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FEBRUARY 7, 1900.
No. CCLXI.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

A Student's Library. FEW things are of more importance to an architectural student than that he should possess a collection of well-selected books. In most cases it is essential that they should not be costly—valuable works of reference can be consulted at public libraries if required, and can be purchased only by the well-to-do—but in any event they ought to be full, complete, accurate, and modern; while to buy a cheap book solely because it is cheap is the worst of all possible economies. In the realm of architectural history, for example, there is a wide range of choice, and yet for the youthful student there is only one book, Hamlin's "History of Architecture." Many others are nearly or quite as good, but none are more accurate at so moderate a price. It must, of course, be supplemented if any particular period is to be studied, as with Anderson's "Italian Renaissance," to give a specimen only of possible specialisation without any excessive expense being incurred. A study of details almost necessarily goes contemporaneously with that of history, and while Glazier's "Historic Ornament" may assist, specialisation is essential, and the necessary works are costly, comprising almost of necessity Watts' work on Grecian ornament, Prentice's "Spanish Renaissance," and Colling's "Gothic Ornament"; while works upon Italian and English Renaissance are said to be likely to appear shortly, some which have long been well known being now out of print. The simple rules of building construction are clearly set forth in Mitchell's two volumes, which may well be supplemented by study of his "Forty Plates;" but "Notes on Building Construction," Vol. III. (long known as "Rivington"), still remains the leading work on materials, though, as it was published many years ago, it must be read with caution and with careful comparison with "Specification," the best general and practical book of reference extant. In the direction of tools and plant a good deal of supplementary information is to be obtained from Seddon's "Builder's Work." As a general rule all quantity surveyors should possess Leaning's book on the subject of quantities, but for some purposes and in some districts either "Dobson and Tarn" or "Fletcher" are to be preferred. The beginner should possess Davis's "Quantities and Quantity Taking," which has just been published. Stevenson's "Estimating" is the one book of real value upon pricing, as it explains to a student how to analyze and arrive at prices for himself; "Specification," again, being the work of reference. Coleman's "Sanitary House Drainage" may well form the elementary book upon sanitary matters, but the subject is important enough to carry further, for which purpose either Moore's "Sanitary Engineering" or else "Modern House Construction" may be used. Theoretical cal-

culation is often left to engineers, and unfortunately so, for the subject is a fascinating one when once the initial difficulties have been overcome, so that Middleton's "Stresses and Thrusts" may well be added to this small library of elementary works, Ewing's "Strength of Materials" being the best, as it is also the most modern work, for the advanced student. G. A. T. M.

London University. THE announcement that the University of London is to move its quarters to the Imperial Institute has called public attention to the building which they are about to leave. It is rather a far cry from Burlington Gardens to South Kensington, and it may be questioned if the University may not regret their old home so centrally and conveniently situate. It is not generally known

West End of the use of statuary as an integral part of architectural design. The street is a narrow one, but although the façade could be better seen in a wider thoroughfare, it is still most effective, and the suddenness with which it confronts the spectator in a confined space reminds one of some of the older buildings of Italy. The design consists of a central block with lower wings on either side; from the centre a portico, one storey high, advances and arrests the eye with seated statues at its outer edge; these are flanked at each end of the portico by terminal piers. Behind the portico rises the main block, with columns between the tall windows; against the sky, crowning the composition, are six very fine statues of Galen, Cicero, Aristotle, Plato, Archimedes and Justinian; they are flanked by two small square towers bearing a clock and a wind-dial, both unfortunately very dirty. The wings are of lower elevation; the basement is without windows, the courses lightly

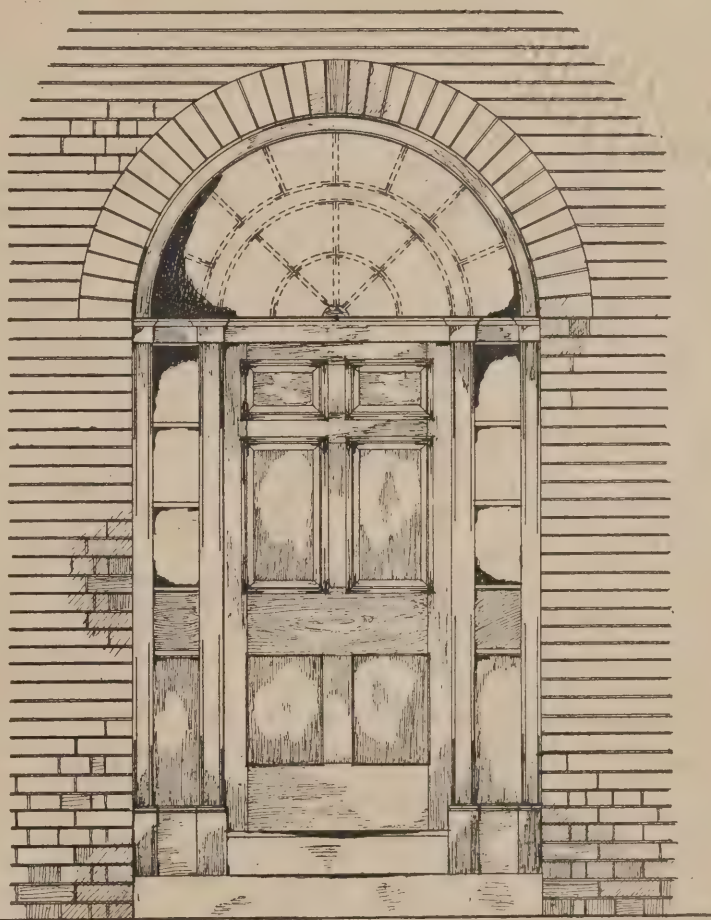


FIG. 1.—FRONT DOOR, 26, DUKE STREET, LIVERPOOL. DRAWN BY M. HONAN. (See p. 3.)

that South Kensington at one time was very nearly being made into a Government quarter, virtually shifting the centre of London life permanently to the west. The Prince Consort favoured a scheme for a vast series of buildings on the ground belonging to the Commissioners of the Great Exhibition of 1851; as they were severally completed they were to be occupied by the Government departments, Whitehall and its neighbourhood being deserted. This was before the scheme for embanking the Thames was put forward; that great work fortunately preserved Whitehall as the historic seat of government, and South Kensington became a land of museums. The University Buildings in Burlington Gardens merit attention for several reasons, and primarily because they are the best example in the

channelled, broken by niches containing statues; the upper storey has windows grouped in threes with columns between; a cornice marks the floor. Over the whole front runs a light balustrade broken by pedestals of statues. Some brownish-red stone has been used for details in the wings with doubtful effect; fortunately the structure was designed before the days when a basement of polished granite, with red brick, terra-cotta, tiles, and "who can say how many more" materials, was considered indispensable. There is an air of refinement about the building which well befits a university; the effect of the whole is very dignified. The statuary—twenty-two stone figures, six in niches, four seated, and twelve breaking the sky-line—is well distributed, and it is impossible not to regret the absence of this most effective feature from most of our new designs. J. C. P.

THE "BUILDERS' JOURNAL" SHILLING FUND.

TO ERECT HOMES FOR DISCHARGED SOLDIERS.

MOST of our readers are by this time aware of the fact that we have started a Shilling Fund to assist the admirable project that has been set on foot for building a Home of Rest for disabled soldiers as a gift to the nation from the building trades. Full particulars of the scheme have already been given, but for the benefit of any who may not have seen them, we repeat a few details.

Character of the Gift.

The purpose of the gift is to meet as far as possible the needs, which all the patriotic funds hitherto established have to a great extent overlooked, of the permanently disabled soldier discharged from the army with a pension inadequate to supply even the barest necessities of life. It is proposed to erect and equip six cottage homes containing in all 100 beds, and in selecting inmates for the homes preference will be given to soldiers who have at some time been members of one or other of the building trades.

The homes will be erected on a freehold site at Bisley, generously given by Lord Pirbright. Their management and maintenance will be superintended by a special sub-committee of the Sailors' and Soldiers' Help Society, an excellent institution of which H.M. the Queen is patron.

Methods of Helping.

The Executive of the Building Trades Gift, whose address is 1, Waterloo Place, Pall Mall, S.W., invite offers of gifts in kind; they have issued printed details, giving the exact quantities of materials, fittings, &c., required, and those of our readers who wish to help in this way should write for these particulars.

Obviously, however, there are many thousands connected with the building trades whose gifts could not possibly take that form, and in the hope of enlisting the help of many who would otherwise be left out, we have started a Shilling Fund.

By this means all who are in any way connected with the building trades—architects, architects' assistants, draughtsmen, students, builders, clerks of works, foremen, workmen, and apprentices—will be afforded an opportunity of taking their share in the national gift.

The following additional contributions to our Shilling Fund have been received up to Monday afternoon:—

	Shillings.
Previously acknowledged	1,486½
Per William Pitts, London, S.W.:	
William Pitts	1
Mrs. Pitts	1
Joseph Whiddon	2
E. Richardson	4
Per Messrs. Gascoigne and Blake, Builders, Onslow Road, Richmond:	2½
J. T. Blake	12
C. R. Willmott	2
J. R. Caste	1
Westbrook and Shrimpton	1
Shrimpton and Jackson	1
Coleman and Pimm	1
George Blake	1
Leslie Blake	1
Richard P. Timbs (Derby)	20
D. Bushell (Bristol)	20
J. T. Ramsell (Westminster)	1
Per G. S. Twizell (Newcastle-on-Tyne):	
Martin W. C. Risby	3
Robert Good	1
G. S. Twizell	1

	Shillings.
H. L. Hicks	1
Edward Cratney	1
Henry C. Charlewood	3
R. P. S. Twizell	1
W. H. R. (London, W.)	1
Inspector	1
R. B. P. (London, N.)	1
Per F. J. Dixon, 4, Sotheby Road, High-bury, N.:	
L. Lamplough	1
F. G. Gayer	1
F. J. Dixon	5
E. W. Cooke	1
Alfred H. Dutton	1
L. Tarran	1
L. Blake	1
R. H. Saunders	1
Architect's Family	8
Mrs. Wratten	5
Total	157

We have a number of collecting forms left which we should be pleased to send to any reader who will make good use of them.

The Workmen's Contribution.

We are pleased to learn from the Executive of the general fund that contributions both in money and in kind are coming in well. An attempt is being made to enlist the help of workmen, whose gifts are being asked for the special purpose of defraying the cost of the labour involved in erecting the homes; many masters have agreed to allow collecting sheets to be posted on their building jobs.

Gifts in Kind.

The following is a complete list of contributions in kind for which promises had been received up to the end of last week at the Offices of the Executive of the gift:—

FOR THE WHOLE OF THE BUILDINGS:

Messrs. Acton and Borman.—The whole of the Glass Paper.

Messrs. D. Anderson and Son, and J. C. Brealbert and Co. (jointly).—The whole of the Slag Wool.

Messrs. Robert Boyle and Son.—The entire natural Ventilation Appliances for the whole of the buildings.

Messrs. Carter and Aynsley.—The entire Locks.

Messrs. S. and E. Collier (Reading).—The entire Ridge Tiles.

Messrs. Diespeker and Co.—The entire Mosaic Flooring for Lobbies, Halls, Lavatories, &c.

Messrs. T. and W. Farmiloe.—The entire Whitelead, Colour, Oil, Turps, Varnish, Brushes, and Paint Pots.

Messrs. Hobbs, Hart and Co.—The entire Locks.

Messrs. G. B. Kent and Sons.—Paint, Toilet, and various Brushes.

Messrs. Nicholls and Clarke.—The whole of the Glazing.

Messrs. T. Rider and Sons.—The Dressers for the whole of the Homes.

Messrs. John Roberts and Son (Leeds).—The whole of the Nails for the Roof.

Messrs. Roberts, Adlard and Co.—The laying of the entire Slating (exclusive of slates).

The Velongo Slate and Marble Quarries.—The entire Damp Course Slates, Slate Shelves Slabs, &c.

Messrs. Webb's Engineering Co. (Birmingham).—The entire Door Fittings and Window Furniture, and the General Ironmongery and Taps.

Messrs. G. A. Williams and Son.—The whole of the Interior Blinds.

Messrs. Doulton and Co.—2,000ft. of Drain Pipes, and Yard Gullies for the Six Homes.

Mr. James Brown.—Moulded Bricks and Ornamental Panels of the whole of the buildings.

Messrs. G. Tucker and Son (Loughborough).—Chimney Pots for all six Homes.

FOR SPECIAL SECTIONS OF THE WORK.

The Asbestos and Asbestic Co.—Asbestic Plaster.

Messrs. G. Aston and Sons.—50cwt. of Ironwork and some Large Girders.

The B. and S. Folding Gate Co.—Indiarubber Flooring for two Bathrooms.

Messrs. Benham and Sons.—Two large Kitchen Ranges.

The Birmingham Blind Co.—A set of Outside Blinds for one Home.

Messrs. John Burton and Co.—10,000ft. run of 4in. by 2in. Rafter and Ceiling Joists.

Mr. Jas. Carmichael.—Six Front Doors and Frames.

Messrs. Colls and Sons.—The complete set of forty Doors for one Home.

The Columbian Fire Proofing Co.—The Construction of the First Floor of One Home.

The Conduit Insulation Co.—Electric Conduits.

Mr. J. F. Ebner.—Pitch Pine Flooring for the Ground Floor of Three Homes.

Messrs. J. C. Edwards (Rusdon).—9,000 Red Pressed 6in. by 6in. Flooring Quarries.

The Expanded Metal Co.—Metal Lathing for exterior walls, floors, and partitions of the Recreation House.

Mr. E. Marshall Fox (for the British and London Non-Flammable Wood Company).—Non-Flammable Wood Joinery and Interior Timber Work for the Recreation House.

Messrs. Alfred Goslett and Co.—Three large Kitchen Ranges with high pressure boilers.

Messrs. Thos. Gregory and Co.—Wood-block Flooring for the Recreation Hall.

Messrs. Hilton, Anderson, Brooks and Co.—50 tons of Portland Cement.

Messrs. H. H. Bros. (Leicester).—The Architraves for one Home.

Messrs. Humphreys.—A 30ft. Iron Building for Work shops.

Messrs. Kirk and Randall.—75 squares of lin. Roof Boarding.

Messrs. Lander and Co.—The Warm Air Grates for the Recreation House.

Messrs. Thos. Lawrence and Sons (Bracknell, Berks.).—25,000 Red facing bricks, and 500ft. of molded bricks.

Messrs. Wm. Lee, Son and Co.—25 tons of Portland Cement and 50 yards of Lime.

Messrs. Lindsay, Neal and Co.—The Heavy Girders for a Pair of Homes.

Mr. E. Lucas.—A Service Lift.

Messrs. Macevoy and Holt (North Fleet).—50 tons Cement.

Messrs. McNeil and Co.—The Slag Wool and Roof Felting for one Home.

The Mural Decoration Syndicate.—503yds. of Partitions.

Messrs. John Newton and Co.—The Roof Felting and the "Plasterers' Hair" for three Homes.

Lord Penrhyn (Penrhyn Quarries).—10,000 Slates.

Mr. Assheton Smith (Dinorwic Quarries).—10,000 Slates.

Messrs. Strode and Co.—The Electric Fittings for one Home.

The Town Company, Ltd. (Birmingham).—Twenty-five Enamel Slate Mantlepieces.

Messrs. Geo. Trollope and Sons.—Doors, Casements, and Linings for one Home.

Messrs. Twyford.—The Sanitary Fittings for one Home.

Messrs. B. Ward and Co.—An Artificial Stone Staircase for one Home.

Mr. John P. White (Leicester).—Mantlepieces, designed by the late G. H. Morris, and Garden Seats.

Messrs. Geo. Wooliscroft and Son (Hanley).—The Roofing Tiles for one Home.

Messrs. Maw and Co. (Shropshire).—250 yards super. Tiling for paving.

Mr. George Jennings (preliminary).—Sanitary Fittings for one Home.

Moorgate Engineering Co.—Iron Staircase for Recreation House.

Mr. Jabez Thompson (Northwich, Cheshire).—1,000 Patent Brickwoods.

Mr. William Wiffen (Holsworthy, Devon).—Oak Lintels for one Home.

Darbishers' Granite Quarries (Penmaenmawr).—Some Granite for Macadam.

Messrs. Towers and Williamson (Grantham).—Clinkers for Workshops and Stable floors.

The British Uralite Co.—18,000 square feet of Uralite Slabs.

In addition to the above the following contributions in money have been received:—

	£	s.	d.
The Worshipful Company of Tylers and Bricklayers	105	0	0
Robert Neil, Esq. Messrs. (Robt. Neil and Son, Manchester)	100	0	0
Mr. George Parker	100	0	0
Messrs. George Farmiloe and Sons, Ltd. (Belfast), per Lord Mayor of Belfast	26	5	0
Messrs. Maides and Harper	10	10	0
Messrs. Woodward and Co.	10	10	0
Army and Navy Auxiliary Co-operative Supply, Ltd.	10	0	0
Messrs. J. H. Sankey and Son	10	0	0
W. H. George, Esq.	5	5	0
Messrs. William Sapcote and Son (Birmingham)	5	5	0
The Upper Warden, Worshipful Company of Tylers and Bricklayers	5	5	0
Mrs. Marigold	5	0	0
A. B. Smith, Esq.	5	0	0
J. B. Tomblinson, Esq. (Barton-on-Humber)	5	0	0
Walter Bird, Esq.	3	3	0
Messrs. Brown and Sweetland	2	2	0
A. Chippendale, Esq. (Leeds)	1	1	0
Various minor sums	0	17	6

OTHER GIFTS.

Mr. B. T. Buttsford.—50 Books for Library.

Messrs. Busset.—Two Armchairs.

Messrs. Mansford and Son.—Typewriting Accountments and Stationery.

Messrs. A. S. Wilson and Co.—Drawing Materials.

Messrs. Sprague and Co.—Lithography.

Messrs. Rich and Co.—Electrography.

DOORS AND DOORWAYS.*

By M. HONAN.

MOST, if not all, of the old work that now remains in Liverpool was done during the seventeenth and eighteenth centuries and belongs to the Queen Anne and Georgian periods, the latter sometimes being called the "portico period." As regards the front doors of many of the old houses of these dates, we find the six-panelled door a great favourite, and it may, in fact, be hailed as a typical Liverpool door. In design, it was formed the same as most doors, the only difference being that the two panels below the lock rail were flush with the stiles, &c. The only line showing the shape of the panel was a small bead worked on the stiles and rails. (I might here add that I am not aware of a door of this kind in any other town, which is the reason why I call it a typical Liverpool door.)

The general effect of this door is very satisfactory, and it has the air of solidity and security, which no doubt was essential in those days when riots and other street troubles were of common occurrence. As for examples of this door, there is one at No. 26, Duke Street (see Fig. 1). The fanlight has long since disappeared and is now replaced by a sheet of modern plate glass. Park Lane, Pitt Street and Kent Square have many examples of this kind of door.

Another very common form of external door is that with eight panels, four raised panels above and four below the lock rail, the upper ones in each case being the smaller. This form is very simple and (to my mind) very effective, and is also very strong and practical, as it has five rails and four muntins, which afford ample accommodation for furniture, such as knocker, letter-box, lock and handle. This kind of door dispenses with the wide lock rail which is generally considered to be very troublesome to get to look right. I might here add that it is no common occurrence nowadays to see doors of good design and elegant proportion which are unpractical, the lock rail somehow coming too high or too long to enable the handle to be reached easily; as regards the knocker, one has frequently to reach it with a walking-stick or umbrella. Occasionally we find no provision made for the accommodation of the letter-box, which, of course, is a very important article. The usual way out of the difficulty is to see it placed under the side fanlights, or when the latter do not exist, the letter-box is placed on one of the panels as the only solution obtainable without spoiling the proportion of the door with wide rails.

These six- and eight-panelled doors were used internally as well as externally, and were nearly always the pride of the housewife, as the polished smooth surface of the solid mahogany was of beautiful and well-selected

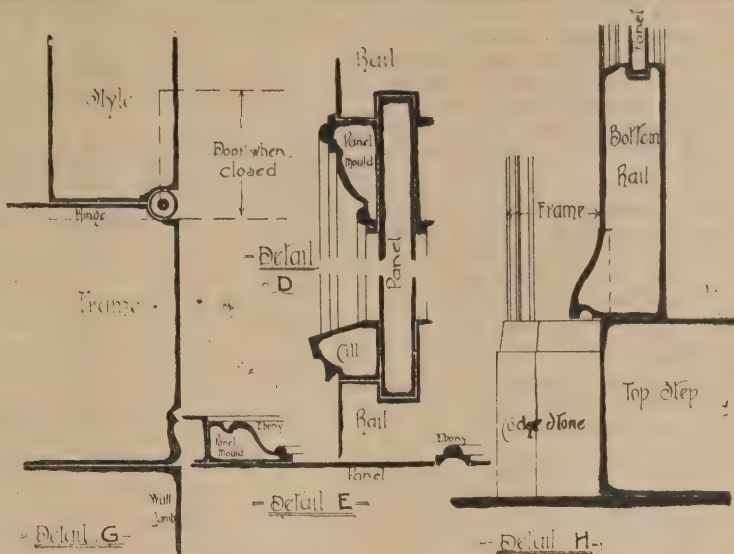


FIG. 2.—DETAILS OF DOOR.

figure. However, these handsome doors were only the property of the rich merchant princes, who imported the hardwoods. The Royal Institute, Colquitt Street, and the Town Hall still have most of their original mahogany doors, of which a detail is given at E, Fig. 2. These doors have the raised panel effect without going to the expense of working down a solid panel, by simply inserting a small mould, which gives the required line and is very effective. The panel mould and little bead on the Town Hall doors are worked in ebony, while those in the Royal Institute are all in mahogany. I believe there still remain two or three of these doors in the old houses, but they are very few in number, as they were generally removed on the departure of the master of the house to a better neighbourhood, where we now frequently find them.

Another kind of internal door we have not yet mentioned is the screen or vestibule door. Of these Liverpool has numerous examples, mostly of simple design, of which a glimpse is obtainable during the milder months, when the front door is thrown back. One of the most elegant forms I have noticed and measured is in a very large house in Hope Street (No. 72, I believe); it is, as usual, a double door opening in two halves (see Fig. 3). The space below the lock rail is panelled, above which it is glazed and divided by small wooden bars of pleasing and elegant form, which might be described as two intersecting stilted circles. Another very common form is to be found in an old china shop in Canning Place, at the corner of Park Lane. As shown by the illustration (Fig. 4), it is formed of straight bars intersecting and producing a diamond kind of pattern; in fact, nearly all the screen doors are based on this last example, being more or less of diamond

form, or squares formed by the bars intersecting one another. The reason why these interesting doors with glazing bars fell into disuse, in the early part of this century, was due to the introduction of plate glass, which immediately afforded the liberty of glazing in large sheets without support. I believe plate glass was first used in Liverpool in a house in Lord Street, about 1820; it was considered a curiosity and was the admiration of the rich, who soon purchased the ugly article.

Of the other old doorways in Liverpool, there still remain many good examples. The pro-cathedral, in Church Street, has four very well-known doors, worked in stone and characteristic of their date—1705. The detail is large and refined, and may be contrasted with our small modern work. There is a tradition about these doors that when this building was erected Liverpool could not boast of a single professional architect, all the work being designed and executed by the master builders, who really developed the so-called Queen Anne style; and as something classic was required an application was made to a London architect to furnish designs for a doorcase, as it was called. He sent down in due course four sketches for the purpose. The authorities here not being able to agree as to which should be selected, it was suggested that the whole four should be adopted, which was accordingly done, and, as may be seen, each of the four is of different design. It appears as if two designs and then two revised sketches were made, as the two on the north side bear great resemblance to the two on the south side, but they are of better proportion.

The doorway illustrated (Fig. 5) is that at the south-west corner, and I might hint that the doors are the work of Wren, Evelyn, or Hawksmoor, as the dates compare favourably with the lives of these men, who were the great architects in London at the time, and the work is not unlike theirs.

The charming group of buildings in School Lane, behind the pro-cathedral, known as the Blue Coat School, has as its main entrance a doorway almost identical with the one on the south-west side, which might suggest the same design was carried out in the two buildings (or else cribbing was in vogue in those days). The date of the door is 1709, five years after the pro-cathedral was erected.

Another dignified doorway with projecting steps belongs to a corner house of York Street and Duke Street (see Fig. 6). It consists of a flight of steps raking with the main front finishing in a broad landing 3ft. 6in. wide, on which the doorway is formed. The iron railing which guarded the approach has disappeared; no doubt it was considered inconvenient for getting boxes and goods in and out, as the house is now a kind of office and warehouse. A little lower down the street, on the other side, a similar doorway (dated 1780) remains with the iron rail complete. It is, beyond all doubt,

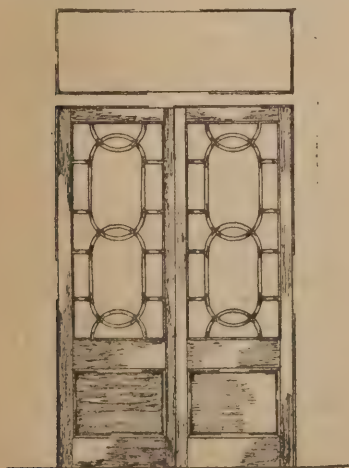


FIG. 3.—SCREEN DOOR, HOPE STREET, LIVERPOOL.



FIG. 4.—FRONT DOOR TO OLD CHINA SHOP, CANNING PLACE, LIVERPOOL.

* A paper read before the Liverpool Architectural Society on January 22nd, 1900.

one of the most pleasing old doorways in Liverpool. It is decidedly the work of one of the architects of the epoch, who worked in a more correct and more accurate employment of classic models after Athenian and Roman buildings. They scorned the modest Queen Anne style or the work of the people, though their own work stands out with a conscious architectural effort.

The doorways to the flank wings of the Blue Coat Hospital afford a good example of bold flights of steps projecting 6ft. or 7ft. from the wall face and being about 13ft. wide. The doors and frames are flush with the wall plane, as the fanlights, which are a portion of the window, are constructed out of the same frame as the door; or, in other words, the doors and fanlights, together with the windows, are all treated as part of the wall surface. Contrasting these bold flights of steps, of which we have taken two examples, and of which Duke Street is so full, there are several houses which have a curious form of doorway, which we might describe as Queen Anne open porch. It was formed by setting back the door face 4ft. or 5ft. from the wall plane. The jambs and soffit so formed are panelled or cased-in with wood, and painted white or cream, the colour of the period.

This porch effect produces a fine shadow and relieves the flatness of the elevation, and suggests several ideas as to its origin. The first thing that strikes one on seeing these doorways is that the old men were tied down to very strict frontage lines and were not allowed to have projecting flights of steps as we still see in streets built before the Act or by-law came into force. Well, rather than be beaten by the town's surveyor (in fact the old men never were beaten by any difficulty) and lose their grand flights of steps, they recessed their doors and therein placed the steps, so avoiding setting back the building. Another idea seems to have been to get a porch effect which would afford shelter to their welcome callers, or the beggar, from the driving rains and cold winds. These doors were as a rule very plain and flat as regards the wall treatment, having simply an architrave and cornice at the top.

Before passing on to fanlights, one word about door furniture, such as knockers. Nearly all the old knockers are gone from their original homes, like their masters, but occasionally we find one or two as mute reminders

of their former pomp, pride, and importance. We have heard of the whole side of a street being divested of its knockers in one night, probably on account of the value of the metal, as many were made of solid brass. In London a brass knocker and a high doorstep were considered in those days as an outward and visible sign of a boarding-house or an aggressive family. That is why so few are found in the West End.

Fanlights were nearly always moulded in cast-iron or lead when of intricate design, no doubt on account of the difficulty of constructing them in wood; in fact, they look what they are, and no attempt seems to have been taken to mask

the material by imitating wooden designs. Some of the fanlights were considered so valuable that we hear of them being insured against breakage in riots, &c. The fanlight to the house in York Street is plain and simple (Fig. 6). Wolstenholm Square, which very few people know, as it is surrounded by warehouses, has a large fanlight of good and manly design; in all probability 26, Duke Street, had the same as indicated by dotted lines in Fig. 1. The old china shop in Canning Place has a common form which belongs to that kind of door (Fig. 4).

Now we might take a few practical details which may be suggestive and help to give a little interest to the too often plain door. The first detail (A, Fig. 7) is a small mould, let into the stile and returned round the top and bottom rails, which was often done by Wren, and it gives the door a look of unity amongst its panels, as they are all connected.

Something similar is shown at B (Fig. 7), in a cheaper manner; it can be obtained by designing the panel mould into two orders, so to speak, using the first order for the muntins only and the two orders for the stiles and rails. It gives an interest to the door and pulls the design together. Another interesting detail (C, Fig. 7), and a great favourite with Mr. Norman Shaw, in his large houses, is to mould the stiles, top and bottom rails. The effect is rich, but costly. This detail is very common amongst Scottish woodwork. Another simple treatment (D, Fig. 2) to external doors or gates is to enclose the panel with a large bolection mould on the top and two sides, letting it die on to a kind of sill at the bottom. This is very suggestive and also very practical for doors exposed to the weather, as the sill throws off the rain.

As we have touched on keeping out the driving rain, a very common place for it to enter is on the top step. The simplest way to avoid this is to keep the door and the top step in the same plane, and if the site is exposed, to insert a moulded sill to throw off the water (see H, Fig. 2). A very useful detail for front doors that are nearly always opened back, such as in offices, is not to hang the door to the usual rebated frame, but simply to a square frame (see G, Fig. 2). When the door is open the frame and door are on the same face and the effect of panelling is produced. Of course the back of the door is ugly and has an unfinished appearance and this detail is only suitable for doors seen only on the outside and always open.

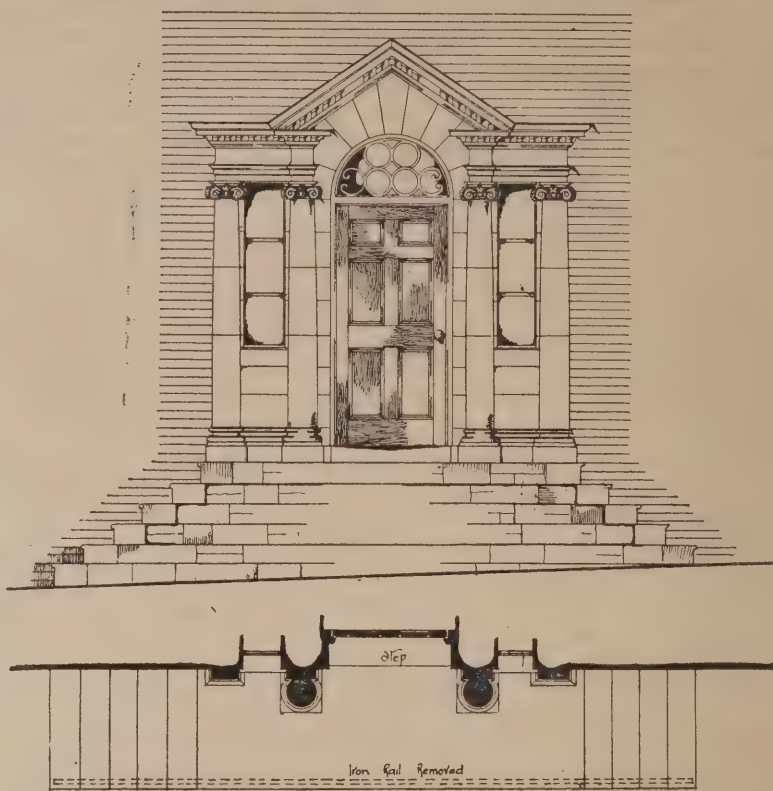


FIG. 6.—MAIN DOORWAY TO A HOUSE AT THE CORNER OF YORK AND DUKE STREETS, LIVERPOOL

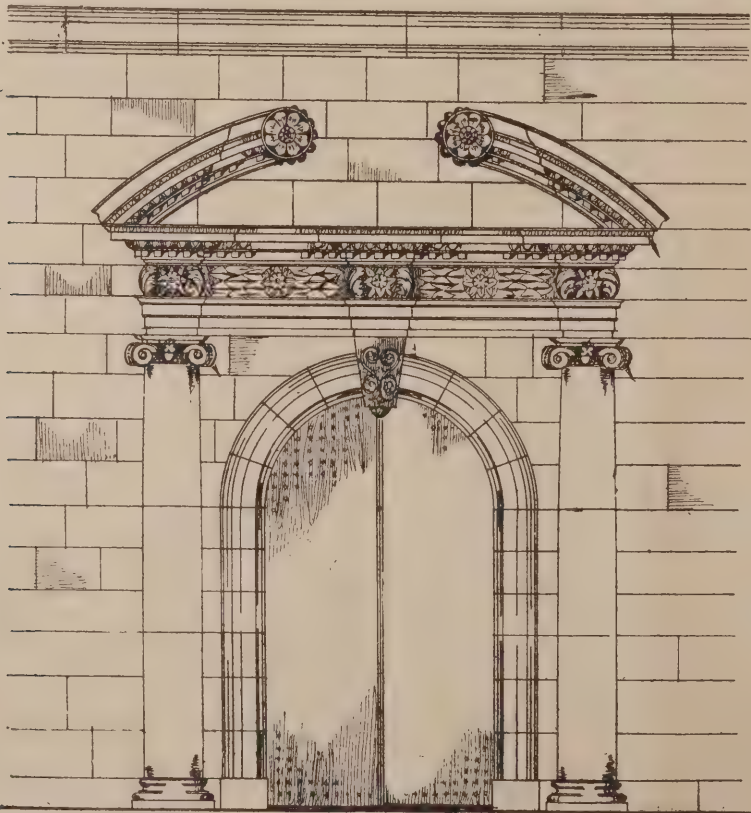


FIG. 5.—SOUTH-WEST DOOR, PRO-CATHEDRAL, LIVERPOOL. DRAWN BY M. HONAN.

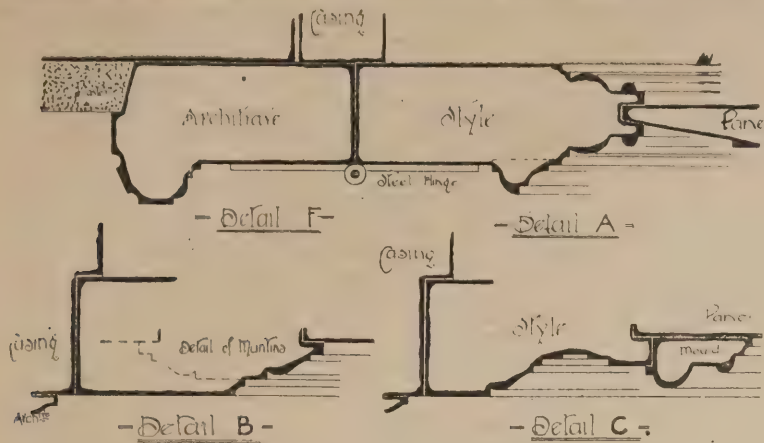


FIG. 7.—DETAILS OF DOORS.

Just another detail (F, Fig. 7) and that is to hang internal doors to an architrave so as to expose both sides of ornamental steel hinges, when one desires to use them.

MR. JOHN BELCHER.

THE NEW A.R.A.

THE election of Mr. John Belcher to the Associateship of the Royal Academy is a fitting recognition of an industrious career and many distinguished accomplishments in the architectural world. The general feeling of the profession will be, we feel sure, that the honour could fall to no more deserving recipient. A few particulars of Mr. Belcher's professional career will be read with special interest at the present time.

Articled to his father, Mr. Belcher brought to this beginning of his career the knowledge he had gained as a boy in Paris, where he had been sent to study and sketch, with parental instructions to pay especial attention to the Renaissance, as understood in France. For some years after this he worked in partnership with his father; but, when the latter retired, John Belcher, to quote his own words, "after swallowing Street's Academy lectures, forthwith proceeded on a wild Gothic career."

Before, however, he had ranged through the Gothic styles, to come back at last to Classicism and the Later Renaissance, Mr. Belcher found Nuremberg and Rothenburg,

and the old cities of Germany, full of inspiration; and if he had not at a later date visited Italy and become impressed, as one needs must, with the Renaissance works of Florence and Pisa, he had never, we may safely assume, given us such a work as the building for the Institute of Chartered Accountants.

When Mr. Belcher designed the new buildings for Messrs. Rylands and Sons after the great Wood Street fire about eighteen years ago, they were, with a due regard for the requirements of private firms for lavish decorations, done in the Dutch convention of the sixteenth and seventeenth centuries. The wonderful invention and fertility of resource of those old Hollanders were then exercising an influence over Mr. Belcher's design, and he was passing through a period of enthusiasm in which the old merchants' houses that front the now silent waterways of Dordrecht, Haarlem, and other decayed cities of the Netherlands, seemed most desirable starting points towards designs for business premises in living London.

He has produced many works which mark a gradual development from the picturesqueness which then meant so much to him onward to the chastened severity of his later years. One cannot, without difficulty, hope to follow him here in restorations of village churches in Warwickshire and Wilts; but it is in his designs for country houses that one finds much work of an interesting quality. Most of these houses are done in what one may perhaps be allowed to call a Tudor convention: Holcombe, near Chatham; Yeldhall Manor, near Twyford, originally named "Bearroc"; houses at Henley; houses on Chiswick Mall; Mark Ash,

Surrey; and his own house, "Redholm," Champion Hill (of which we give an illustration); stables and studios, Brenchley; house at Royston; cottage hospitals, Norwood and Chatham; and many others. A later development may be observed in such houses as Morden Grange, Blackheath, additions to Court Lodge, Boxley, to Dr. Gandy's house, to that of Mr. De Chapeaurouge, Norwood. The alterations and additions for the Earl of Eldon at Stowell Park are on a very large and important scale, comprising some entirely new works and the remodelling of old buildings which hitherto have had no outstanding architectural character. Terraced gardens, new stabling, and laundry buildings are included in these works. The gardens of Stowell Park, and many of his houses, have been specially designed by Mr. Belcher. This is a matter which he feels to be of great importance, as it enabled him to link the building with the site, throwing out tendrils in the shape of terraces, walls, and hedges to tie it to the ground.

But, so far, the most interesting of all Mr. Belcher's works is the building for the Institute of Chartered Accountants, with those happily



JOHN BELCHER, A.R.A., F.R.I.B.A.



"REDHOLM," CHAMPION HILL, S.E.: MR. BELCHER'S

allied features, the decorative friezes of sculpture along the elevations by Mr. Hamo Thornycroft, R.A., and the sculptured figures by the late Mr. Harry Bates, A.R.A.

We regard this building, Mr. Belcher's dignified design for the completion of the South Kensington Museum, and that for the Colchester Town Hall, and the Cambridge Guildhall, as contributions towards the formation of a style in these days when architects have been content for the most part to borrow from the work of the past. Already we may see from the works of his imitators, in which attenuated entablatures, engaged columns, deep sculptured bands about the middle of buildings, and heavily rusticated ground-floor piers are reproduced with a touching fidelity, if sometimes also with exasperating want of fitness, that he has made a considerable impression upon the art of his time. All this is an unconscious tribute to the influence Mr. Belcher's work has upon the minds of some of the younger men.

It is obvious to the observant eye that the desire for the attainment of restfulness, solidity, sternness, and soberness, underlies Mr. Belcher's work, despite the hindrances of the building system; despite the thousand and one obstacles that lie in the way of the modern architect, blunting the edge of the keenest idea. It is not a small achievement to have done this, and the slightest advance is a great one in an age of marking time.

HERALDRY.—III.

By GUY CADOGAN ROTHERY.

(Continued from page 386, No. CCLIX.)

HONOURABLE ORDINARIES AND SUB-ORDINARIES.

AS stated in the first chapter, the early ornamentations, or charges in heraldry, were merely the strengthenings of the shields. These are generally held, by the most competent of the old heraldic authorities, to be ten in number, and are termed honourable ordinaries.

As these ordinaries already existed on the escutcheons of the principal nobles, and, indeed, on nearly all of the earlier coats of arms, the heralds who were appointed for the purpose of introducing a little order and method in the science classed them as the first and highest order of heraldic charges. It is hardly astonishing to find that nearly every one of these ten different charges has a special meaning or legends attached to it.

One of the greatest contrasts between English and Continental heraldry is that our heralds attach a particular value to the escutcheon according to its simplicity, as the escutcheons of the younger branches of a family often had new additions to distinguish them from the elder branch. On the Continent the escutcheon is valued by the number of charges, in many cases the ordinaries as well as the field being heavily charged. In English heraldry it is allowable to emblazon the honourable ordinaries with almost any common or minor charge, but the practice is not so much resorted to as on the Continent.

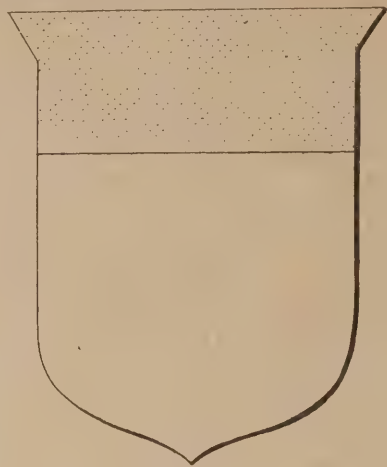
The principal ordinary is the *chief*; it occupies the upper part of the shield, divided from the lower by an horizontal line, which ought to fill up one-third of the surface of the field.

Each ordinary has a certain number of diminutions, or modifications of the parent charge. In the case of the *chief*, its diminutive is the *fillet*, one-fourth of the chief, and is always placed in the lower portion of the chief.

The *pale*, second in importance, is a band, occupying one-third of the shield, from top to bottom. Its diminutives are the *pallet*, half the size of the *pale*, and the *endorse*, which is half the size of the *pallet*.* The word *endorse* comes from the French *endosé*, to place back to back; a *pale* when emblazoned between two *endorse*s is said to be *endorsed* or *indorsed*.

The *bend* represents a band, one-third of the shield, crossing from the dexter chief to the sinister base. The *bend* has three diminutives; they are the *bendlet* (sometimes called a *garter*), the *cotice*, and the *ribbon*. A shield divided into several parts by lines in *bend* is said to be *coticé*.

* In every case the first diminutive ought to be one-half of its parent charge, the second one-half of the first, the third one-half of the second. This rule does not apply to the chief, the cross, the saltire, or the quarter.



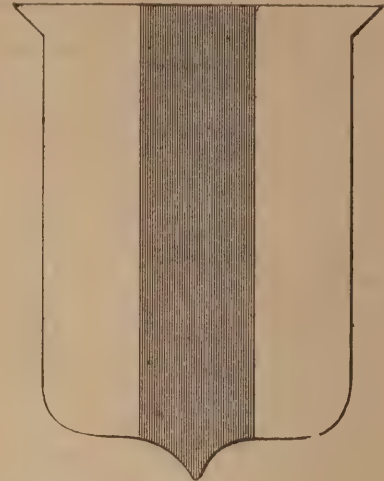
THE CHIEF.

The *bend sinister* is the *bend*, or *bend dexter*, reversed, coming from the sinister chief to the dexter base. The *scarpe* and the *baton* are its diminutives. The *baton*, variously called *baton* or *batoon*, is the charge used by heralds as the mark of bastardy.* It is sometimes borne *coupé* when its extremities do not touch the sides of the shield. This was a special privilege, and at one time but rarely conceded. Another mode of lessening the disgrace of this charge was to have it reversed, a privilege conferred only on extraordinary cases. After the bravery displayed on the battlefield against the English by John the Bastard of Orleans, Charles VII. allowed him to turn his *baton* from sinister to dexter. A like boon was granted to the Earl of Murray by his sister, Queen Mary of Scots.

The *fess* is an horizontal band in the middle of the shield, and occupies one-third of its surface. It represents the waist-band, one of the symbols of knighthood or high military command; the officers' and non-commissioned officers' scarves, still worn in our army, are relics of this ancient scarf of authority. The *bar*, the *closet*, and the *barrulet*, this last always borne in couples, are the diminutives of this charge.

The *chevron* is formed by two bands rising from the sides of the shield and meeting in a point in the centre. It is one of the charges formerly given to founders of families, and is highly prized. A *chevron* is sometimes borne *rompu*. The diminutives are the *chevronel* and the *couple-close*, which last is always borne in couples and often one on each side of the chevron, when the chevron is said to be *couple-closed*. Many heralds hold that the chevron represents the principal rafters of a gable roof, to which the term still applies in the French language, and hence is an appropriate charge for the founders of a family; another

* The term *bastard bar* has been popularly, but erroneously, given to this symbol; the *bar* is a diminutive of the *fess*, and therefore the term *bar* cannot be applied to the diminutive of the *bend sinister*.



THE PALE.

theory is that it symbolically represents a park gate.

The *cross* is a combination of the *pale* and the *fess*; it is a favourite and much-valued charge. The ornamentation of heraldic crosses is extraordinarily varied; this "honourable ordinary" is deserving of a treatise by itself. The principal crosses are the plain cross; the cross crosslet, a cross with the limbs having a transverse bar near the ends; the cross pattée; the cross moline; the cross fleury, or ornamented at each end with fleur-de-lis; and the cross patonce.

The *saltire* is formed by *bend dexter* and *bend sinister* conjoined.

The *pile* is in the form of a wedge, the point downwards. Its proper size is one-third of the shield in its upper part, but if it is charged its broadest end fills up two-thirds of the shield. A *pile* may be borne *transposed*, that is to say, with the point uppermost.

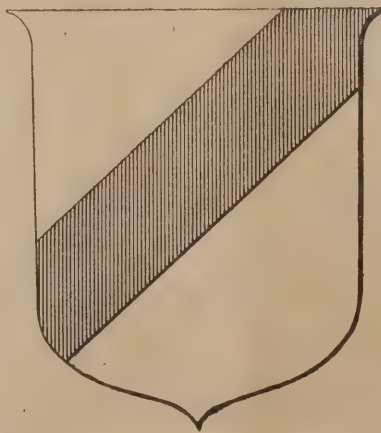
The tenth and last "honourable ordinary" is the *quarter*, which occupies the upper dexter position of the shield, consisting of one-fourth of its surface. It has one diminutive, the *canton*, occupying one-eighth of the shield.

All the above charges may be *voided*, a term applied to a charge when it has its centre removed, showing the field through it. The *voiding* may be of any shape; a cross is voided *per-pale*, or *per-fess*; but in such a case the shape of the *voiding* must be specially mentioned, otherwise it would mean that the charge was *voided* of its own shape. Mr. Mark A. Lower, the author of "Curiosities of Heraldry," says that this curious custom of *voiding* was adopted because the bearers had lost their patrimonies, and retained only the shadow of their ancient greatness.

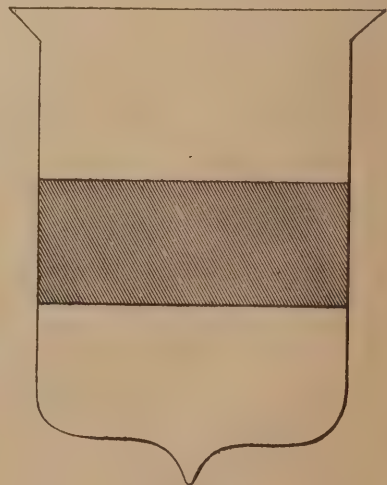
The terms *in pale*, *in bend*, &c., when applied to common charges, denote that they are borne disposed in the form of the ordinary mentioned. A shield is said to be *paly*, *bendy*, &c., when it is divided by several lines in the form of the ordinary mentioned, the number of divisions



THE BEND.



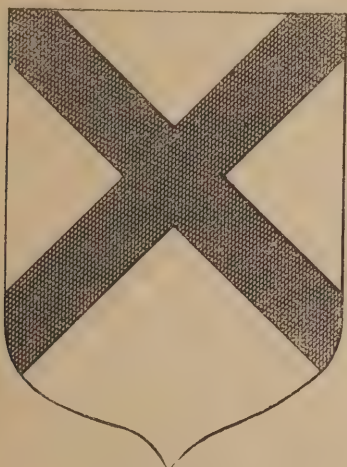
THE BEND SINISTER.



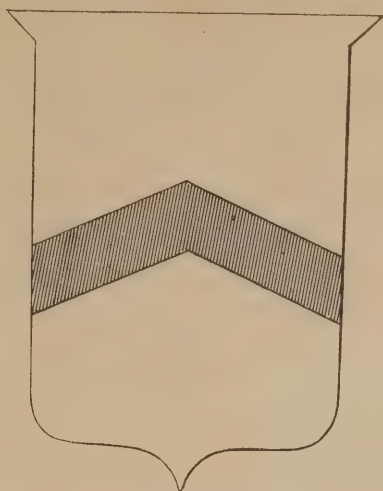
THE FESS.

being also specified with the tinctures; the first division being of the first-mentioned tincture, the second of the second, and so on alternately. A shield may be divided *per-pale*, *per-bend*, &c., when it is of two different tinctures and divided in the shape of the ordinary. A common occurrence in heraldry is to have the charge and the field *counter-changed*, a term employed to denote a party-coloured charge displayed on a party-coloured shield, half metal and half colour, of the same tinctures as the charge, which has its metal part on the colour and the coloured part on the metal of the shield. The term *tierced* is applied to a shield which is divided into three parts; it may be either *tierced in fess*, *in pale*, *in bend*, *in bend sinister*, or *in pale*, according to the form of the three parts.

When any ordinary is pierced by a square hole, it is said to be *square-pierced*; but if, in the case of a cross, the whole of the intersecting portion is removed it is termed a *cross quarterly-pierced*. Ordinaries may be simply *pierced*, i.e., pierced with a round hole, and also *lozenge-pierced*; they are often borne *couped*, that is to say, they have their extremities cut off and so do not touch the sides of the shield; they may also be *rompu*, when the ends instead of being cut off with a smooth edge are torn off and present a ragged edge.



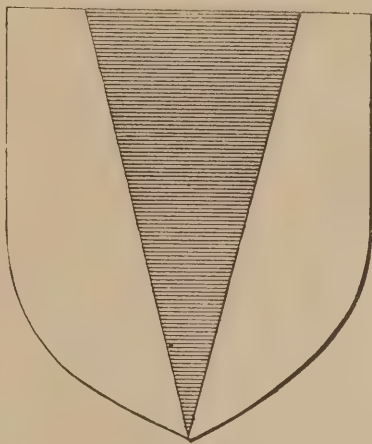
THE SALTIRE.



THE CHEVRON.

shield is covered with lattice-work it is termed *fretty*, or *fretty cloué*, when, instead of being interlaced, the dexter lattice is placed over the sinister bars and nailed.

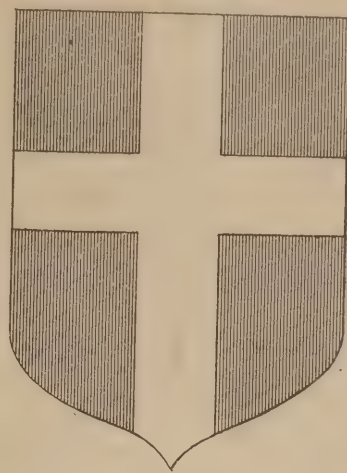
The *bordure* is a broad band encircling the



THE PILE.

shield; it is sometimes, although seldom, charged with common charges, and, therefore, has been, by some heralds, enumerated with the honourable ordinaries.

Its diminutives are the *crle*, which, unlike the *bordure*, does not touch the edges of the shield; and the *tressure*, which is generally borne *flory-counter-flory*. Both of these are by some heralds classed as distinct charges, and not as diminutives of the *bordure*. The *tressure* in Scotland is most highly esteemed, it being a royal charge, encircling the red lion of the Scottish arms, and was only granted to private individuals by a royal warrant, and then only in cases where the recipient had



THE CROSS.

performed some great deed for the good of his sovereign or country. It was also granted to the families directly descended from the female members of the royal family.

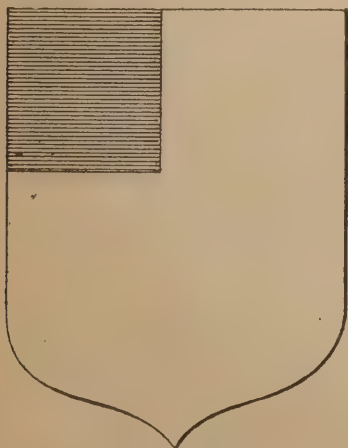
The *pall*, an ecclesiastical vestment and ornament, is a combination of the upper part of the saltire and the lower part of the pale.

The *flanches* are the dexters and sinister portions of the shield when they are cut off from the rest by curved lines; they are always borne in pairs, and the fact of their sometimes being charged has made some authorities class them as honourable ordinaries. The *lozenge* has four sides, the upper and lower points acute, and the side ones obtuse. Its diminutives are the *rustre*, or lozenge with a round hole through the centre (when the hole is square it is termed *square-pierced*); the *fusil*, which has its upper and lower angles much more acute than the *lozenge*; and the *mascle*, a lozenge showing only a narrow rim, through which the field is seen. The *mascle* probably was intended to represent a link of chain armour.

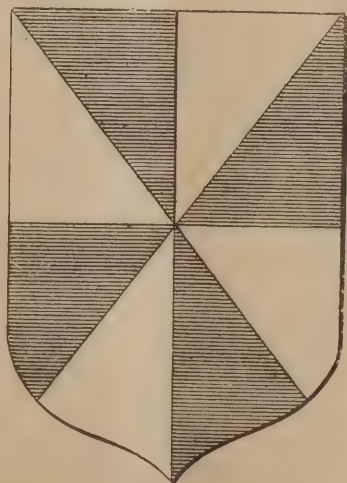
Among some of the most ancient charges are the *roundels*, small circular charges, which are sometimes classed as sub-ordinaries. *Roundels* are called *bezants* when of or; when they are tintured argent, *plates*; gule, *torteaux*; azure, *hurts*; sable, *ogress* or *pellets*; vert, *pommes*; purple, *golpes*; sanguine, *guzes*; tenné, *oranges*. The *plate* is sometimes borne barry of seven argent and azure, when it is called a *fountain*.

The *mullet* and *star* have sometimes been classed among the sub-ordinaries. The *mullet* is a charge representing a spur-rowel, and has five points. The *star* has six points or more; they are always *wavy*, but, if it has more than six points, only every other one should be represented as *wavy*. The *mullet* and *star* were respectively military and ecclesiastical charges.

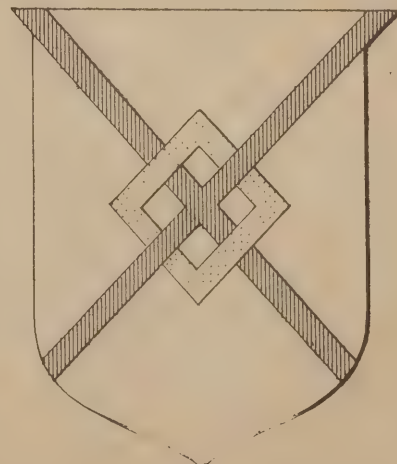
Flames of fire, when borne alone, may be counted as sub-ordinaries. They are borne as



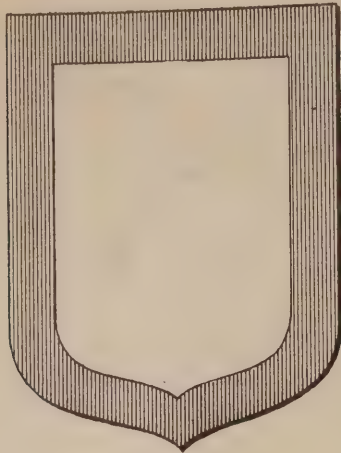
THE QUARTER.



THE GYRON.

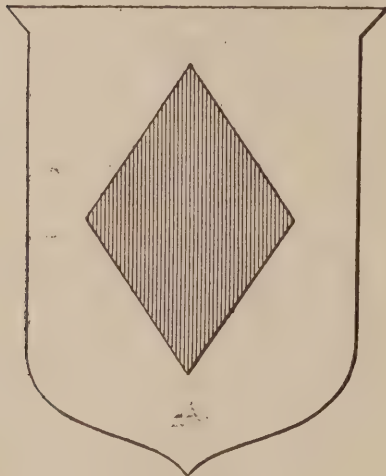


THE FRET.



THE FRET.

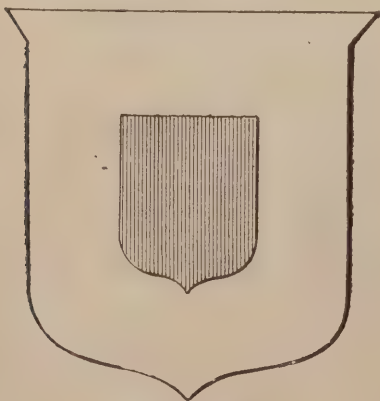
symbols of the bravery and valour of the original bearer, ever impatient to lift his eyes and thoughts upwards; always thinking of and aspiring to perform, and no doubt sometimes having accomplished, brave deeds. The charge is often seen on the Continent. Fire-bombs, fire-buckets, fire beacons, and torches in flames are of more frequent occurrence, but these cannot be classed as sub-ordinaries; they belong to the vast number of common charges.



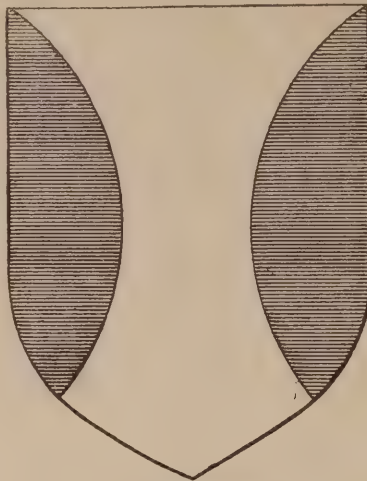
THE LOZENGE.

Then there is a curious device known as the gurge or gorge, which is intended to represent a whirlpool; it occupies the whole of the shield. Its tinctures, when borne proper, are argent and azure; if it is of any other colours it should be mentioned.

A shield may be divided *per-pale*, *per-bend*, &c., but these lines of division are not always smooth. The principal lines of division are: *wavy*, *engrailed*, *invected*, *indented*, *dancette*, *nebulé*, *embattled*, *dovetailed*, and *potentée* (see page 351, No. CCLVII).



INESCUTCHEON.



THE FLANCHES.

THE TRENT EMBANKMENT, NOTTINGHAM.

THE construction of the new Trent embankment, at Nottingham, is being vigorously pushed forward. The object is to form a broad road, or drive, combined with a fine promenade, alongside the Trent, extending from Trent Bridge to Wilford Bridge, a distance of a mile and a quarter. The first pile was driven in May, 1898, and now the whole of the piling has been completed, and about nine-tenths of the filling up necessary to raise the whole of the road several feet above the river level has also been accomplished. All the material required for the raising of the embankment has been obtained by dredging gravel from the river. This method has not only been the means of saving considerable trouble and expense, but it also possesses the important advantage of materially deepening the bed of the river at the same time. So far, no less than 250,000 tons of gravel, &c., have been taken out of the river. Unfortunately, progress has been somewhat delayed in consequence of the rock in several places being within 2ft. or 3ft. of the level of the water, necessitating the suspension of dredging operations until the rock was blasted away.

Rising from the water are tiers of concrete steps, which may, in fine weather, afford seating accommodation, and will yield exceptional facilities to boatmen and anglers. Next to the steps comes—what the æsthetic eye could well have spared—a hauling path, but this, though little required, has to be maintained for navigation purposes. The work of kerbing and ballasting is being proceeded with as rapidly as materials can be obtained. The foreshore, which will be some yards in width, is now being turfed. The carriage drive will be 36ft. wide, and on either side, separated from it by grass and tree-planted verges, is to be a footpath, that nearest the foreshore being 15ft. wide. The total span of the road, including footpaths and grass verges, will be about 90ft., or half as wide again as the Lenton Boulevard. Both the Corporation and the owners of the Clifton estate, who between them own the whole of the property abutting on the new embankment, are reserving the land until the completion of the work, when it is expected to realise high prices as sites for villa residences. A large staff of men is employed upon laying and turfing the slopes and planting trees, of which there are to be three rows. At present, with thousands of tons of material lying about, with carts churning up the mud on the banks, and with unsightly dredgers in the river, the scene is not a prepossessing one. Nevertheless, order is being slowly evolved out of chaos, and, as the summer approaches, clearer evidence of the nature of the work will be forthcoming. When the scheme has reached its full extent, with trees in leafage, green turf, and handsome riverside residences—naturally a process not capable of completion in a year or two—it can be said, without boasting, that the city will possess a riverside

promenade second to none in the country. No heavy traffic will be allowed on the road at all. A suggestion has been made that the central avenue of Queen's-walk should be turned into a drive, so that a complete circuit could be made and the embankment reached by vehicles without the necessity of going round by Wilford-road. In conclusion, it should be stated that the work has been designed, and is being carried out, by Mr. Arthur Brown, the city engineer.

Correspondence.

Messrs. Sax's Calendar.

To the Editor of 'THE BUILDERS' JOURNAL.

LONDON, S.E.

SIR,—Our attention has been called to an editorial note in your issue of January 31st, in which you quote a letter from a correspondent expressing annoyance that his request for a copy of our 1900 calendar was not complied with by us, and complaining that we asked him to send us a "trade card." We cannot think, however, that your correspondent quoted the whole of our letter to you, and in order to clear ourselves in your eyes from the charge of discourtesy which would seem to be implied, we venture to point out that our sole reason for confining ourselves to members of the trade was that, owing to the rush for these calendars, which, we must admit, entirely exceeded our calculations, it was quite impossible for us to comply with the hundreds of requests which we have received; and since some of them had to be disappointed we thought that, being engaged in the trade supply business, it was only fair that we should give trade applicants the preference. Trusting that this explanation will be satisfactory to yourself, and to any readers of your journal who, on the strength of your remarks on our calendar, made application for the same and have not yet received a copy,—We are, dear Sir, your faithfully,

JULIUS SAX and CO., LTD.

The Study of the Human Form and its Influence on Architecture.

To the Editor of 'THE BUILDERS' JOURNAL.

LONDON, E.C.

SIR,—Mr. Jemmett's idealism is deducible from his writing, and that he has written, at "white heat," a rhapsody on the beauty of the human form is evidenced by your columns. But is the beauty of the human form so new a discovery that it requires promulgation or support in this nineteenth (or twentieth) century? The title of the article engendered a hope that Mr. Jemmett would attempt graver work, would show how the human form and architecture were knit and wed together, indicating a path of learning the student might tread till he arrived at the ability to place the human form on a building without destroying the beauty of the former or the architecture of the latter. But in this regard, the worst defect of English design, Mr. Jemmett's pen has not moved. Your author, too, is most unhappy in his comparisons, as anyone must be who attempts to contrast "a thing Divinely fashioned" with the labour of human beings. Such comparisons are always odious, but they need not be ridiculous. If you must compare, at least choose something similar in action or function. What is the function of an iron column or joist? Roughly, the carriage or support of a permanent weight; that is its sole purpose. Does Mr. Jemmett contend that this is the sole purpose of the human form? Possibly, if he had watched the moving machinery of an ocean liner, he might have found a better simile to his purpose, and if he had studied Kipling to the extent of "The ship that found herself," or "McAndrew's Hymn," he would understand how even an inartistic intelligence can see in the rush and thrust of the levers, not only beauty and perfection, but the presence of a soul.—Yours faithfully,

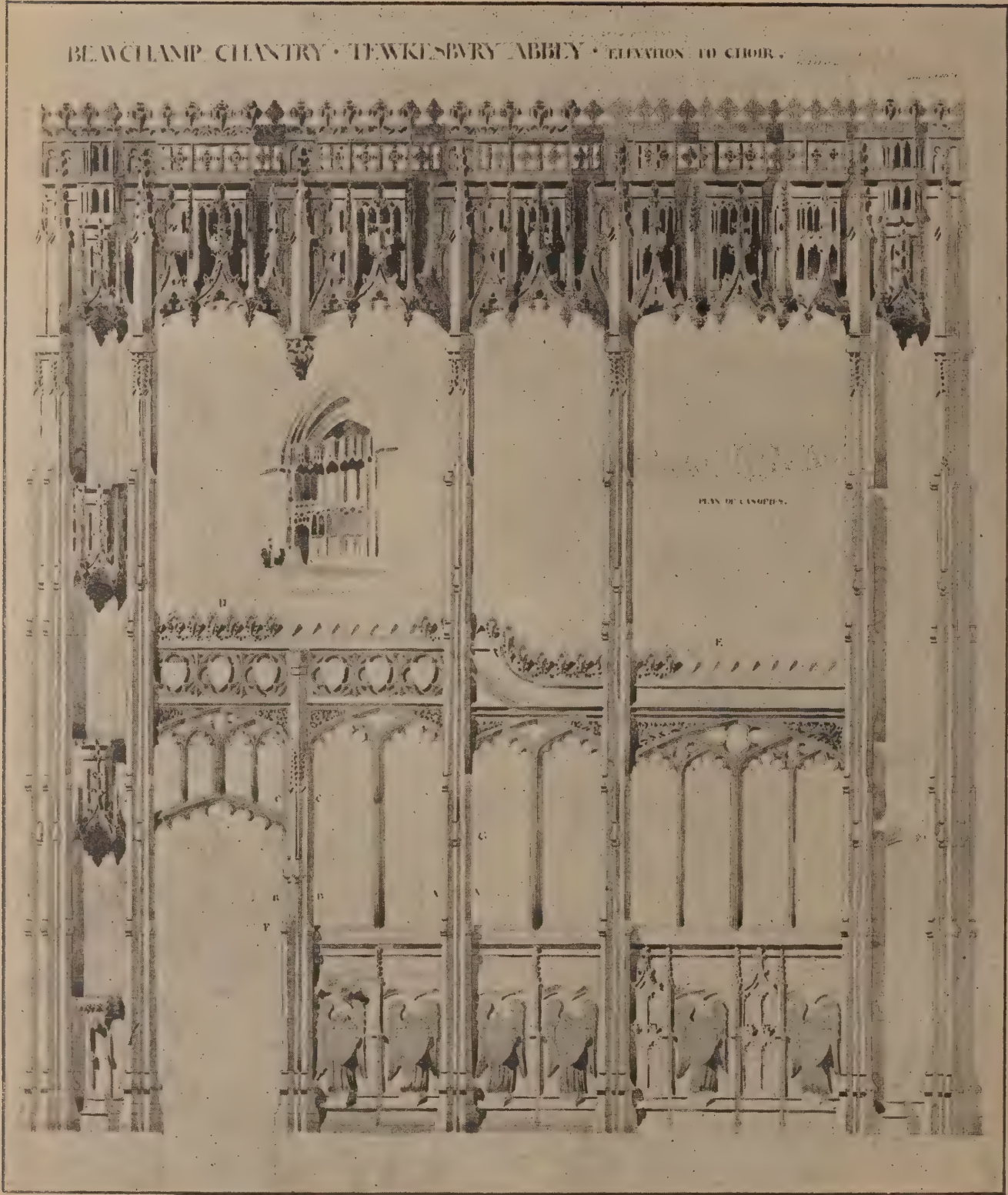
CIVIL ENGINEER.

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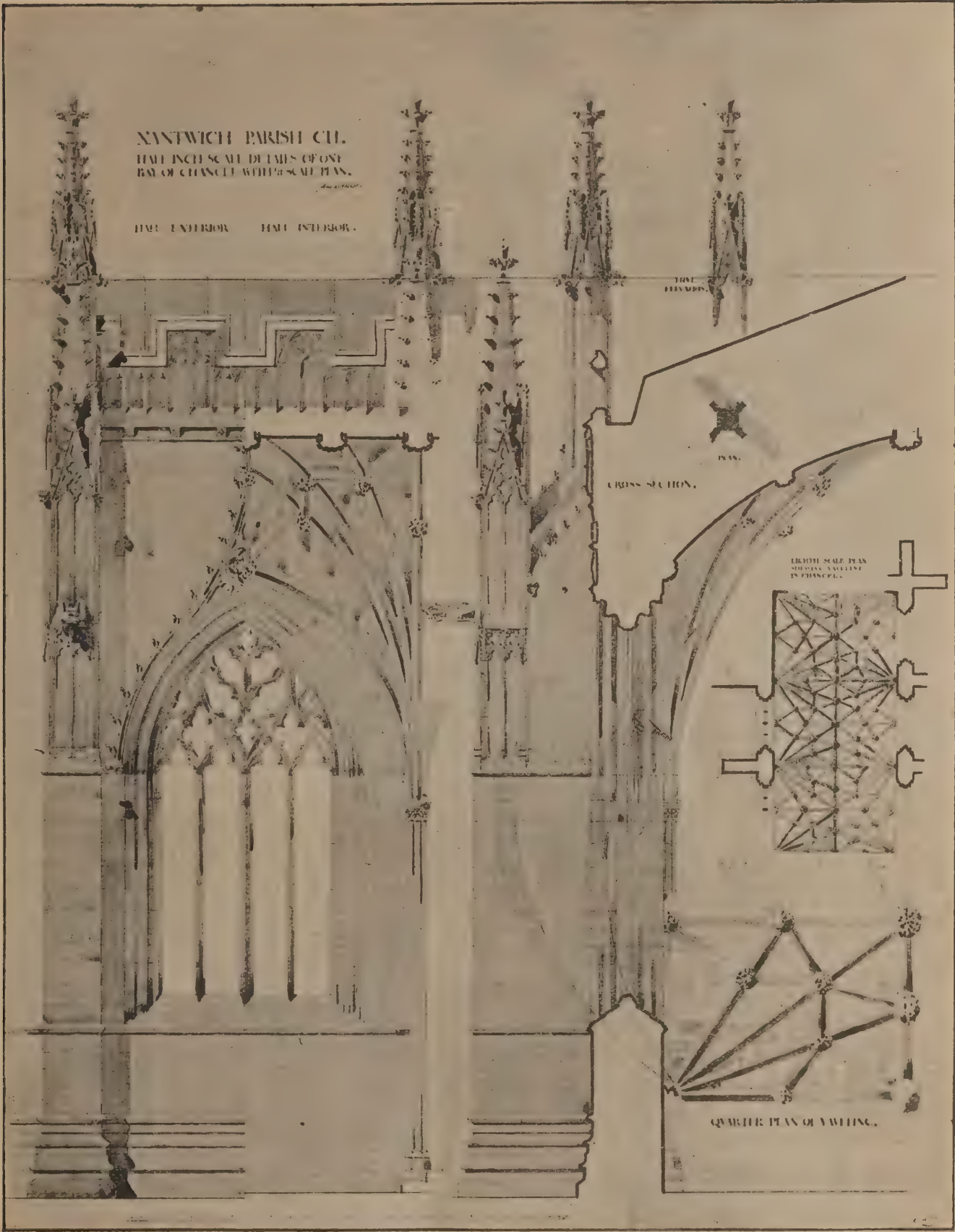


R.I.B.A. PUGIN STUDENTSHIP: MEDAL OF MERIT. ST. LO, NORMANDY. DRAWN BY J. A. WOORE.

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BEAUCHAMP CHANTRY, TEWKESBURY ABBEY.



NANTWICH PARISH CHURCH ONE BAY OF CHANCEL.

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R.I.B.A. TITE PRIZE: MEDAL OF MERIT DESIGN FOR AN ISOLATED CLOCK TOWER AND BELFRY. By W. A. MELLON.

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R.I.B.A.

A MEETING of the Royal Institute of British Architects was held on Monday evening last, when the president (Mr. William Emerson) occupied the chair. Mr. Alexander Graham expressed regret at the death of Mr. William White (who was elected a Fellow in 1859) and it was resolved to send a letter of condolence to his relatives. The president then announced that it was the Council's intention to submit the name of Professor Rodolfo Lanciani to Her Majesty the Queen as the recipient of the Royal Gold Medal for 1900. Professor Lanciani is a great archaeologist and topographer and has contributed very largely to our knowledge of Ancient Rome, about which he has written a great deal. He received the Queen's Gold Medal in 1849, more particularly for his work "The Edifices of Ancient Rome," and is an honorary corresponding member of the Institute.

The President's Address

to students was full of interest, and the following is a synopsis of it:—

The practice of architecture is quite one of the most toilsome and difficult, as well as one of the most noble, worthy and interesting of all secular pursuits, and one in which the life and history of a people should be indicated more than in any other. To enter upon it is, therefore, a very serious step for a young man to take. Architecture is not solely a fine art, nor is it altogether simply a profession. It has two distinct sides. The one is the artistic side, the other the practical and business side, and both are as essential to each other as the stomach to the head. For instance, without a certain amount of legal knowledge an architect cannot safely advise his employers regarding contracts with builders, or in respect to the purchase of or dealing with building sites. There must also be a knowledge of the latest scientific inventions affecting buildings, of construction in all its details; materials, accounts, and the values of materials and labour. But apart from all the practical matters, and to turn to the artistic side, a wide appreciation of the beautiful in all styles of architecture is necessary for the enlargement of the views, and to open the eyes as to what architecture in its highest aspirations really means.

The practice of architecture *should not mean* to those adopting it just a means of livelihood. Were this the idea bad builders might be evolved, but never good architects. It *should mean* the putting of selfish ends on one side for the sake of the art, with a determination that no personal considerations shall weigh in the balance, providing in the best manner for our employer's wants at any amount of self-sacrifice, and building for them in truth and beauty, to the utmost that may be in the capacity of the architect. Further, it should also mean, building not just for the present, but for the future, works that may last, and of such a class that future generations may form a high, and not a low, opinion of what we are as a nation. To arrive at this altruistic level of work means an exalted feeling of the value to others of beautiful architecture, and the worth to the world of honest hard work.

There are several things most necessary for the student who has such high aims. First, there must be diligent study. Second, there must be the power of drawing. Third, there must be enthusiasm. And with all these there must be combined a high ideal of the responsibilities of the architect. Then, granted that you possess all these gifts, if you have not the *spirit* of architecture you had much better leave it entirely alone; for if under the circumstances architecture paid you, you would derive no sort of satisfaction from it but the monetary one, and that can be obtained with less exhaustive labour in inferior occupations.

With regard to study, if you do not consider Greek work you will not understand Roman; if you ignore Roman half the meaning of Romanesque and Byzantine will be an enigma to you. Unless you have studied all these thoughtfully you will really know but little. Therefore study all styles of architecture, and

that without prejudice; but the best of the various styles and their purest examples should be the subjects of the first most careful study, reflection, and comparison by the student. The finest works in architecture are those which have perfectly suited the circumstances of the age and nation for which they were erected, were well and honestly constructed, stately and beautiful in proportion and detail, and truthful in the expression of their purpose. And the best examples are those which are the purest, whether in Greek, Roman, Gothic, Renaissance, or any other period.

Some time ago the one thing most prominently urged upon students of architecture was the paramount necessity for draughtsmanship, drawing first, drawing second, and drawing last. This resulted in much good, and draughtsmanship has now been brought by many of you to a high pitch of excellence, but also, I think, some harm has resulted. Too great value seems occasionally attached to the effect, technique, and execution of the drawing itself; and the quality of the architecture, a far greater thing, is sometimes apparently considered of secondary importance. This is entirely wrong. The effect of architecture certainly cannot be shown without good drawing, but draughtsmanship, however excellent, cannot make inferior architecture good. French drawings of architecture are much more academic than ours. I think our style of drawing is defective in many ways. French drawings give by clean lines and properly cast shadows a fairly truthful impression of the detail, relief, and projections of a building. By our method shadows are sketched in merely with a view to look pleasing on paper, and frequently convey a false effect of the cornices and other salient features.

Some years ago designs were mainly shown by coloured perspectives; then it was said they were so faked up by the artists that they were quite untrue representations of the designs. Consequently pen and ink drawings became the fashion. But I would ask what can be more untruthful and misleading than a black and white line drawing of a building constructed of several differently coloured materials? A monotone design, no doubt, can be well shown this way, but is it not evident how misleading an etched drawing may be in representing, for instance, a design in red bricks and white stone?

Therefore, learn to draw accurately and definitely, as many of you already do excellently well, but do not neglect to supplement it by careful dissection and measurements. Also study the human figure, for more than all else that instils a fine sense of proportion. But, above all, do not let sketching run away with you, or mistake drawing for architecture; it is not; but simply a means to an end, and bears the same relation to it that an alphabet bears to a language.

The third essential I would put before you as imperative to the successful accomplishment of noble architecture is an unlimited enthusiasm. If you look towards the sun your own shadow is unseen, being cast behind you; so if your mind's aspirations are steadfast towards a lofty ideal, through your entire possession by this God-inspiring zeal, there will be complete unconsciousness of self in respect to your art.

Further, it is all very well to fancy, as some appear to do, that architecture as a fine art is altogether apart from, and above, the sphere of such practical matters as drainage, heating and ventilating, electricity, hydraulic power, gas and water supplies, and suchlike. Granted that it is on a higher level, nevertheless there is no important edifice, public or private, erected now, to which these things are not vital; it has been well said they are the very nerves of the structure. If any building is to properly answer to its requirements it must be not only artistic, but also scientific.

Let noble architecture be your first consideration, but practical use should follow closely in the wake. The true architect must ever aim at the highest ideal, if his work is to live; but always let your ideal be beyond your best efforts.

In conclusion, I will leave with you the

following words as worthy of thought, for without some such sense of moral responsibility as is implied in them your work in life as architects or men will be deficient in quality: "Our task in this life is to employ to the uttermost that human faculty, that human talent which has been given to us, and not to let it wait for some exceptional moment in which we shall probably never find ourselves, or we may die without ever knowing or dreaming what lies in the capacity of everyone of us to be, to dare, or to do."

Mr. Bodley's Remarks.

Mr. G. F. Bodley, A.R.A., followed the President with a light criticism of the Institute designs, and afterwards enlarged into a very able discourse on many vital matters affecting architecture. The drawings submitted for the Owen Jones studentship were, in his opinion, almost without exception, very carefully done, and, this prize dealing with colour, he emphasised what an important factor colour was. It was one of the fairest of the hand-maidens of architecture, but it ought always to be treated with breadth of effect. With regard to marbles, the employment of two kinds gave the best result. Architects of the present day were too prone to use many kinds of marble in their work. The Pugin drawings he considered very satisfactory. He, however, did not think it much good to criticise drawings. Theirs was not a drawing school; it was a school of architects. Drawing was not design, and they drew but poorly when they built magnificently. The Tite drawings did not altogether please him; he missed a charm about them, and there seemed to be wanting more idea and greater consideration and more freedom in design. Mr. Varndell's drawings for the Grissell prize were boldly and carefully delineated, and he was also pleased with those by "Tiny." He was glad that the medal had been given to Mr. Fulton for his measured drawings of St. John's College, Oxford; but as to the Soane designs, he felt that something better might have been done. Having made these rapid criticisms, he dwelt on the chief principles in architectural design. First, there was refinement of design and detail, which was often sadly lacking in present-day architecture. Everything ought to have real life in it, and whatever was the expression of death was bad. Refinement of design gave this life. Next, there was concentration of ornament. For the enjoyment of ornament there should be a concentration of it, rather than a sprinkling over the whole edifice. Thirdly, came the true use of detail. It was a great error to suppose that by enlarging the detail you made the building look large. The reverse was eminently the case. Symmetry or balance was the fourth principle, and then came economy of material as a part of refinement. Good architecture was not only building to stand, but building to last. Strength combined with economy should be our aim. As regarded breadth contrasted with detail, the fifth requirement, he pointed out how in Gothic ornament the delicate lines of light on the ridges, and the sudden deepening and darkening of the background, set off the design. Sixthly, he urged suitability in buildings, and said that the architect ought to build according to his surroundings, and in contrast or harmony with them, and in this connection he pointed out that there was no need for us to go abroad for models; our own English architecture was second to none for poetry and beauty. We might have patriotism in art. Lastly, there was harmony and character and feeling in the same building, and, in his opinion, no eclectic school which mixed styles would live long. A vote of thanks to the President and Mr. Bodley was proposed by Sir James Linton, seconded by Mr. H. Axel Haig, and carried unanimously.—The prizes were then presented.

Liverpool Church Destroyed by Fire.—

St. Saviour's Church in Huskisson Street, Liverpool, was destroyed by fire on Sunday last. The outbreak is attributed to a defective flue.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"There are two characters in which all greatness of Art consists—first, the earnest and intense seizing of natural facts; then the ordering those facts by strength of human intellect, so as to make them, for all who look upon them, to the utmost serviceable, memorable, and beautiful. And thus great art is nothing else than the type of strong and noble life; for as the ignoble person, in his dealings with all that occurs in the world about him, first sees nothing clearly, looks nothing fairly in the face, and then allows himself to be swept away by the trampling torrent and unescapable force of the things that he would not foresee and could not understand: so the noble person, looking the facts of the world full in the face, and fathoming them with deep faculty, then deals with them in unalarmed intelligence and unhurried strength, and becomes, with his human intellect and will, no unconscious nor insignificant agent in consummating their good and restraining their evil."—RUSKIN.

Extra-ordinary.

DURING the last few weeks hundreds of in memoriam notices of John Ruskin have appeared in the public press, practically all expressing real appreciation of his life-work. We have received one from a Liverpool correspondent, who fittingly signs himself "Original." We print it as a curiosity. The following key is, however, necessary to the understanding of the symbols used:—Margin black line, life's span from birth to age; circle at top, eternity; circle with bar, emblem of Grand Architect; bar below date, Egyptian Met gauge or span of life; AO, alpha and omega.

Silence!!

Man's head is bent;
Forest flowers crystal tears shed;
Hearts ing'le spark bath sped:
Art's temple veil rent,
Muffle bells, Anthem Requiem,
England has lost the Great Poet,
Artist, Philosopher, King—
John Ruskin.

1900
A

The New Royal Academicians.

ON page 390 of our issue for January 24th last, we hinted that the probable successful candidates for the three vacancies at the Royal Academy would be Mr. Belcher, Mr. Farquharson, and either Mr. Pomeroy or Mr. Drury. The result of last week's elections is that Mr. Belcher, Mr. Drury, and Mr. H. S. Tuke were added to the list of associates. In the first election, it is stated, those who received sufficient "scratches" to have their names inscribed upon the blackboard were Mr. Farquharson (16), Mr. Tuke (15), Mr. Edward Stott (10), Mr. Yeend King (4), Mr. George Simonds (4), Mr. Ridley Corbett (3), and Mr. Belcher (3). The ballot between the two first-named brought in Mr. Tuke by no less a majority than 23, he receiving 40 votes to Mr. Farquharson's 17. In the second round Mr. Farquharson was still a prime favourite. In the first "scratching" he obtained first place with 15 votes, while Mr. Belcher, received 13, Mr. Stott 11, Mr. Simpson (the architect) 9, Mr. Simonds 5, and Mr. A. Drury 4. In the ballot Mr. Belcher obtained 29 votes to 28 cast for Mr. Farquharson, who for at least the second time in the last few years has been shut out from the Academy by only one vote. The third round was now entered on, and only four amongst the fourteen voted for succeeded in getting on the blackboard. Mr. Alfred Drury received 20 votes, Mr. Farquharson 19, Mr. Stott 12, and Mr. Simonds 4, and in the

ballot Mr. Drury won by 33 votes to Mr. Farquharson's 23. The Academy has thus taken to itself an extremely capable painter of the new school, an architect renowned for the excellence of his designs, and a sculptor whose training with Monsieur Dalon has filled him with the best traditions of the French school. We give on page 5 of this issue some particulars of the career and work of Mr. Belcher.

Doors and Fire.

WE have received from the British Fire Prevention Committee Nos. 35 and 39 of their publications, both dealing with doors. The former gives details of a test made with a 2in. framed pitch-pine door and a 2in. framed deal door, in which honours were about equally divided. We gave some further details of this test, which was made in October last, on page 184 of our issue for October 25th. The doors dealt with in the test described in publication No. 39 were a 2in. framed Honduras mahogany one, with 2in. solid panels, and a 2in. framed poplar door, also with 2in. solid panels. In 1 minute smoke came through the joint between the head of the poplar door and the frame; in 5 minutes the flame through this joint became continuous; in 10 minutes the door was much twisted, and flame came through the joint at the top, and part of the way down the sides; then, after 15 minutes, a slight spurt of flame appeared between the frame and the top of the mahogany door; in 24 minutes one of the top panels of the poplar door fell in; in 26 minutes the flame at the top of the mahogany door became continuous all along the top rail; in 36 minutes the whole of the poplar door had collapsed and fallen in; in 42 minutes flame appeared through the joints of the four outer corners of the lower panels and bottom outside corners of the upper panels of the mahogany door; and in 49 minutes this door fell inwards, all the bolts and hinges being red-hot, and becoming detached from the door. It will thus be seen that the mahogany door stood for nearly a quarter of an hour after the poplar door had collapsed.

Pinnacles Out of Plumb.

WRITING to a local newspaper with regard to stone pinnacles out of the upright, Mr. Harry Hems, of Exeter, says: "They were never built so purposely, any more than was the (very ugly, to my mind) celebrated circular leaning tower at Pisa, or the even more perilous looking pair of square watch towers at Bologna. The sun has an effect upon soft stone, and I should conclude the pinnacles alluded to have been drawn over by the sun's rays, precisely as may be seen on a larger scale in the bent spire that crowns the western tower of St. Peter's fifteenth century church at Ermington, in this county. I recollect that thirty odd years ago every pinnacle (all built of Beer stone) upon and about the roof of Exeter Cathedral curved over one way, drawn towards the sun. They have all one by one been removed, and new ones substituted since then. The quaint south-east spire of SS. Peter and Paul, Barnstaple, built of oak covered with lead, got twisted as it now is during a thunderstorm. The celebrated and unique tall spire at Chesterfield parish church, Derbyshire, takes a hoist three distinct times between the tower battlements and the weather vane. It was originally built of green oak not properly seasoned. This was covered with lead, and when the hot days came the air within got so warm that the sturdy English oak (the stubbornest wood in the world) got awry, and hence its present ugly lines. We see the same thing on a smaller scale done every day when an oak lectern is placed over a hot-air grating. And larger things than lecterns—goodly-sized pulpits—suffer sometimes from the effects of hot air."

Casting for Plaster Models.

MR. AUGUSTUS SIMSION, who is a model caster, carrying on business in Denmark Place, Charing Cross Road, and Mr. Henry Fehr, a sculptor, who has a studio in Fulham Road, recently entered on a transaction which ended in the High Court. Mr. Simsion's claim was for £62 for casting a

plaster model in bronze. The defendant counterclaimed £250 for damages done to the model. The plaintiff had made for the defendant two bronze griffins from a plaster model, and when the work had been done he returned the model in a broken condition. The reason given by the plaintiff was that it was impossible to cast bronze from a plaster model without damaging the latter, as the damp sand used for making the mould had to be rammed with great force against the plaster and the damp injured it. The plaintiff said that this was especially the case where two bronze casts had to be made from the original model, and that in the present instance parts of the model fell to pieces after the second mould had been made. The plaintiff said that he had taken every precaution, and that he would not have undertaken the work if he had been expected to return the model uninjured. The plaintiff's witnesses stated that it would have been impossible to return the model in good condition after making two bronze castings. The defendant said that he had had considerable experience as a sculptor, and his models had never been returned in a damaged condition. In the ordinary course he would have expected that twelve casts could be made from one model. The defendant's witnesses said that if reasonable care had been taken the model would not have been damaged as it was. The jury found a verdict for £60 on the claim, and £8 on the counterclaim.

Buried Cities.

A REMARKABLE series of explorations has been carried out on the site of the ancient city of Susa (Western Persia), the Sushan of the Scriptures and the capital of the Elamite kingdom. The excavations of M. Jacques de Morgan in the great citadel mound at Susa, which rises about 105ft. above the plain, have unearthed the remains of no fewer than five successive cities or settlements one above the other, dating far back beyond the historic age into the neolithic period. The latest historical city is found at a depth of about 21ft. below the surface. Here were found brick buildings, but no trace of metals or writings, while 30ft. below this we find the earliest settlement, with rude pottery and flint implements. It is therefore clear that we have here evidence of a vast antiquity. In the lower strata of the mound large quantities of pottery were discovered, but all below the historical strata was hand-made, the use of the wheel, as in pre-dynastic Egypt, being unknown. The importance of these discoveries cannot be too highly estimated, as they undoubtedly shift the birthplace of civilisation from the alluvial plains of the Tigris-Euphrates valley further eastward.

A Queer Storey.

IN the Model Answers to Examination Questions published in our issue for January 24th, our contributors in quoting two of the questions inserted the word "(sic)" after the words "ground-floor storey" and "basement storey" (see page 385). We allowed the word to stand, thinking our contributors were questioning the correctness of the use of these terms, whereas they were actually pointing out the inaccuracy, as they considered it, of the spelling of the word "storey," which was thus written, though the "e" was inserted by our printers in accordance with the usual spelling adopted by us. The sequel is curious. We receive a letter from Mr. Ebenezer Gregg, who set the question at the R.I.B.A. Exam., pointing out that he spelt the word "storey," and expressing some indignation that he should be suspected of spelling the word with an "e." Almost by the same post we receive a letter from Messrs. Middleton and Carden, who are scarcely less perturbed at the idea that they should question the accuracy of the form "storey." Each of our correspondents is evidently quite sure that his form of spelling is the only correct one; the fact is, of course, that both are correct. Good authorities quote alternative forms. As to the use of the terms "ground storey" and "base storey," there is evidently some difference of opinion, but the matter seems to us to be of very little general interest.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Altering Windows: Rights of Light.

GREAT YARMOUTH.—H. writes:—"In a long workshop I have a number of small windows (ancient lights) looking out upon a neighbour's roof. Shall I be able to put in a larger window without incurring any liability for damages and without any sacrifice of present right, provided I do not carry the line of light lower than at present? Referring to the accompanying sketch (not reproduced), can I take out the brickwork between the existing windows and put in frames covering the whole?"

"H." can take out the brickwork between the existing windows and put in frames in the manner proposed, so as to enlarge the openings through which light enters his premises, without either incurring any liability for damages or any sacrifice of present right.

Handwriting for Civil Service Exam.

DUBLIN.—A SUBSCRIBER writes:—"I am thinking of sitting at the coming examination for Assistant Surveyors R.E.C.S., War Office, and I am informed that only the civil service style of handwriting will qualify a candidate for such a post. Is this so?"

There are no regulations as to any special style of handwriting for these examinations. It may be safely assumed that a certain number of marks are given for neatly written papers. Answers to questions have, as a rule, to be written on plain paper without lines. Full particulars of these examinations can be obtained, free of charge, on application to the Secretary, Civil Service Commission, London, S.W. HENRY ADAMS.

Questions in Heraldry.

PERPLEXED writes:—"I am very much interested in Mr. Cadogan Rothery's articles on heraldry and should like to have answers to several questions. My father married 'a woman who represents the last of her family,' and consequently has her arms in a shield of pretence. (1) Must my arms consist of my paternal and maternal arms quartered? If so, in which quarters do they go? Or (2), can I simply take on my paternal arms? (3) When a husband bears his wife's arms accolée to his own, do his descendants carry on their maternal arms in any way, or simply their paternal arms? (4) Are mine what are called 'Arms of Alliance'?"

(1 and 2) In strict accordance with the laws of heraldry, "Perplexed" should quarter the maternal and paternal arms. Custom, however, sanctions the omission of this formality when the paternal family is ancient or more distinguished than the maternal. In that case the quartered arms would be merely used on genealogical trees, &c. The paternal arms always take precedence—that is to say, they occupy the first, and are repeated in the last quarters. The first quarter is the dexter chief, but remember that "the dexter and sinister sides are so called from the position of the shield when worn against the chest of the bearer," consequently the herald's right is what an ordinary mortal would imagine to be the left. (3) No. A husband wears his wife's arms accolée merely to show his alliance, to assert his proprietary rights; just as a bishop impales the arms of his See to show that he intends to enjoy the fruits thereof. (4) Yes, they are arms of alliance. G. C. R.

Designing Roof Truss.

HASTINGS.—E. D. B. writes:—"I have a drawing of an iron roof truss to prepare for my R.I.B.A. final examination, with the strains on the several members worked out and their sizes stated. Would a reciprocal diagram be sufficient for this, and would you give a wind pressure diagram or take the wind pressure as equal to so much per superficial foot? Also, what book would you recommend me on the subject?"

In designing a roof truss, calculating the stresses, and determining the sections of members, a reciprocal diagram should be employed. The stresses are scaled from the reciprocal diagram and should be figured on the frame diagram. A wind pressure diagram would be desirable, as being more in accordance with the actual forces to be allowed for, and also as showing a more thorough acquaintance with the subject. The method of procedure is described in detail in "The Practical Designing of Structural Ironwork," Spon, 8s. 6d.

Lindfield Church, Sussex.

NEWCASTLE-ON-TYNE.—A PROBATIONER writes:—"I have prepared drawings of one bay of the main pier arcade (Perpendicular) of Lindfield Church, Sussex. Upon endeavouring to write a description of it, as required by the R.I.B.A., I find it exceedingly difficult to obtain any information. Can you kindly supply me through your columns with the necessary particulars? Could you also tell me in what book I can get a plan of St. Eustache, Paris."

It would probably be best for "Probationer" to send a stamped and addressed envelope to the Vicar of Lindfield Church, as information is difficult to obtain from any other source. In the "Sussex Archaeological Collections," Vol. II., there are some notes upon an ancient mural painting there, and in a later volume there is a passing reference to its having, or having had, or having been intended to have had (this not being made clear by the context) a parvise over the porch. Guide books content themselves by remarking that the church is "perp." A plan of St. Eustache will be found in "Eglise Saint Eustache, à Paris," by Victor Calliat. R. W. C.

Setting-Out Buildings.

BRISTOL.—E. W. writes:—"Please say how to set-out a building on the site, how to set-out square and level for foundations, &c. At what period of the work should the drains be laid?"

Where the site to be levelled is of tolerably small area, and variations of level do not exceed 10ft., pickets may be driven and levelled over the site with the aid of straight edge and mason's level. After the site is levelled the main front of the building should be determined by a line of pickets and the angles of the building accurately set off with building square checked with chain. The width of excavations for foundations may now be marked off. The method of setting-out a right angle with chain is to mark off four links on base line, three links perpendicular, and a tie line or hypotenuse of five links. Any multiple of three, four, and five may be used for greater accuracy. Drains should be laid before building operations are commenced, i.e., during the progress of excavations for foundations and levelling. HENRY ADAMS.

R.I.B.A. Examinations.

BIRMINGHAM.—PROBATIONER writes:—"What is the best book to use for subject 6 in the R.I.B.A. intermediate examination, Descriptive Geometry, the Projection of Solids? I should also be glad to know if Gill's Geometry embraces the whole of this subject."

Gill's Geometry is an excellent work on the subject, but for the R.I.B.A. intermediate it should be supplemented by Angel's "Practical Plane and Solid Geometry," price 1s. 6d. R. W. C.

DUDLEY.—SPHINX writes:—"Having passed the following examinations, I shall be glad to

know if they exempt me from the preliminary R.I.B.A. examination:—Oxford Junior, third-class College of Preceptors, and the following South Kensington examinations:—First-class Elementary Freehand, first-class Elementary Model Drawing, first-class Elementary Perspective, first-class Elementary Building Construction, first-class Advanced Model Drawing, second-class Elementary Shading, second-class Elementary Geometry, Sub. I, second-class Advanced Shading, second-class Advanced Freehand.

No. It is just possible that exemption might be obtained in geometrical and free-hand drawing, but to ensure even this, specimen drawings should be submitted in addition to the certificates. G. A. T. M.

Owen Jones Studentship.

DUNFERMLINE.—STUDENT writes:—"What are the requirements for the Owen Jones Studentship, as I wish to go in for it?"

Candidates for this Studentship must submit testimonials, with drawings exhibiting their acquaintance with colour decoration and with the leading subjects dealt with in Owen Jones's "Grammar of Ornament." Particulars of all the prizes offered are given in the R.I.B.A. Kalendar, which can be obtained for half-a-crown (postage about 4d. extra) from the Institute's offices at 9, Conduit Street, Regent Street, W.

Valuing Leasehold Property.

YOUNG VALUER writes:—"I have to make a valuation of several properties, all of which are leasehold; one lease expires in about fifty years. What is the difference to allow for between this and the others with 800 years' lease? Would it be a fair thing to reckon for the 800 years' lease to pay 6 per cent., and for the 50 years' lease to pay 7 per cent? The property is all house property (cottages) and not too well built."

In the valuation of leasehold properties for terms of years certain, the method is to allow for the setting apart of a certain sum, called a sinking fund, which will accumulate at the end of the term to the amount of the purchase money. Thus, in valuing a leasehold house for a term of fifty years unexpired, the real value is the full value obtained by multiplying the net income by the number of years purchase, taking the latter as perpetual, less a sum which will accumulate in fifty years to the amount of the purchase money. This may be worked out by compound interest, but the usual method, in order to avoid long calculations, is to refer to Inwood's Valuation Tables. These give the number of years purchase by which the annual value of the property is to be multiplied, to find its real value direct, with such sum deducted as would, if invested at the same (Table I.) or a different (Table VIII.) rate of interest, accumulate at the end of the term to the sum paid. Thus, the only difference between the value of a long and a short term is the larger sum which in the latter must be set apart as a sinking fund. To make this clear take your own example:—

First, the value of a leasehold house, term fifty years. From gross rent make all deductions, such as repairs, rates, ground rent, &c., leaving net annual income. £

Years purchase, at 7 per cent for fifty years' term (Inwood) . . . = 13.801

Full value allowing for sinking fund £

Second, in the case of a lease for a term of 800 years, such an income may for all practical purposes be considered as perpetual; therefore the purchase value is found by multiplying by the number of years purchase at the same rate of interest, taking the term as perpetual, in this case = $100 \div 7$ per cent. = 14.286 years. Provision must be made, however, in the case of a long lease, for the probable rebuilding of the whole property, which might come under the head of repairs. I would advise "Young Valuer" to get a copy of Inwood's Valuation Tables.

E. BRAND, P.A.S.I., &c.

THE DESIGNING OF ELECTRICAL GENERATING STATIONS.*

By A. ROBERTS, M.S.A.

THE first matter to be considered in connection with the designing of electrical generating stations, and one which naturally largely affects the design, is the selection of the site. In doing this many matters of vital importance to the ultimate economical working have to be considered. It should, if practicable, be near a river, canal, or railway, so that coal may be unloaded direct from the barges or trucks into the coal bunkers, obviating the necessity of cartage, which involves a large extra outlay each year. It should not, if possible, be in the centre of a residential neighbourhood, as this involves many difficulties, such as complaints as to alleged vibration, noise, smoke, condensed steam, &c., in most cases unfounded, but at the same time involving cost to refute. One instance in this respect came under my notice where adjoining owners brought an action for damages in respect of vibration. They stated they had kept careful note of the times when the vibration complained of was extremely bad, and the worst period was when the company in question was able to prove that no engines were running. Another instance was a chimney shaft in the centre of a residential neighbourhood in connection with a generating station, which had been disused for this purpose on account of the company requiring much larger works, the chimney shaft, therefore, being entirely out of use, and having no flues or boilers connected with it; notwithstanding this, complaints were made by adjoining owners of the smoke, &c., but in this case, happily, it was not difficult to refute the alleged nuisance.

Another consideration in selecting a site is possible actions for damage to ancient lights. Care, of course, is necessary in all cases, but more particularly so in the case of an electric light company, most persons thinking that a company of this description with a large capital behind it is "fair game to shoot at," and, therefore, endeavour to obtain injunctions and other pleasant legal hindrances which are annoying to the architect, who is generally pressed to rush up the building as quickly as possible.

One other, and although last, by no means least important thing to be considered in selecting a site is space for future extension. In starting, a company does not usually wish to overburden itself with a large capital and therefore the ground taken is often only sufficient for the building immediately required; in the course of a few years, as the company grows and has to meet a larger demand for supply of current, more generating plant is required and further building becomes necessary, and this then means either having two or more stations with a larger staff required than is concentrated in one station only, or in obtaining statutory powers (in itself an expensive luxury) and the compulsory purchasing of the various interests of adjoining owners and occupiers, when enormous claims have to be met and compensations paid. It is therefore false economy in the first place not to acquire a large enough site for all contingencies of extension and growth which may be anticipated for many years to come. Other matters in selecting a site have to be considered, such as the nature of subsoil, facilities for drainage into parish sewers, &c.; but as these are common to all building operations, and not special to electric light buildings, I will make no particular reference to them.

Having considered the questions relating to the acquisition of the site, the next matter for consideration is the design and construction of the buildings. In the first place, it is usual for an electrical engineer to decide upon the system of supply to be adopted, and to formulate a scheme and prepare sketch plans showing disposition and space required for

machinery, plant, &c. The architect then has to design his buildings to meet the requirements of the engineer, and practically as a shell to cover and protect the engineering plant. The ideas and wishes of the electrical engineer should therefore always be studied and adopted, as the primary function of a building of this description is the supply of current, and not as a testimony of the architect's artistic taste (if he has any). Engineers' architectural ideas, however, as a rule do not run on parallel lines with those of an architect (for instance, Vauxhall Bridge), but the *suaviter in modo* system is far more preferable than endeavouring to force one's own taste and inclinations. The plan of necessity depends to a large extent upon the shape of the site, but simplicity and economy of working should be the key-note. It is needless to say that in the London district the buildings must be planned in accordance with the Factory Act and also the London Building Act, the latter, however, has special clauses relating to electrical generating stations, by which the Council has power to authorise buildings to be erected of greater cubical dimensions than 250,000 cubic feet, and in other respects to exempt such buildings from any of the provisions of the Act if they think fit.

The following are the principal departments for which provision must be made in the plan: (1) Coal stores; (2) boiler house; (3) engine house; (4) workshops; (5) stores; (6) meter and testing rooms; (7) engineers' apartments; (8) offices and also battery rooms, if any batteries are proposed to be erected at the generating station.

(1) *Coal Stores*.—These should be situated adjoining and readily accessible from the boiler house. They should be divided into a number of bunkers to obviate danger of fire and for other reasons; one to each pair of boilers is a convenient arrangement, so that a check may be kept upon the consumption per boiler. Generally, however, on account of contingencies of site the coal bunkers cannot all be placed near the boilers, in which case it is necessary to have a system of iron tip-up trucks running on narrow gauge rails from the vaults, with turntables at any point where the trucks have to turn at right angles. The doors to bunkers should be of iron, hung to lift with counter-balance weights; the flooring is usually of concrete or blue Staffordshire bricks. Where the coal is shot into bunkers out of carts, it is well to have several removable coal plates and shoots to each bunker, rather than one central one, as in the latter case it is difficult to fill the coal bunker to its utmost capacity without trimming the coal, which entails much labour. As to the capacity of coal vaults, sufficient coal should be accommodated to supply the boilers for at least three weeks or a month, and, of course, if space is available, the greater amount of coal storage capacity the better.

(2) *The Boiler House*.—A convenient arrangement, where practicable, is for the boiler house to run parallel with the coal bunkers, and also with the engine house. It is usual to sink the level of the boiler house floor some 8ft. or 10ft. below that of the engine house, so that the steam pipe from the crown of the boilers may be conveniently placed with regard to the engines, and so that coals may be shot down from the ground level into the coal bunkers beneath, the flooring of which being necessarily at the same level as the boiler-house floor for ease of stoking. The space required in the boiler house depends upon the type and size of boilers, but there should be a space of at least 16ft. to 18ft. between the boiler and the wall opposite the fire door, for convenience of stoking and so that boilers, drums, and tubes may be conveniently removed, swung round, and replaced with new ones; and for this purpose also large doors must be provided for ingress and egress of new and old boilers, as may be required in the course of years.

The boiler house should be lofty, well lighted and ventilated by a continuous skylight running from end to end of the building, with louvre boarding at the sides, the skylight being glazed with one of the many patent systems of glazing, rather than by the old-fashioned wooden bars. Space must be pro-

vided in the boiler house for further engineering plant, in addition to the boilers, such as feed-water heating and detartarising apparatus, Green's economisers, &c., depending upon the scheme adopted, and particulars of space required for these must be obtained from the engineer when planning the building. Stokers' lavatory and urinals should be provided readily accessible from the boiler house, and a stokers' mess-room with cooking range, &c.

With regard to the chimney shaft or shafts, if a single shaft is decided upon, it is best to place it in the centre of the range of boilers, with the horizontal flue running right and left, so that boilers may be added as the works grow, and in selecting the position of the shaft future extension must be borne in mind. It is however advisable, where funds and space permit, to have two shafts of smaller capacity rather than one shaft of large capacity, so that in the event of repairs being necessitated through damage from lightning or other causes one may be shut down whilst the other is working. The area of the shaft should also be amply large enough to provide for all future boilers that may be required, and in the London districts particularly it is advisable to carry up the shafts at least 150ft. to 200ft., so as to distribute the products of combustion at as high a level as possible. The shaft must also, of course, be designed in the London districts in accordance with the regulations of the Building Act. I fear it would be wearying and extend this paper too much to touch upon the calculations requisite in designing a shaft relating to draught, wind pressure, stability, &c., all of which, however, are of much interest; but I must content myself now by making a few general remarks relating to construction only. There is a diversity of opinion as to the best form of chimney, some authorities arguing that a circular chimney is better than a square one; but the shape usually adopted for electrical stations is an octagonal form of unequal sides, or, rather, a square chimney with the corners taken off. In calculating the area, it must be remembered that the actual effective area of a chimney is less than the entire internal superficial area of the shaft, as the velocity of the gases is retarded by friction on the sides of the shaft, and it is usual to take for the effective area the total area less 2in. all round.

The horizontal flue conveying the gases from the boilers to the shaft should be of a larger sectional area than the shaft, as these get constricted by deposit of soot, and if entering the shaft from opposite sides a midriff or central division wall should be carried up the centre of the shaft some 15ft. or 20ft., constructed of firebrick. The shaft foundations of necessity are of vital importance, and must be of sufficient area to carry the load, which is usually very great, without sinking into the ground beneath. They should be allowed to stand some months before the brickwork of the superstructure is commenced, as it takes some time for a large body of concrete, 30ft. or 40ft. square by 8ft. or 10ft. deep, to set. The bricks should be specially selected, particularly at the base, to withstand the load, which often amounts to eight tons or ten tons or more per foot super; they must not, with the exception of the cap and footings, be laid in cement, on account of its unyielding nature, and its inability to stand heat so well as lime mortar; besides a shaft built in cement usually cracks. The materials should be frequently tested during the erection of the shaft, particularly bricks for crushing strains.

An extremely good mortar for shafts which I have used, and which is used largely in the North, is composed of blue lias lime, sharp sand, and foundry ashes, in the proportion of one of lime, two of sand, and three of ashes; the joints should be kept thin, and to prevent the shaft being blown out of the upright before the mortar has set the brickwork should not be carried up too quickly. A special bond is often adopted for shafts, in which a large number of stretchers is used, as longitudinal tenacity is required to prevent a shaft splitting; for this reason hoop-iron bond, well tarred and sanded, should also be built in at frequent intervals. In selecting the position

* A paper read on Saturday 25th before the Society of Architects.

for a shaft, it is preferable that it should stand alone, and not be attached to any buildings. If, however, from necessity of plan it must be in continuation of the walls of a building, there should be no bond between the shaft and the wall adjoining, but a straight joint to allow the shaft to expand and contract; also, it should be built first, so that any settlement may take place before walls are built adjoining.

The cap should be of simple design, not of too great projection, and little or no stonework employed in its construction, as in the event of this becoming disintegrated by frost it is costly and difficult to repair, and a heavy cap causes the shaft to oscillate in a wind with longer pulsations, and there is more chance of its being overthrown. A cast-iron capping, built up in sections and bolted together, forms, to my mind, the best finish at the top, and to this the lightning conductor may be readily fixed and stayed. The shaft should be frequently plumbed to ensure a uniform batter, and great care should be taken in its construction to see that no bats are used.

A firebrick lining is necessary, which should be carried up according to the height of the shaft some 80ft. to 100ft., the firebricks being laid in fireclay and usually carried up perpendicularly (i.e., with no batter), with a space averaging about 2in. between the outer wall and the lining. It must have no bond with the outer wall, and to steady it headers with sand joints are usually projected through the 2in. space at intervals to touch the lining. To prevent soot and cinders falling and blocking up the 2in. cavity, the brickwork of the shaft must be racked out to cover up the cavity at the top, but room must be left to allow the firebrick lining to expand. It is essential in firing a chimney for the first time that heat should not be applied too suddenly, or there is danger of the chimney splitting, so it is well to allow a little heat to pass up for some weeks before it is necessary to use it to its full capacity.

Foot irons are usually built into the interior of the shaft from base to cap to afford access for repairs, &c., and in most electric generating shafts the exhaust-steam pipe is carried up the centre of the shaft, and the stays to keep it upright must not be bonded into the firebrick lining or main walls, but should rest on the offsets where the brickwork is reduced in thickness, to allow the exhaust pipe to expand and contract; as this exhaust pipe and the heated column of steam inside forms the readiest path for a flash of lightning, it must be carefully earthed and connected up to the lightning conductor. The boilers usually adopted in London stations are of the water tube type, as with these steam may be more quickly raised than with any other form, and this is an essential where sudden fogs and consequent darkness are so prevalent.

(3) *The Engine House.*—This, as I before said, should be parallel if possible with the boiler house so that steam pipes from boilers are as short as possible and may be carried direct through the separating wall to the engines; its dimensions, of course, depend upon the number of engines and type proposed, and here the engineer must again be consulted. It must provide accommodation not only for the engines and dynamos, but for switch boards, and should also either contain engineers' mess-room and lavatory, or have these conveniently adjoining. It should be lofty, well lighted and ventilated by either skylights or ranges of windows so planned that through ventilation may be obtained, as it is essential not only for the personal comfort of the staff, but also for the plant, that the temperature should not be too high. Cleanliness is of extreme importance in the engine house, as dry gritty particles in the atmosphere, or blowing about in the wind, would shortly do irreparable damage to the bearings of the machinery, revolving at such high speeds as its does. For this reason, therefore, it is usual to face the walls (and, where stores and other departments are over the engine house, the ceiling also) with glazed bricks, which are cleanly and reflect the light, ensuring a bright engine house. These may also be easily wiped down, so saving the annual cost of distemping or painting the

wall surfaces that would otherwise be necessary.

Window frames in the engine and boiler houses should be of steel or iron, rather than of wood, as the unavoidable high temperature causes the latter to shrink and wind, and the former are also more fireproof. An overhead traveller is essential in an engine house for the erection and removal of engines, dynamos, &c., and corbels should be built in the walls as the works proceed, or some provisions made for carrying the rails upon which it travels. The flooring of the engine house must receive careful consideration. It should be carried entirely independently of the engine beds, so that the vibration set up by the engines may not be transmitted; and it should be paved with some cleanly, insulating material, if possible, non-slipping. Wood-block flooring soon gets greasy and unsightly, and the best material I have found so far is unglazed red tiling, although this has the objection of not being a good insulating material.

The engine beds are usually constructed of a continuous block of concrete (not separate beds for each engine), which is carried down 6ft. or 8ft., and carefully constructed and planned so that vibration shall not be transmitted to the ground beneath. Many methods have been tried, successfully and otherwise, to prevent the transmission of vibration, and that adopted at the Chelsea Station, which has proved very satisfactory, is to first construct a foundation of concrete 9in. deep, on this sheet lead is placed, then two layers of continuous matting similar to an ordinary door mat, but very much thicker, on this lead sheeting is again laid, and on these insulating layers the concrete superstructure of the engine bed, about 7ft. deep, is erected.

The position of the holding-down bolts for the engines must be ascertained, boxes constructed and accurately placed in the right position before the concrete is shot into the beds, so that after the concrete has set, the wooden boxes may be taken out and the holding-down bolts, with anchor plates attached at the bottom, may be let into the cavities thus formed, and grouted in with fine concrete and cement.

Switch boards should be constructed of some fireproof material, slate slabs in timber framing being one of the best forms of construction. The switch boards should be raised one step above the engine-house floor level, on a continuous platform, so as to isolate the switches and enable the operator working them to have a good view of the engines and dynamos. India-rubber mats are provided to stand on when operating the switches. A convenient office should be arranged, if practicable, for the electrical engineer in charge, with a window looking into and commanding the working of the engine house.

(4) *Workshops* must be provided for carpenters, engineers, and fitters, &c., with lavatories, mess-room, and office for foreman, the floor space for these depending upon the size of the works; there is little in their construction of special interest.

(5) *Stores.* These are an essential department of an electrical station. They should be conveniently situated near the workshops; also, if on the upper floors, lifts and hoists must be provided in connection with them. Racks are requisite for the various articles stored, and an office at the entrance for the storekeeper. The stores generally, like the whole of the building, should be of fireproof construction, and a special store provided, with iron doors, for oil. In calculating the strains and stresses in steel construction carrying floors of stores, it is well to err on the side of excess, as the loads carried are usually very great.

(6) *Meter and testing rooms* have nothing special to call for remark; stoves should be provided here for warming purposes, and benches for storing meters, for testing, &c.

(7) *Engineers' apartments* should be situated naturally with the best outlook, and, if over the engine house, made sound, as well as fireproof, as far as possible. The accommodation required of course depends on the number of the staff.

(8) *Offices* are often situated away from the

generating station, and must provide accommodation for secretary and staff, chief engineer and staff, draughtsmen's rooms, and board rooms; they have nothing special that calls for note. Battery rooms must be well ventilated to allow gases to escape, and the floors should be of cement, or acid-proof asphalt, with channels to carry off contents of the cells if they should get broken. Accommodation must be provided on the roof, in some convenient and accessible position, for water tanks, as a large storage of water is essential, so that in the event of burst mains or other causes preventing supply, no inconvenience is occasioned.

With regard to construction generally, an electrical generating station should be substantial, and of fire-resisting materials, as it is of extreme importance to prevent fire, not only on account of the damage done to the works, but because a fire would damage plant and prevent the supply of current, which is a most serious matter. Also, the premiums charged by insurance companies for electrical buildings are extremely high in any case, and would be more so unless the building throughout were of a fireproof nature. A system of fire hydrants should be fitted throughout the building, and in most electrical stations the staff are exercised in fire drill. All walls (at any rate those of engine house) should be carried down to same level as the foundations of the engine beds, and a clear space should be left all round the building between external walls and those of adjoining buildings to prevent the transmission of any vibration.

There are many other points in the planning and construction of electrical generating stations that require consideration, but I hope to have given some general idea of the special matters to be thought of which may prove of interest.

Views and Reviews.

AN ELECTRICAL DIRECTORY.

The Universal Electrical Directory for 1900 is more bulky and comprehensive than ever before. It now comprises 26,397 names and addresses of members of the electrical and kindred industries throughout the world, and for simplicity and facility of reference it is divided into four groups—British, Continental, American, and Colonial—each of which is again divided into sub-sections. In addition to the new names incorporated in the present issue, much financial information is given, the telegraphic addresses and local telephone numbers are given, and the whole forms the largest and oldest electrical dictionary extant. The present is the nineteenth year of publication, which says much for the manner in which the book is appreciated by those whom it concerns.

"The Universal Electrical Directory (J. A. Berly's)." London: H. Alabaster, Gatehouse and Co., 4, Ludgate Hill, E.C. 7s. 6d.

A GEOMETRY PRIMER.

As set forth in the preface, this little book is intended for candidates reading geometrical drawing for the Science and Art Department, South Kensington, Elementary Stage, for entrance to Sandhurst and Woolwich, and for the Cambridge Preliminary and Junior Local examinations. The problems are clearly and concisely explained, and well illustrated, which is an important feature. The most interesting portion of the book is, however, that giving solutions to questions set in the Science and Art, Civil Service Commission, Cambridge Preliminary and Cambridge Junior Local examinations; these solutions should be of great help to the students for whom the book is primarily intended.

"Geometrical Drawing" (Part I: Plane and Elementary Solid). By W. H. Blythe, M.A. London: C. J. Clay and Sons, Cambridge University Press Warehouse, Ave Maria Lane, E.C. 2s. 6d.

A new Market at Brighton, to cost £10,000, is a proposal which has received the sanction of the Town Council.

Professional Practice.

Ipswich.—In March last building operations were commenced on a new parish hall in connection with St. Matthew's Church, Ipswich. A house and garden, with a frontage of 92ft. to Clarkson Street, were purchased, and the hall is now completed. Mr. H. J. Wright is the architect, and Mr. Robert Girling the builder. An entrance hall divides the large room from the two club rooms, but in addition there are lavatories for both parts of the building, and a well-equipped kitchen. White brick and stone have been used for the outside of the building. The hall, measuring 42ft. by 31ft., with a height of 14ft., is lighted by a five-light stained glass window, and from the roof by a large lantern. It has a wood-block flooring, and is heated by hot water, is well ventilated, and fitted with incandescent lights. A platform with canopied recess has been provided and on the background has been fixed a movable screen for lantern entertainments. At the rear of the hall there is a ladies' retiring hall with lavatories, under which the heating apparatus has been fixed by Messrs. Huff and Son, hot-water engineers, of Ipswich.

Keighley.—The new Queen's Theatre and Opera House, which has been designed by Mr. Frank Matcham, of London, was opened last Saturday. The area of the site is about 7,000 square feet and the building has a frontage of 86ft. to Queen Street and 48ft. to Adelaide Street. A glass and iron verandah has been erected over the pavement for the whole length of the front. Admittance to the best parts of the house is at the Lawkholve Lane side of the building. This entrance leads into an attractive vestibule, giving access to the pit stalls, and a wide and well-decorated staircase leads to the dress circle. The pit has tip-up seats of polished birch. At each end of the dress circle is placed a private box, so designed as to blend with and increase the attractiveness of the internal scheme of construction. The decoration is in the style of Italian Renaissance, the gallery fronts being of fibrous plaster, and in front of each of the private boxes is a panel bearing the name of Shakespeare in the one case and Sullivan in the other. Around the large sunlight in the centre of the roof are four paintings depicting the seasons of the year. The stage has been considerably increased in size, and the dressing rooms are quite separate from it. An installation of automatic sprinklers is furnished throughout, and a fireproof curtain of iron and asbestos has been provided. A row of sprinklers has been fixed immediately over this curtain, and should a fire occur the plugs in these will melt, and the result will be a constant stream of water flowing upon the back of the curtain. In the construction of the building every care has been taken, so far as possible, to make it fireproof, and not only about the stage, but in every part, stone and concrete have been most extensively used with this end in view. Heating is by radiators on the low-pressure system, and the electric light has been installed, supplemented by gas. The following have been the contractors for the various works:—Builders, Messrs. Greenhow and Murgatroyd, Keighley; fibrous plaster and decorations, Messrs. Dejong, London; electric installation, Messrs. Grace and Sutcliffe, Keighley; iron and glass shelter, Messrs. McFarland, Glasgow; upholstery, &c., Messrs. Dean and Co., Birmingham; carpets, &c., Messrs. Turner, Son and Walker, Liverpool; iron and asbestos curtain, Messrs. Oldroyd, Leeds; gasfitters, Messrs. Jenkins and Tollerton, Leeds; Grinnell sprinkler installation, Messrs. Dowson, Taylor and Co., Leeds; act-drop, Messrs. McCullough, Salford; general scenery, Messrs. Edgerton, Bradford; ropes, &c., Messrs. J. Sharp, Keighley. Sub-contractors:—Masonry, Messrs. Waddington Bros., Oxenhope; steel girders and pillars, Messrs. Foster Bros., Preston; hydrants and fire apparatus and heating apparatus, Messrs. Oldroyd, Leeds; general ironwork, Messrs. Hird, Shipley; plumbers, Messrs. J. Harrison, Keighley; plasterers, Messrs. Greenwood, Cross Hills; painters, Messrs. Lonsdale

and Sons, Keighley; stage and all machinery, Messrs. J. W. Cawdrey and Co., London; high-speed engine, Messrs. Crossley Bros., Manchester; dynamo, the Electrical Engineering Company, Morley. Mr. E. Swann, of Leeds, acted as clerk of works.

Leeds.—The new church at Chapel-Allerton, Leeds, which has been erected from designs by Mr. G. F. Bodley, A.R.A., at a cost of nearly £20,000, is in the Decorated style of the fourteenth century and consists of nave, with aisles, chancel, and chapel for daily service, situated on the south side of the chancel. The nave is separated from the aisles by lofty arcades of clustered columns and arches. There is no clerestory, but a high roof of panelled wood, painted and gilded in a style unusual in the North, but frequently found in old west country churches. One of the principal features of the interior is a carved oak screen separating the nave from the chancel and supporting a considerable part of the organ, which is enclosed in a handsome case, painted red and gilded. The remainder of the organ is situated in the north aisle. This division of the organ is usually found to produce an admirable musical effect; and, probably owing to the panelled roof, the whole building possesses a peculiar resonance which will beneficially affect the singing of the choir. The walls are of Ancaster stone, and the dressings of Bath stone. Some very handsome gifts have been made to the church. The late Mr. J. W. Naylor (who contributed £5,000 to the building fund) gave the organ; also the beautiful stained-glass east window, which is a memorial of his deceased wife. This window, which was designed by Mr. Bodley and executed by Messrs. Burlison and Grills, of London, has four lights, displaying the figures of St. Matthew St. Peter, St. Augustine and St. Aidan. The window at the east end of the side chapel is also of stained glass. The carved oak screen is the gift of Mrs. J. J. Cousins, in memory of her husband. The oak stalls for the clergy and choir have been presented by Miss Clark, and the sedilia will be the gift of Miss Firth. The brass lectern is given in memory of the late Mr. and Mrs. Charles Naylor by their son and daughter. It consists of an eagle, the work of Mr. H. J. M. Furze, mounted on a pedestal and a marble base designed by Mr. Bodley. Messrs. Stephens, Bastow and Co., Limited, of Bristol, were the contractors for the new church.

Mundford, Norfolk.—St. Leonard's Church, Mundford, has been restored by Messrs. J. Springfield and Son, builders, of Swanton Morley, under the direction of Mr. A. J. Lacey, architect and diocesan surveyor, Norwich. The nave has been refitted with a new oak roof with hammer-beams, and covered with Broseley tiles. It was found in removing the old principals that some were in an excellent state of preservation, and, where possible, these have been preserved and used again. At the east end of the chancel two new buttresses have been erected to each angle. On the south side of the nave a new buttress has been added of flint and Weldon stone dressings. The south-west window was found to be dilapidated and its tracery partly gone. This has been restored with Weldon stone. The churchyard being very much higher than the nave, it was decided that a dry area should be arranged around the entire building, and this has been laid out with Staffordshire blue bricks. The walls have been generally repaired with rubble bedded in cement. An entirely new vestry of flint, with Weldon stone dressings, has been erected on the north-east side of the chancel. The interior of the nave has been re-stuccoed throughout, and the hammer-beams and cornice have been ornamented by means of cusplings. The unsightly old gallery on the south-west side has been removed and the wall filled up. The old belfry has been removed and replaced by a new one of red battens. An Estey organ with two manuals has been placed in the chancel, whilst new heating apparatus has been supplied by Messrs. Reeve and Sons, of Norwich.

Keystones.

Sir Thomas Lipton's Cheap Restaurant is almost completed. The building is four storeys high and has a red granite portico facing City Road, at the corner of Baldwin Street.

Glasgow Exhibition Buildings.—The tender of Messrs. W. Shaw and Son for the grand concert hall and restaurant, amounting to £14,497 1s. 6d., has been accepted. The entire work is to be completed by January 31st, 1901.

York Architectural Society.—The report of this Society for the past two years has, as a frontispiece, a good half-tone illustration of York Minster, 1898. Mr. William Bell, F.R.I.B.A., is the president for the present session, and there are now fifty-four members on the roll.

A New Calendar has been sent us from the London Drawing and Tracing Office (manager, Mr. John B. Thorp), 98, Gray's Inn Road, W.C., a copy of which will be sent to any applicant. It is of a handy size, and, though the colour scheme is not all that could be desired, it forms a bright and cheery spot on the wall.

Housing Problem.—A public conference upon the housing of the people in town and country has been organised by the Fabian Society, and will be held in the Memorial Hall, London, on March 1st next. This conference is to be held in conjunction with the Trade Union Conference on Labour Representation, which is to assemble in the same building on the last two days of the present month.

A New Font at Holy Trinity Church, Dorchester, has been made by Messrs. Harry Hems and Sons, of Exeter, and is now being placed in position. The bowl and base are of English alabaster, and there is a middle column of Castellino marble surrounded by four others of alabaster. The railings are of hammered iron and polished brass, and were made by Messrs. W. and R. Feacey, of Dorchester.

Pulling Down Chimneys.—A brick chimney 16ft. high and 8ft. square at the base, and 4ft. in diameter at the top, has been overthrown in St. Louis by the use of hydraulic jacks. The chimney was first undermined on one side, and three 10-ton hydraulic jacks were placed in position under the side. A hawser was then fastened about the chimney, 60ft. from the ground, and ropes led from this hawser to crabs placed at a distance of about 100ft. from the chimney. With eight men at each crab and men at the hydraulic jacks, the chimney was slightly lifted and pulled at the same time; the men at the jacks left their posts at the first warning crack, but those at the crabs continued their work until the chimney fell.

London County Council.—At the meeting of the Council held on Tuesday in last week, recommendations were passed authorising the erection of a new fire station at Shepherd's Bush (cost, £13,230) and a new School of Economics and Political Science on the Council's land in Clare Market. A motion instructing the Housing Committee to proceed forthwith with the erection of dwellings on the Churchway (Somers Town) area was carried. The Main Drainage Committee recommended that the Council should invite tenders for the construction of an additional northern outfall sewer, estimated to cost £600,000. Mr. Cornwall thought the manager of the Works Department should be asked to report as to the price he could do the work for. He consequently moved to refer the report back. This amendment was carried. The influence of the war was seen by some names which the Building Act Committee was asked to pass for new streets at Muswell Hill (a part of Central Finsbury). Three streets are to be called Methuen Park, Colesburg Park, and Rensburg Park; two other new streets in Woolwich are to be called Enslin Road and Ladysmith Road; two streets in Hoxton are to be incorporated under the name "Redvers Street."

A New Organ at All Hallows' Church, Leeds, has been built by Messrs. Abbott and Smith, of Leeds.

A New Organ at the Royal Academy of Music has been built by Messrs. Henry Willis and Sons. It takes the place of the instrument set up in 1876.

A New Peal of Ten Bells at St. Mary's, Beverley, has been provided at a cost of about £1,500. Messrs. Taylor and Co., of Loughborough, were the founders.

Another Cromwell Statue.—A bronze statue of Oliver Cromwell, 7ft. 6in. high, is to be erected at St. Ives, Hunts. Mr. F. W. Pomeroy has been given the commission. The cost will be about £1,300.

The new Town Hall and Municipal Offices at Chatham is in the English Renaissance style. The main feature is a square and high corner tower, surmounted by a domed belfry with clock faces. The facings are of Monkspark stone, which is light in colour. £30,000 has been the cost of the building.

Was Stonehenge a Sun-Dial?—An immense sun-dial was once upon a time formed by the thirty stones of Stonehenge, suggests Dr. Alfred Eddowes. The stones, with their intervals, divided the circle into sixty equal parts, the grooved stone being used for supporting a pole which formed the pointer of a sundial for daily observation, or an indicator of the time of year by the length of the shadow.

New Town Hall for Batley.—A Local Government Board inquiry was held at Batley on February 1st into the application of the Town Council to borrow £36,000 for the erection and furnishing of the new town hall and the extension of the open market. The Mayor and Town Clerk emphasised the inadequacy of the present structure, which was built for a Mechanics' Institute, and purchased in 1874 by the Corporation at a cost of £4,900.

South Kensington Art Council.—The Lord President has appointed Sir William Richmond, K.C.B., R.A., Mr. T. G. Jackson, R.A., Mr. E. Onslow Ford, R.A., and Mr. Walter Crane as a Council to advise the Department of Science and Art on art matters relating to Art Schools and Classes, the Art Museum, and the Royal College of Art. He has also appointed Mr. A. Spencer, Headmaster of the Municipal School of Art, Leicester, to be Headmaster of the Royal College of Art.

Colchester's New Town Hall.—Mr. W. Gurney Benham, of Colchester, sends us a copy of the second edition of the illustrated pamphlet dealing with the new town hall and municipal buildings that are in course of erection from designs by Mr. John Belcher, A.R.A. Messrs. Kerridge and Shaw, of Cambridge, secured the contract for £33,397, and are to complete the work by Michaelmas next. The pamphlet, which has been enlarged, contains a list of gifts promised, required, and suggested.

A Proposed Ruskin Union.—Mr. Frederic Harrison will preside at a meeting to be held at the St. Martin's Town Hall on Thursday February 8th, the eighty-first anniversary of the birth of John Ruskin, when the Rev. J. B. Booth, M.A., of St. James's, will deliver an address on "The Life and Work of John Ruskin," in which suggestions will be made for the formation of a Ruskin Union for the study of Ruskin's works. Admission will be by tickets, which may be had on application to Mr. Mark H. Judge, 7, Pall Mall, S.W.

New Board School at Paisley: Result of Competition.—At a meeting last week of the Paisley Burgh School Board the minutes were that Mr. Watson, architect, and Mr. Mathieson, measurer, had submitted their reports on the competitive plans lodged for the new school at Renfrew Road. The architect reported that, in point of convenience of arrangement, he was of opinion that the design under the motto of "Economy" occupied the first place. The measurer's report showed that the probable cost of the building in accordance with that plan would be £18,843, or £13 8s. 3d. per scholar. A protracted discussion took place, when it was ultimately agreed not to accept any of the plans lodged.

New Patents.

These patents are open to opposition until March 10th.

1899.—Continuous Muffle Furnaces.—1,805. W. DICKEN, Hanley, W. WADE, Longport, and L. L. GRIMWADE, Stoke-on-Trent. The object of this invention is to prevent cracking or "dunting" of pottery or other ware during firing. The kiln is circular and has an entirely closed muffle, the fire-hole being at the opposite side of the kiln to that in which is the opening (the only one) through which goods are passed or taken out. Within the muffle is a circular table mounted on wheels and capable of being revolved from the outside by means of rack and pinion. The iron or clay boxes containing the articles to be fired are placed on this table, which is then turned, the firing being thus controlled and adjusted.

Roofing Tiles.—2,798. J. J. HAMMOND, Rhyl. The tile is preferably made of cement or concrete, and of the usual size (10in. by 7in.). It is quite flat on the underside and has an ogee moulding along each side edge, so formed that when two tiles are placed together the ogee joint overlaps and the top face is level. About 1½in. from the upper edge of the tile a cross-bar is moulded, and a panel is formed by sinking the middle portion. When in position, the flat back on one tile rests on the cross-bar of the tile below, and they all fit very compactly together. Only thirty-six are required to cover one square yard, as compared with seventy-eight ordinary tiles. The overlap is about 3in.

Wall Coverings.—3,109. W. RUTTENBERG and M. VAN ZANTEN; both of Dordrecht, Holland. A series of frames are fastened to the wall and are covered with sheet metal plates, previously ornamented with a drawing or pattern by lithographic means. The sheets are bent round the edges of the frames.

Girders, Beams, Trusses, &c.—3,930. A. WESTWOOD, Tipton. This invention is to allow girders, beams, &c., to expand and contract with more freedom without undue strain on their abutments. It consists of three parts:—(1) A bearing plate having a semi-circular trough supported by ribs; (2) an intermediate crescent-shaped bearing block, with a hollow on its upper side; and (3) a top plate having a transverse swelling fitting in this hollow.

Cement Burning.—4,252. P. RUNGE, Yospommern, Germany. To prevent the cement caking to the sides, the kiln has fitted round it, in its hottest portion, a water jacket. When burning is considered complete, the water supply is increased so that it overflows into the furnace uniformly, quenching the cement and preventing it caking to the walls.

Tool Handles.—7,696. J. H. WEBB, Cardiff. As applied to planes, the invention consists of a top and bottom bracket and a wooden handle fitting between. The brackets are fixed to the plane body with screws, and the upper side of the bottom one is recessed to receive the end of the handle, which is fixed by a screw passing through it from the top bracket to the lower one.

Fireproofing Solutions.—22,085. A. J. BOULT, London (A. Nieske, Dresden). To render them fireproof, fabrics or documents are impregnated with a 10 per cent. solution of molybdate of sodium. This chemical does not injure the articles treated like metallic salts.

The following specifications were published on Saturday last, and are open to opposition until March 17th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1898.—21,688, BAKER AND BAKER, refuse destructors.

1899.—245, WILLIAMS AND WALFORD, radiator for hospitals, infirmaries, &c. 470, COOPER AND COOPER, continuous kiln. 941, BROWN, apparatus for the automatic delivery

and discharge of sewage and other liquids to and from filter beds. 1,139, FIEGLMUELLER, closing cap for use in impregnating timber, beams, piles, &c. 1641, TULLOCH, apparatus for use in the purification of sewage and other polluted waters. 2,699, BARRATT, acetylene lamps. 3,145, LOMAX and TOMLINSON, door knobs and latches. 3,303, CLARKE, faucets for flushing tanks. 3,332, TATTERSALL, tubular heaters for steam or fuel or hot water as a medium to heat air. 3,342, SMITH, waste pipes, overflow pipes, &c. 3,552, MILLS (*Soc. Anon. des Fontaines à Gaz*), gas burners for heating purposes. 3,653, EDWARDS, brick moulding and pressing machinery. 4,066, LEWIS, construction of slate mantelpieces. 4,418, DYMOND (*Lönnbeck*), ventilating and heating apparatus. 5,177, ADAMSON, cutter for dressing slates, tiles, &c. 5,201, SCOTT, screw-down taps and cocks. 5,295, ALDAM, HEATON AND CO., LTD., and CROFT-SMITH, construction or manufacture of sash bars for domes, skylights, windows, &c. 5,307, SOUTHERN AND SPILSBURY, device for adjusting the cutting irons or blades of planes, spoke-shaves, &c. 5,450, *Soc. Anon. des Usines du Pied-Selle*, heating apparatus. 7,065, ROGERS, ladder and tape connections for Venetian blinds. 9,036, CAREY, improvements in windows to facilitate cleaning them. 11,149, BOGAARD, nut lock. [Date applied for under International Convention, October 29th, 1898.] 18,156, CARLAND, hinged casement opening and closing mechanism. 19,469, FRANK, method of forming pipe joints. 19,628, WATROUS, water-closet valves. 20,469, WINDLE and MEARES, attachment of corrugated iron sheets to roof purlins. 22,084, HUGHES, taps, tap holes, &c. 22,155, CHICK, means for fixing woodwork to walls. 22,451, ENGELKE and MEYER, valve for the delivery of hot and cold water. 23,157, BUTCHER, fire extinguishing apparatus. 23,458, MÜNCH-PHIPPS, fireproof ceilings. 23,616, MCKINNON, windows. 23,871 BURROWS, locks and latches. 23,936, BURROWS, manufacture of door knobs. 23,953, PHILLIPS (*McDougall*), fastenings for door handles. 23,963, LAKE (*Peck, Bros. and Co.*), taps or faucets for wash-basins, &c. 23,981, THOMPSON (*Westfälische Metall-Ornamenten-Fabrik Rob. Osv. Leutert and Co.*), lattice windows. 23,982, CHARLES, glue-applying machines.

New Companies.

Mineral Plaster and Cement Co., Ltd.

This company was registered on January 23rd, by Shaw and Sons, Fetter Lane, E.C., with a capital of £500 in 5s. shares, to adopt an agreement with G. Ollier, and to carry on in the City of Nottingham or elsewhere the business of plaster and cement manufacturers, &c.

Walker and Crawshaw, Limited.

This company was registered on January 18th by Jordan and Sons, Limited, 120, Chancery Lane, W.C., with a capital of £35,000 in £1 shares, to acquire the business carried on by Walker and Crawshaw, at Conisbrough, Yorks, and to carry on the business of brick, tile, pottery, and earthenware manufacturers and merchants, quarry owners, timber merchants, sawmill proprietors, &c. The first directors (to number not less than four nor more than five) are G. Walker (chairman), G. Crawshaw, L. T. Crawshaw and R. Crawshaw. Qualification, £500. Registered office: The Works, Conisbrough, near Rotherham.

General Tramways Construction Syndicate, Limited.

This company was registered on January 16th by Goldberg and Co., 2 and 3, West Street, E.C., with a capital of £200,000 in £1 shares, to enter into any contract for the construction of rail and tram roads, the subject of the concessions bearing date December 22nd, 1898, and July, 1899, granted by the Federal Assembly of the Swiss Government Republic to Francois Forestier, for the construction of rail and tram roads in the Canton of Geneva, and, generally, to carry on the con-

struction, execution, carrying out, equipment, improvement, working, development, administering and controlling of public works of every description. The first directors are L. Hirsch and L. Neumann.

Atmospheric Steam Heating Co., Limited.

This company was registered on January 18th by Ashwell and Co., 79, Queen Street, E.C., with a capital of £10,000 in £1 shares, to adopt an agreement between Ashwell and Nesbit, Limited, and J. Simpson and Co., Limited, of the one part and A. E. Hawkesley (for the company) of the other part, and to carry on the business of heating, ventilating and mechanical engineers, iron-founders, metal workers, &c. The first directors (to number not less than two nor more than seven) are B. Simpson, of London, and A. T. Ashwell, of Nottingham. Registered office: 55-6, Chancery Lane, W.C.

A. Kellett and Sons, Limited.

This company was registered January 19th by C. Doubble, 14, Serjeant's Inn, E.C., with a capital of £70,000 in £1 shares, to

acquire by purchase or otherwise, as a going concern, the business of builders and contractors as now and hitherto carried on under the style or firm of Abram Kellett at the Old Oak Wharf, Willesden, Middlesex; and to develop and extend the said business. The first directors (of whom there shall be not less than two nor more than five) are the first three signatories to the memorandum of association. Qualification, £500. Remuneration not specified.

Lloyd's Avenue Estate Company, Ltd.

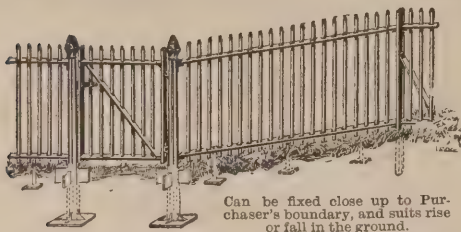
This company was registered on January 17th by Turner and Co., 101, Leadenhall Street, E.C., with a capital of £100,000 in £5 shares, to adopt and carry into effect a certain agreement for the acquisition of certain lands, buildings and hereditaments of any tenure in the county of London, and to develop, deal with, and turn to account the same in such manner as the company shall see fit. The first directors (of whom there shall be not less than three nor more than five) are J. Dixon, E. H. Watts and a third to be elected by the signatories. Qualification, £1,000. Remuneration, £100 per annum each.

The North British Granite and Whinstone Quarries, Limited.

This company has been registered in Scotland with a capital of £20,000 in £1 shares (5,000 six per cent. preference, and after ordinary shares have received eight per cent., to rank for a further two per cent.), to carry out agreements with the Kilsyth Whinstone Quarries, Limited, and John Freebairn, quarrymaster, Kilsyth, and to carry on the business of quarrymasters, brickmakers, merchants, &c. Registered office: 44, Renfield Street, Glasgow.

Lumley Brick Company, Limited.

This company was registered on January 26th by King and Co., 11, Queen Victoria Street, E.C., with a capital of £20,000 in £50 shares, to acquire the business of the Lumley Brick Company, Lumley, Durham, and to carry on the general business of brick, tile, terracotta, and earthenware manufacturers, quarrymasters, &c. The directors are R. Herron, G. A. Atkinson, W. R. Waddingham, J. Lunn, and W. Dodd. Qualification, £500. Remuneration to be fixed by the company.



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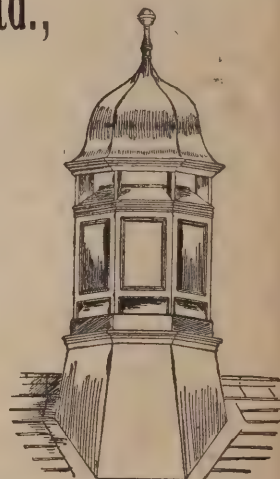
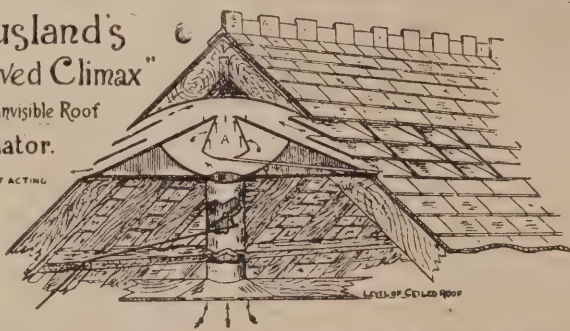
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COMING EVENTS.

Thursday, February 8.

YORK ARCHITECTURAL SOCIETY.—Mr. S. H. Adams on "Sewage Disposal Works."

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. Edwin Foley on "Our Household Gods—Their Design and Designers."

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Lower Limb." 6.15 p.m.

ST. MARTIN'S TOWN HALL.—Rev. J. B. Booth, M.A., on "The Life and Work of John Ruskin."

Friday, February 9.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Francis W. Troup, A.R.I.B.A., on "Ornamental Lead and Lead Casting." 6.45 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers.)—Mr. Herbert Manley, M.A., M.B., D.P.H., on "Sanitary Law: English, Scotch and Irish: General Enactments, Public Health Act, 1875; Model By-laws, &c." 8 p.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. William Allan, jr., on "Builders' Work." 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—VI.

ARCHITECTURAL ASSOCIATION.—Mr. Thomas Blashill, F.R.I.B.A., on "Working-Class Dwellings in Blocks."

INSTITUTION OF CIVIL ENGINEERS. Students' Meeting.—Mr. D. E. Lloyd-Davies on "Underground Sources of Water Supply." 8 p.m.

Saturday, February 10.

ARCHITECTURAL ASSOCIATION.—First Spring Visit.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Lambeth Palace, at 3 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers.)—Inspection and demonstration at Friern Barnet Sewage Works at 3 p.m.; conducted by Mr. E. J. Reynolds, A.M.I.C.E.

DUNDEE INSTITUTE OF ARCHITECTURE.—Visit to Villas in West End at 2.15 p.m.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS (Newcastle-upon-Tyne).—Council Meeting at 1 p.m. General Meeting at 2 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Fire Brigade Building; and City Chambers. p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Visit to Eblana Cement Works, Ringsend, at 3 p.m.

Monday, February 12.

SOCIETY OF ARTS.—(Cantor Lectures).—Mr. Bennett H. Brough on "Metalliferous Deposits."—IV. 8 p.m.

VICTORIA AND ALBERT MUSEUM (South Kensington).—Mr. Hugh Stannus, F.R.I.B.A., on "Historic Evolution of Applied Art: XIV.—Medieval Christian Art." 6 p.m.

SURVEYORS' INSTITUTION.—Ordinary general meeting at 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstration for Sanitary Officers.)—Mr. Louis Parkes, M.D., D.P.H., on "Public Health Statutes: Order, Memoranda, and Model By-Laws of the Local Government Board, and By-Laws in Force in the Administrative County of London." 8 p.m.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. G. H. Oatley, F.R.I.B.A., on "Bills of Extras." 8 p.m.

Tuesday, February 13.

SOCIETY OF ARTS (Applied Art Section).—Mr. John Sparkes on "The Best Means for Arresting the Decay of Indian Art." 8 p.m.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—Mr. C. Hodgson Fowler, F.S.A., on "A Parish Church."

Wednesday, February 14.

SOCIETY OF ARTS.—Professor R. W. Wood on "The Diffraction Process of Colour Photography." 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers.)—Mr. J. F. J. Sykes, D.Sc., M.D., on "Objects and Methods of Inspection, Nuisances, &c." 8 p.m. Inspection and demonstration in the Parish of St. George's, Hanover-square, at 2 p.m.; conducted by Mr. Albert Taylor.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. Frank Caws, F.R.I.B.A., on "Concrete Floors." 7.30 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Harold Tarbolton on "Plaster Work."

BIRMINGHAM AND DISTRICT CLERK OF WORKS AND BUILDERS' FOREMAN'S ASSOCIATION.—Mr. J. H. Pickard on "The Elan Valley." 8 p.m.

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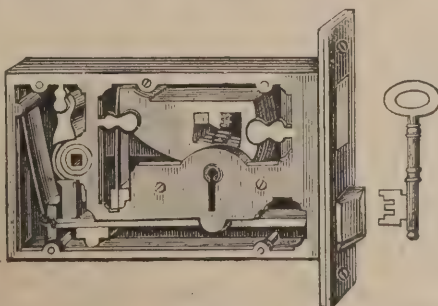
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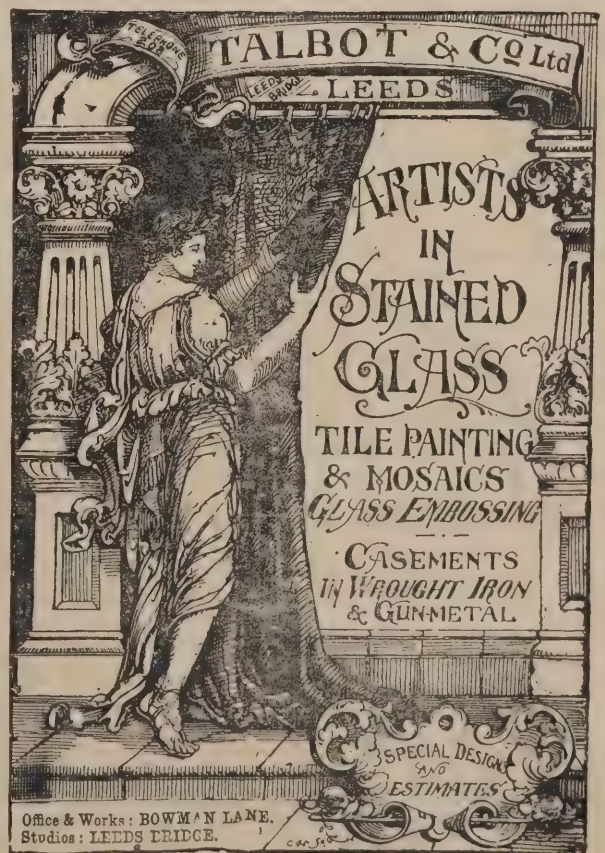
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Straw	per load	1 4 0	1 16 0

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Copperas	per ton	2 0 0	—
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Linseed Oil	per cwt.	1 3 9	—
Petroleum, American	per gal.	0 0 7½	0 0 7½
Do., Russian	per gal.	0 0 6½	—
Pitch	per barrel	0 8 6	—
Tallow, Town	per cwt.	1 6 6	1 9 0
Tar, Stockholm	per barrel	1 5 0	1 5 6
Turpentine	per cwt.	1 19 6	—
Lead, white, ground, carbonate	per cwt.	1 3 0	1 4 0
Soda red	per ton	2 17 6	3 0 0
Soda crystals	per cwt.	3 1 0	—
Shellac, orange	per cwt.	3 1 0	—

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Copper, sheet, strong	per ton	82 0 0	—
Iron, bar, Staffs. in London	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	11 0 0	—
Lead, pig, Spanish	do.	16 10 0	16 12 6
Do. do. English common brands	do.	16 17 6	—
Do. sheet, English, 6lb. per sq. ft. and upwards	do.	18 10 0	19 0 0
Do. pipe	do.	19 10 0	—
Nails, cut clasp, 3in. to 6in.	do.	10 0 0	11 0 0
Do. floor brads	do.	9 15 0	10 15 0
Tin, Foreign	do.	138 0 0	—
Do. English ingots	do.	133 0 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montagne	do.	27 7 6	—
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Do. Petersburg	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	12 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	17 0 0	—
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	10 15 0	11 0 0
Do. do. White	do.	7 15 0	11 5 0
Do. Swedish	per P. Std.	10 15 0	17 10 0
Do. White Sea	do.	17 10 0	18 0 0

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Do. Canadian Spruce, 1st per P. Std.	do.	8 10 0	8 15 0
Do. do. 3rd & 2nd	do.	9 10 0	13 5 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	13 10 0
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Do. 2nd	do.	0 8 3	0 9 6
Do. 3rd & 4th	do.	—	—

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Cedar, lin., Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 0 4 1/8	—
Do. Tobasco	do.	0 0 5 5/32	—
Elm, Quebec	per load	12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 11/16	—
Do. African	do.	0 0 3 13/16	—
Do. St. Domingo	do.	0 0 33	—
Do. Tobasco	do.	0 0 5 11/16	—
Do. Cuba	do.	0 0 7 29/32	—
Oak, Dantzic and Memel	per load	3 0 0	3 8 0
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0	16 10 0
Waincot, Riga (Baulk)	do.	8 15 0	5 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 3 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

ABERAVON.—For the erection of a chapel, out-buildings, &c., for the Primitive Methodist Trustees. Mr. Frank B. Smith, architect, Port Talbot:—
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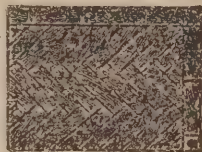
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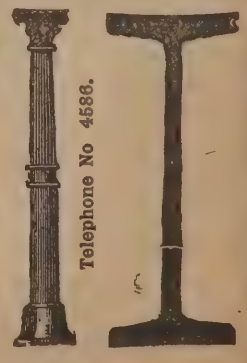
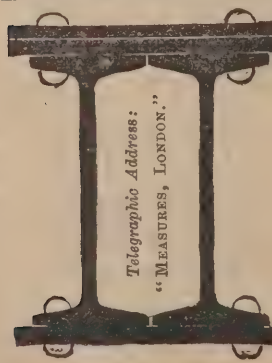
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Scotney ... 1,135 4 6 Bourne* ... 795 0 0
J. Scotney ... 1,120 0 0 Lyon ... 790 0 0
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surveyor, Lewisham Town Hall, Catford, S.E. Quantities by Mr. J. Randall Vining, 89, Chancery-lane, W.C.:—
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Shelbourne and Co. ... 25,938 J. W. Jerram ... 21,494
W. J. Maddison ... 21,882 Carter, Grays ... 21,494
G. Sharpe ... 24,517 Perry and Co. ... 21,437
F. Britton ... 24,234 Gregar and Son* ... 20,422
* Accepted subject to approval of Education Department.

LONDON.—For alterations and repairs to No. 9, Parson's-green, Fulham, S.W., for the Guardians of the Poor of Fulham Parish. Mr. A. Saxon Snell, architect. Quantities by Mr. W. Thomas:—
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J. J. Richards ... 5,695 0 Co. ... £4,950 0 0
S. Dockerill ... 5,129 6 G. Lyford ... 4,892 12 6
Lott and Son ... 5,101 0 T. G. Sharpling-
Spencer, Santo, & ... ton, Nunhead* 4,590 0 0
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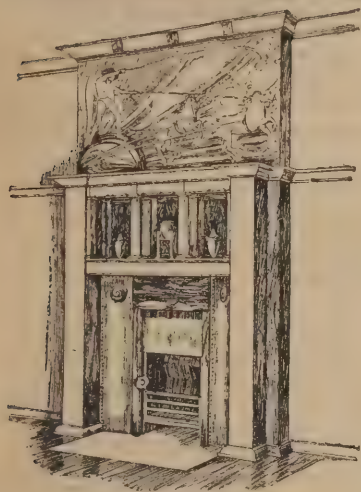
LONDON.—For the erection of warehouse premises at No. 2, 3, and 4, Hanover-court, Long-acre, W.C., for Messrs. Hazell, Watson, and Viney. Mr. W. Ernest Hazell, archi-

tect, 23, Moorgate-street, E.C. Quantities by Mr. A. Paul:—
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Perkins and Co. ... 1,416 0 J. Leggo ... 1,287 18
J. Nicholas ... 1,422 0 Burnett & Walters* 1,276 16
E. Pidwell ... 1,364 0
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H. Vickers ... 11,055 0 0 J. G. Thomas ... 10,377 0 0
J. Hutchinson ... 10,980 0 0 W. Appleby ... 10,000 0 0
A. B. Clarke ... 10,818 4 5 W. Maule ... 9,900 0 0
Dennett & Ingle ... 10,750 0 0 T. Woolston,
T. Barlow ... 10,699 10 9 Crocus-str-et* 9,720 0 0
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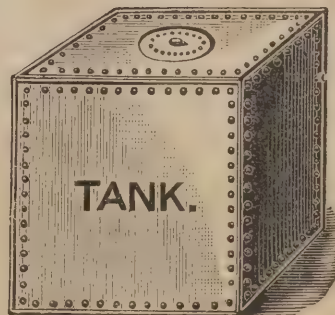
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The Vestry do not bind themselves to accept the lowest or any Tender, and the contractor whose Tender is accepted shall enter into a formal agreement under seal with sufficient sureties for the due fulfilment of his Contract.

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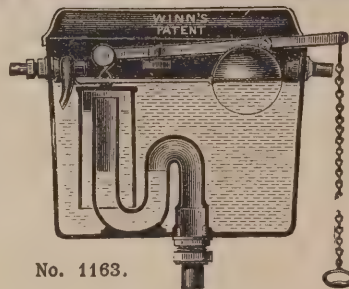
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The premiated drawings will become the absolute property of the Committee, and the successful competitor may be selected to carry out the work, in which case the premium will merge in the commission.

The Committee will be assisted with professional advice when adjudicating on the plans.

Copy of conditions and Plan of site may be obtained on application to Mr. A. W. LAWSON, A.M.Inst.C.E., Borough Surveyor, Municipal Offices, Rawtenstall, on payment of £2, which will be returned on receipt of Competitive Plans, &c.

Plans, &c., must be delivered as directed in the conditions at the Municipal Offices, Rawtenstall, on or before FRIDAY, MARCH 30th, 1900.

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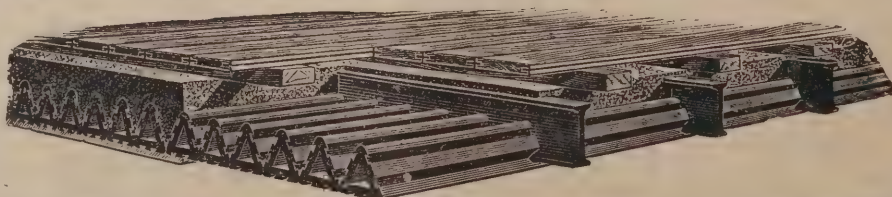
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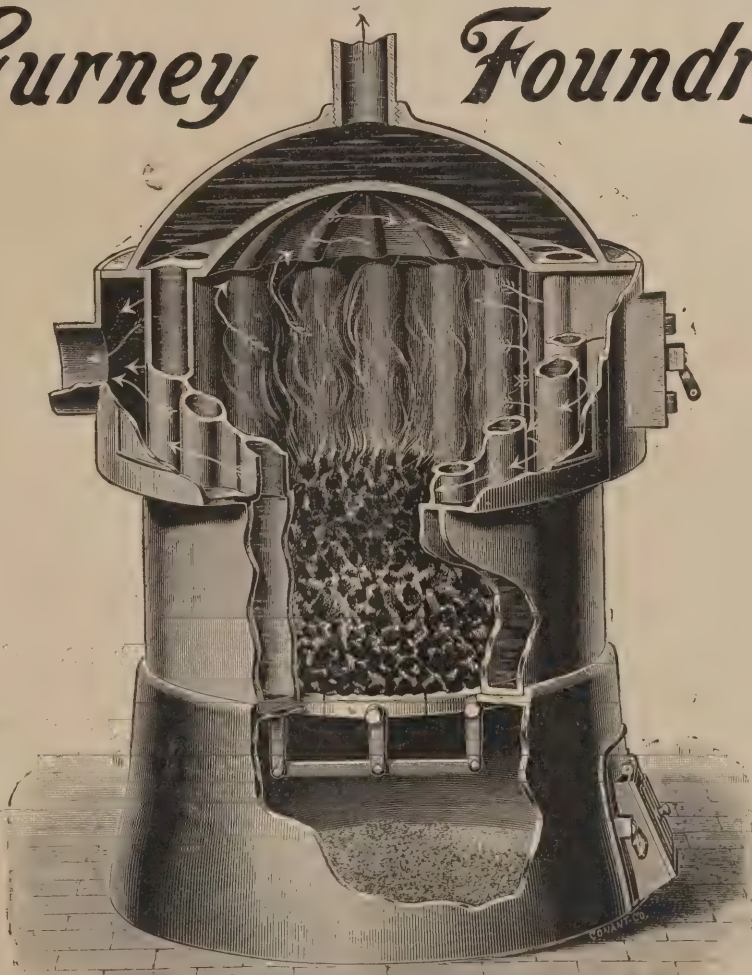
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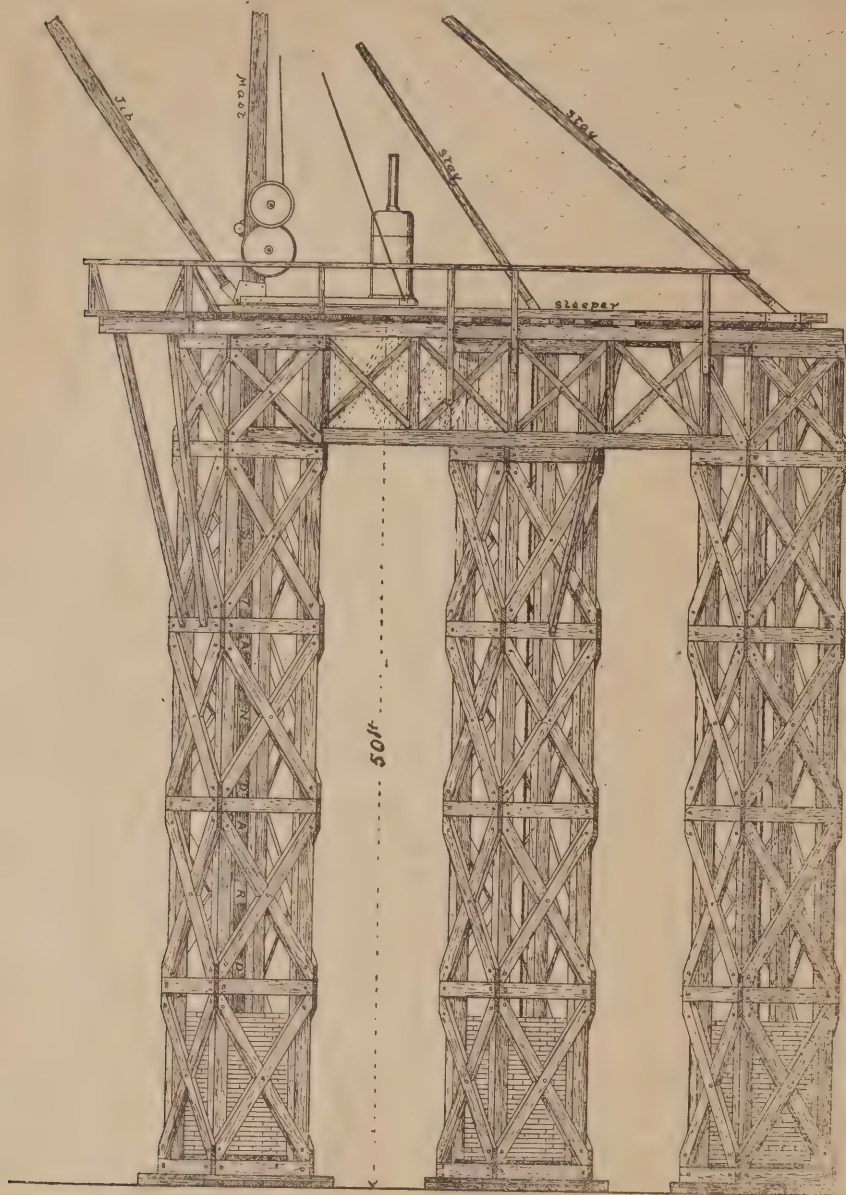


FIG. 2.—ELEVATION OF A DERRICK TOWER GANTRY.

CONSTRUCTING A DERRICK TOWER GANTRY.*

By G. ELLIS, A.B.I.C.C.

THE derrick tower is now much used in extensive building operations; the practically unlimited height to which it can be built, and the great command over the whole site which it affords, make it a favourite appliance of the up-to-date builder. In addition to its mobility, it is, in reality, an economical contrivance, as, with the aid of the derricking power of the crane, a stone, or girder, or other material may be deposited at any desired spot on the site. It thus allows a much lighter scaffolding to be employed in building the walls than would otherwise be possible, and after the first cost of construction little expense will be incurred, as its striking and re-erection may be entrusted to unskilled labourers under competent supervision.

The erection is usually built up on the site of the interior of the building, in such a position as not to interfere with any important structural arrangement. It may consist of one, three, or four-framed piers or towers; the one shown in the accompanying illustrations is a three-tower derrick. These towers are each square on plan and arranged in the form of an equilateral triangle; they are connected at the top by trussed girders carrying a plat-

form of deals, that support the derricking crane and provide a landing stage for its loads. Each tower has sides about 6ft. wide, and is composed of four corner posts, either solid

balk or built up of three 9in. by 3in. deals, resting on a plank foundation and braced both horizontally and diagonally on each side; the horizontal struts are arranged in bays about 10ft. high, and the diagonal ones cut between them.

The tower which supports the crane is provided with a central standard to further strengthen it, the other two having stout chains brought down through them from the feet of the crane stays to ring bolts in the foundation planking; the object of doing this is to prevent the overturning of the crane. The bottom portions of each tower are filled in with bricks, stone, or sand to counteract the effect of the loaded crane. The weight in each should be equal to twice the maximum load to be lifted. As the crane can only make a three-quarter revolution in consequence of the back stays of the mast intervening, no load can be deposited immediately behind it; therefore, it is not usual to truss the rear girder connecting the two anchor towers. The other two, as before mentioned, are trussed both to stiffen the towers and to enable them to carry the load on the platform.

The trussed girders may be made from 5ft. to 8ft. deep, according to the size of the tower. The top member or head, generally of 11in. by 4in. red deal, runs diagonally across the heads of the towers and projects over the front about 4ft. by 5ft. to carry the landing stage. The timbers are halved together where they intersect each other over the head of the standard. The sills rest upon the horizontal braces of the towers and are bolted to the corner posts; the two members are tied together by several $\frac{1}{2}$ in. iron screw-rods, and are kept apart by struts placed at the sides of the rods, thus dividing the truss into bays about 6ft. wide. These bays are each braced diagonally by counter struts, as the strains change their direction according to the position of the crane jib when in use.

Fig. 1 shows the plan of a three-tower gantry, one half showing the construction of the parts immediately below the stage or floor, and the other half the arrangement of the stage above. Fig. 2 is an elevation parallel with one of the trusses. Figs. 3 and 4 are enlarged details of the bracing of the tower.

The usual method of procedure in building a gantry of this kind is to form each side of a tower separately on the ground, first building up the corner posts to the required length and, as shown in Fig. 3, bolting them together with $\frac{1}{2}$ in. by 10in. screw bolts. The nuts should be kept outside for convenience of striking, and those in positions to be covered by the bracing should be sunk in flush as shown. The longer deals forming the posts should also be kept on the outside as there will thus be less joints to bolt. Bolts need only be put in near the joints. The position of the horizontal braces are set out by laying off the points with a 10ft.

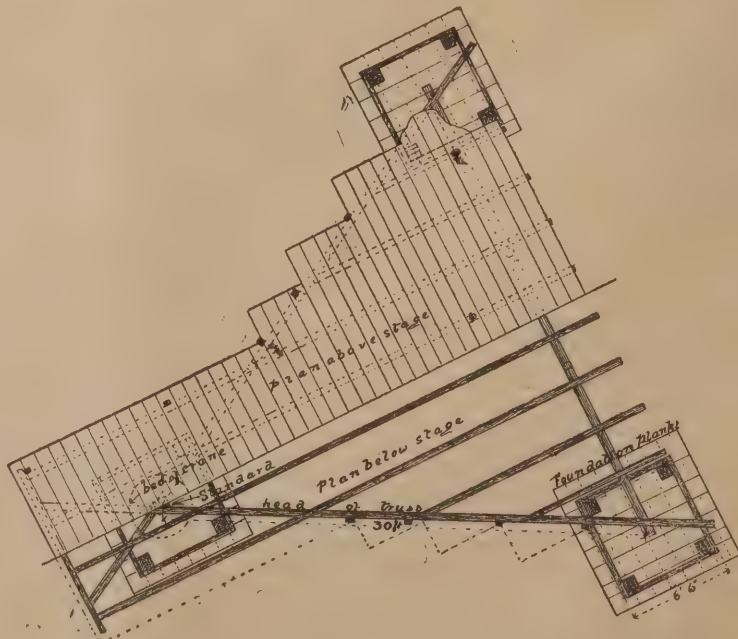


FIG. 1.—PLAN OF A DERRICK TOWER GANTRY.

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DUTIES OF A FOREMAN MASON.

By JOSHUA PAUL.

A MEETING of the Masons' College took place last Tuesday week at the Royal Architectural Museum, Tufton Street, Westminster, Mr. G. Goodley in the chair, when Mr. Joshua Paul gave a lecture on "The Duties of a Foreman of Masons." The meetings of this institution are characterised by their thoroughly practical character, and Mr. Paul's lecture took the form of a series of hints to junior masons upon the methods to be adopted to fit them for the position of a foreman. Mr. Paul said that after having been shown over the department of the employer whose services the foreman was entering, he would then be left to himself, and it would be as well to start by enquiring about the system of booking in and out of all raw or worked stone, &c. Having obtained such information, if a more simple system could be seen, or any improvement could be made, it should be at once suggested; but at all events, the foreman should always arrange so that he had a copy of such booking himself. This copy would be found most useful in case of disputes, such as in the case of clerical errors in the office. If the sawing were done by hand, the booking was usually done by the foreman. As the sawyers were, in the lecturer's opinion, a very troublesome class of men, always grumbling, for instance, when sawing bath stone, that the stone was hard, or else wasting time, perhaps, in getting the block from the stack, it was, in his opinion, necessary to make oneself acquainted with the prices of sawing different stones. More especially would this become necessary if the foreman was required to prepare an estimate, this being in many cases part of his duty. If the sawing was done by steam machinery, it was also necessary to have a system for the booking of the cuts. A good system was to have a board, or a book in preference, ruled out and given to the sawyer, which the foreman should insist on being kept correctly. By this means the foreman would be able to find the prime cost of the sawing, as well as the sizes. Where the cutting was for the trade, this system would be most useful if there was a dispute when the account was sent in, for all machinery was always charged to the foreman's prime cost in preparing the stonework.

When the drawings and details were given for a job, the date and time of receiving them should be always made a note of. The foreman should take great care in working out his details to the general information given on the plan and elevation, and also to that given in the specification, where it was possible to obtain a copy. In some firms a list of the quantities was given, and in this case it would be a duty to call the attention of the front office to the discrepancy, in case it required more stone to finish the job than was given in the quantities. It was usual for the heights of floors and window openings to be given

be as well to visit the job and consult the general foreman with reference to some of the questions, which in many cases only he could settle. Also a truthful diary would be found a most valuable book, especially if the stonework should be under a sub-contract. Having got the queries settled, the foreman should then prepare his own working drawings to a suitable scale. Mr. Paul preferred to use a 1 in. or 1 1/2 in. scale. A copy should also be traced for the fixer, to whom the foreman should give all the information he could consistent with simplicity; for instance, the drawings should not be overcrowded in any way that was likely to cause confusion to him. A most particular point should be made of giving figured dimensions.

The lecturer preferred to give each stone a number. Some foremen added a letter to a number. He agreed that it would be as well to add a letter if the work was on a building lotted off in blocks; or where circumstances required this to be done, as on a return, or where it had been originally arranged to make out a space in one stone, and it was afterwards found that the same could also be done with two stones with the advantage of perhaps forwarding the job.

Having prepared so much of the working drawings, the sawyer could be started. First the sizes should be taken off on a board, and numbered if saw frames were used. The sawyer should be given a copy of these, and he would look out the block nearest to the sizes of the stones wanted. If Bath stone was being cut by hand it were well to check the block and make a sketch of it, and by referring to the list the cuts could then be marked out and the sawyer immediately started. By making a sketch of the block and making the saw cuts on it, it also gave a check for the stock in hand. In addition to being able to start the sawyer, the foreman would be in possession of the sizes of his cuts. It might be thought that this system was introducing a lot of writing or that it was complicated, but once everything was prepared plenty of time would be found to be in the presence of the men, and any question that might be asked could be answered easily.

Having proceeded so far the setting-out and mould cutting could be proceeded with, unless there were a mould-cutter. If there were a mould-cutter he would work from the foreman's working drawing. Even then it were well to run through the moulds and check them by taking off the sizes and numbers, and mark the mould with the proper information for the mason. The conditions should be described as plainly and as fully as possible, so as to avoid too much labour being spent. Thus joints, whether stone or brick, or how far the return was seen, and so on, should all be stated, because a lot of unnecessary labour was sometimes spent, and this would all count against the foreman mason's prime cost or cost of labour, which he was responsible for.

The following is a specimen tabular statement of particulars made by Mr. Paul in sawing various stones:—

No. 1 FRAME.

Number of Block.	Stone.	Item.	Time of Starting.	Date Started.	Time Finished.	Date Finished.	Number of Cuts.	Size.	Super.
4872	Portland (Hard)	789	9 a.m.	Aug. 23	8 a.m.	Aug. 26	4	4' 5" x 3' 6"	61' 10"
1694	York	2210	9 a.m.	Aug. 26	3 p.m.	Sept. 6	4	8' 6" x 4' 0"	136' 0"
324	Red Mans.	2116	10 a.m.	Nov. 19	2 p.m.	Nov. 23	1	6' 6" x 4' 0"	26' 0"
533	field						1	7' 8" x 4' 4"	33' 2"
4536	Spinkwell	1427	11.30a.m.	April 17	9 a.m.	April 18	5	4' 3" x 1' 3"	26' 6 3/4"

on the section, but, if these particulars were omitted, they should be ascertained at the earliest moment, because these items also affected the foreman carpenter and foreman bricklayer. In going through the drawings the foreman should provide himself with a strip of paper (a pocket-book preferably) on which to note all questions or queries separately. These queries should then be settled as soon as possible; sometimes it would

In reply to several questions asked him, Mr. Paul stated that he had found sawing by machinery paid if the machine were kept going, but not otherwise. An iron mason would work about four times as fast as hand labour. A large stone was rubbed quicker than a small one, by reason of it allowing of more weight being put upon it, for if the man rubbing it put much weight on a small stone it would break. He had found

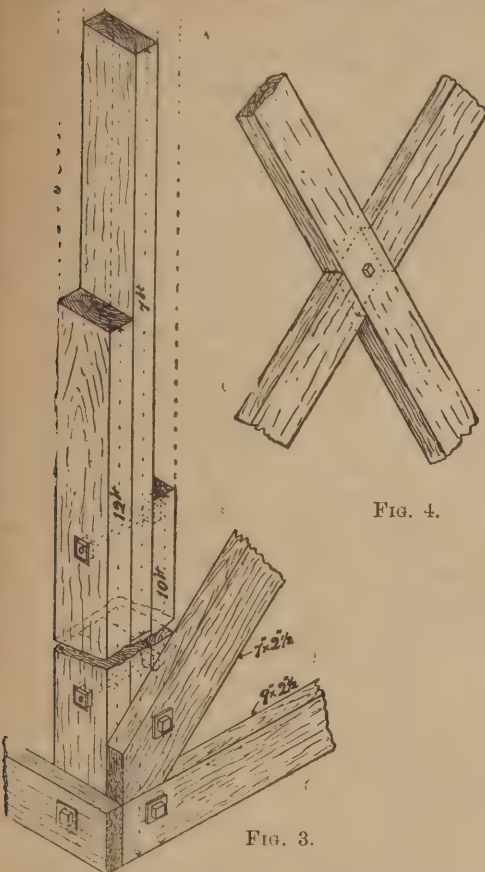


FIG. 4.

FIG. 3.

FIG. 3.—CONSTRUCTION OF CORNER POSTS.

FIG. 4.—JOINT IN DIAGONAL BRACES.

rod, starting at the bottom end of each post. The braces are then cut off to length—the two opposing sets 6 in. longer than the two adjacent sets, to enable them to run over the ends of the latter—and are then fixed in position with coach screws. The frame is next "squared" and the diagonal bracing cut in and bolted. All the pieces are correspondingly marked with a chisel, the braces then taken off, and the other sides made up in a similar manner.

When all the sides have been thus prepared and marked, the corner posts are separated into convenient lengths for handling and are raised upright on the platforms, previously levelled and bedded to receive them. The positions of the platforms are determined by the size of the crane used; that is, the distance of the feet of the back stays or length of the sleepers from the mast. The posts are temporarily braced with boards until the first series of transoms are bolted on, when they will stand of their own accord. After this the diagonal bracing is put in place, completing the first bay, and upon the top planks are laid to form a scaffold for the men to work upon in raising the next bay—and so on until the top is reached. The standard to support the crane must be arranged in position as soon as the first bay of the mast tower is erected. The beam connecting the two anchor towers is next fitted and fixed, and a temporary platform thrown across from the other tower for the men to stand on whilst hauling up the trussed girders. These latter are framed together on the ground, all the posts and braces being stub tenoned into the heads and sills. They are dropped into position as shown on the plan and bolted to the corner posts. A cross beam is fixed on the ends of the girder heads by means of tusk tenons, and four main joists are trimmed into it and taken right through to the rear beam. These carry the landing stage in front of the crane; they are half-notched where they cross the trusses. Other smaller joists are framed into the girder heads where required to carry the rear staging. This is usually composed of 3 in. by 9 in. deals, about every sixth one being spiked down. A 3 in. by 3 in. handrail 2 ft. 10 in. high, running all round the stage and framed into uprights which are bolted to the trusses, &c., will complete the structure.

that a surface was planed more cheaply in a machine, using a Hunter's "Duplex," than by being rubbed by hand. By Hunter's machine, plain work could be done for about 3d. per foot super; the machine could also be used very advantageously on round work. Mr. Paul considered chilled steel shot could be used for sawing by hand, and was preferable to sand by reason of it cutting cleaner. The shot should never be exposed to the air, or it would become rusted into a mass. Lime water was best for preventing it from rusting. The only fault about shot was that, owing to it being so fine, it was apt to get mixed with any sand there might be about, and thus, if several kinds of stone were being sawn, scour the face of the softer stone, especially in the case of marble.

Mr. G. Goodley, the chairman, in thanking the lecturer, said, he (the speaker) appreciated the system put before them that night, more especially as it was one very similar to that used by himself. He had found that in from five to ten minutes you could find what any man had done to-day, yesterday, or even months ago. The booking system was the best and the fairest one. A man who was ten hours longer over a job would generally be found to have done that amount of work, and by this system of booking allowance could be made. Also, if there were a clerical error in the office, by this system you could usually point out where the error had arisen.—Mr. Paul briefly replied, and the meeting terminated.

Engineering Notes.

A New Reservoir at Kingskerswell. Newton Abbot, has been built at a cost of about £2,034. The reservoir's capacity is 62,343 gallons and water is supplied by the Torquay Corporation from their trunk mains by meter. Mr. Rogers was the engineer for the work.

Belgian Electrical Enterprise.—A Belgian company has just concluded with the Corporation of Tsaritsin, on the Volga, a very important contract for (1) the electric lighting of that town; (2) an electric tramway; and (3) an electric railway for the transport of timber from the river to the different saw-mills in the town. The contract is for thirty-five years and under conditions very favourable to the company.

The Barrage of the Nile.—Mr. John Aird states that great progress is being made with the Nile dams. At Assouan the Bab-el-Kebir, Bab-el-Sogair, and Bab-el-Haroun channels have been closed, and the works at these important points are being vigorously proceeded with. Two-thirds of the main wall will be practically completed this season, and the masonry of the navigation channel has been commenced. At Assiout the works are so advanced that it is hoped this dam will be completed a year earlier than the contract time. About 15,000 men are now employed.

Leeds Gas Supply.—Owing to the large increase in the consumption of gas in Leeds, the Gas Committee are considering the question of erecting additional works. In that event it is more than probable that a carburetted water-gas plant will be put down. The general manager (Mr. Townsley) estimates that the cost of such a plant capable of making two and a half million cubic feet of gas per day would be about £30,000. The water gas so produced could be mixed with the ordinary coal gas. This is being very successfully done in London, Liverpool, Birmingham, Manchester, Belfast, and Edinburgh. Mr. Townsley does not anticipate that there would be any material saving in the cost of production, as compared with ordinary coal gas, but its great advantage is that the plant can be got to work much more readily than the coal-gas plant. The ordinary retorts require four or five days' stoking before they are any use, whereas a water-gas plant can be in full working order in less than a day. In a changeable climate like ours, with sunshine one day and fog the next, the benefit of this readier means of regulating the supply will be easily appreciated.

Masters and Men.

The Paris Exhibition Carpenters' Strike came to an end last Tuesday week.

The Strike of Plasterers at Scarborough has come to an end, and the men returned to work last Monday.

Strike at Rauceby.—The bricklayers employed by Messrs. Kirk, Knight and Co., in the construction of the new Kesteven County Asylum at Rauceby, near Sleaford, have struck work for an increase in wages from 9½d. to 10d. per hour.

The National Association of Master Builders of Great Britain and Ireland held their forty-fourth half-yearly general meeting last Tuesday week at St. Martin's Town Hall, London, Alderman W. Houldsworth, of Bradford, presiding. The proceedings were conducted in private. After the consideration of various trade subjects, Mr. W. Sapcote, of Birmingham, was elected chairman for the ensuing year.

The Association of Master Painters in Scotland held its annual meeting at Edinburgh last Friday, when the following officers for the ensuing session were elected: Councillor W. Fraser Dobie, of Edinburgh, president; Mr. Alexander Latto, of Aberdeen, vice-president; and Mr. W. B. Crawford, of Glasgow, re-elected secretary and treasurer. It was decided to hold the next annual meeting at Aberdeen.

Dundee Joinery Trade.—Several alterations in the by-laws for the current year have been suggested by the employers. The chief of these are in connection with the wages question. According to the by-laws at present in force, the masters are bound to pay the standard rate of wages to all the men in their employment, and they now suggest that an alteration shall be made whereby the full rate should be paid only to competent men. Another alteration they propose is that the clause giving an hour's grinding time—an hour to sharpen tools—should be abolished. The suggestions have been laid before a special meeting of the operatives, who resolved to resist any effort to alter the by-laws in the way proposed. Something akin to a deadlock has thus been reached. No notice to reduce the wages by 1d. per hour has yet been made to the operatives.

The Bristol Master Builders' Association held their annual meeting last Thursday, under the presidency of Mr. F. N. Cowlin. Mr. George Humphreys was elected president for the ensuing year and Mr. G. M. Gosling vice-president. Mr. G. Humphreys was re-elected treasurer, and Messrs. E. Walters, E. J. Neale, J. Lovell, G. Wilkins, F. N. Cowlin, F. A. R. Woodward, G. L. Poole and A. Dowling were elected members of the committee, together with the president, vice-president and honorary vice-presidents. The report of the committee, which was confirmed, stated that notices had been received from the federated building trades demanding an increase of wages at the expiration of six months and other alterations in the working rules. The masons and bricklayers' societies had also given notice for an advance of 3d. per hour. These matters would have to receive the early attention of the association. Respecting the long-debated subject of depositing priced bills of quantities with the employer upon the signing of the contract, this question had been brought by the Association under the notice of the Society of Architects, and the hon. secretary replied to the effect that as priced bills of quantities were, in the opinion of the members of his society, confidential documents, they considered that the same should be entrusted to the architect alone, holding, as he did under the contract, the position of a disinterested arbitrator between the parties, and that this was the universal custom with private clients and was even more desirable with regard to public bodies.

Builders' Notes.

Enclosing Building Hoists.—In an action heard in the Court of Session for Scotland a mason's labourer named Thomas Roche sued Messrs. Hutchinson and Grant, of Glasgow, for £100 as damages for personal injuries received through a hoist descending on him. He averred that the well of the hoist, which was used for lifting building materials, was not barricaded. This the defendants denied. Verdict for the defendants.

The Defects in the Workmen's Compensation Act were recently summed up by Mr. C. H. Green, in a paper read before the members of the Insurance Institute of Yorkshire, as follows:—(1) Absolute failure to provide for the unavoidable accidents arising in the course of employment; (2) lack of precision as to the employments included; (3) indefiniteness as to the scale of compensation to be awarded; (4) no security that the workman will receive the compensation to which he is entitled. Compulsory notification of all accidents, on systematic lines, by the employer, and supplementary returns by the insurance companies were suggested as a remedy for the fourth defect.

Scaffolding: Another Decision.—In the case of *Maud v. Brook*, heard recently in the Court of Appeal, claim was made by a widow in respect of the loss of her husband, who, when the accident occurred, was at work on two villas which were being built by the defendant at Victoria Park, Leeds. Judge Greenhow had awarded the applicant £296. The master appealed, and two questions were raised for decision—namely, what was the meaning of the words, "a building being constructed," and "scaffolding," as used in section 7 of the Act. That section enacted that the statute should apply only to employments by the undertaker as thereinafter defined, and one of these employments was "on, in, or about any building which exceeds 30ft. in height, and is either being constructed or repaired by means of a scaffolding." Mr. Ruegg (for the master) said there was no question as to the houses being more than 30ft. high. The deceased man was a plasterer and he was working on the top floor of one of the villas finishing off the wall of the landing with a "float." The houses had been roofed, and the scaffolding was still up outside, although the outside work was practically finished. The banisters had not been put up, and the evidence showed that the plasterers used boards, supported by trestles, to reach the ceilings and the upper portions of the walls. Maud's mate saw him last "floating" the wall of the landing on the top floor, and he was then not standing on any ladder or other erection. Soon after that the sound of a fall was heard, and, hurrying up, his fellow workmen found that Maud had, in some way, overbalanced himself or stepped backwards over the landing, and fallen down on the floor below. He was conveyed to the hospital, where he died from concussion of the brain. The County Court Judge found that the accident happened to Maud whilst engaged on a building more than 30ft. high, which was being constructed by means of scaffolding. Appellant said that finding was wrong, first, because plastering a house was not a work of "construction"; and, secondly, that Maud was not at work—could not have been at work—on scaffolding 30ft. high when he met with the accident, which had nothing whatever to do with the scaffolding at all.—Lord Justice A. L. Smith: "The section of the Act does not say the scaffolding must be 30ft. high."—Mr. Ruegg: "That is true; but the scaffolding must be of the kind that is popularly known by that name—upright poles, with spars or boards lashed to them, upon which other boards are placed, to enable men to work at a height above the ground. I say that boards placed on two trestles, or on two chairs or boxes, is not such a kind of scaffolding as the Act here refers to."—Lord Justice A. L. Smith: "What is a scaffold must be a question of fact in each case. We held that a painter who was repainting an old house by means of a ladder and a board reaching from a rung of the ladder

to the window was not at work on a scaffold."—Lord Justice Collins: "If a board on two trestles or on two chairs is a scaffold, where would you draw the line? Suppose a workman was repairing a ceiling on such a scaffold, and another workman tumbled up or tumbled down the stairs, and broke his leg, would the master be liable? He met with the accident while at work in, on, or about a building being erected or repaired by means of a scaffold."—Mr. Ruegg replied, if the word was not limited to a high scaffold of the kind commonly known by that term, the decisions of the Court must be carried *ad absurdum*. He submitted that the word scaffold in the Act did not cover the boards and trestles used by plasterers when finishing out an ordinary room. The defence pleaded was that the employment of Maud at the time of the accident was not an employment to which the Act applied, and he pressed the Lords Justices to allow the appeal.—Mr. Crompton, for the workman, contended that the decision of the learned County Court judge was right. There was nothing in the Act defining or limiting the kind of scaffold by means of which the building was being erected, and, therefore, a board on trestles was a scaffold. A house was still in course of erection till the walls were plastered and the banisters put up.—By a majority the appeal was dismissed, with costs.

Annual Cement Trade Report.—The year just closed has been a record one for the cement trade. In all large producing countries—the United Kingdom, Germany, Belgium, France, and the United States—supply has barely kept pace with demand. In this country, whilst the trade has had a prosperous year, the margin of profit has been reduced, owing to increased expense of production, caused by higher cost of fuel and labour. The outlook for the year on which we have just entered is bright. Stocks are not heavy, and the building trade continues healthy. Large public works will probably absorb considerable quantities of cement during the next twelve months. Exports are as follows:—1898, 325,674 tons; 1899, 353,615 tons. Whilst exports to the United States, as compared with 1898, show a reduction of 10,000 tons, the consumption in other markets has been well sustained, notably in South Africa, South America, and Canada. We quote current prices as follows:—First-class brands, 6s. 3d. to 6s. 9d. per barrel f.o.b. export str.; good merchantable brands, 6s. to 6s. 3d. per barrel f.o.b. export str. Whilst, undoubtedly, the tendency in prosperous times is to increase production, we are of opinion that the English mills during the present year have attained their maximum output for the present, although in an article like cement an increase is more quickly effected than in many other staple manufactures. One feature worthy of record in the United Kingdom trade is the increasing consumption of foreign cements in this country. Whilst accurate returns are difficult to obtain, we estimate imports into the United Kingdom for 1899 to be not less than 120,000 tons. The bulk has consisted of Belgian natural cements, which, when of reliable manufacture, can be safely employed on all ordinary building work. With regard to Germany, taking the trade as a whole, there is more disposition to meet consumers on individual orders, but for contracts ahead the mills have not so far made any material reduction off last year's prices. Throughout the year the mills of Belgium have enjoyed a good trade, inland consumption being fairly large. The artificial cement works claim to have made a record year, not only as regards the turnover, but also in price. The natural cement mills also have been favoured with an exceptionally active demand both for home and export consumption. In conclusion, the cement trade starts the year well from a statistical point of view, and we believe that the present estimated production for 1900 will not more than suffice for the trade in view. At the same time periods of prosperity like the present tend to over-production, and in time, undoubtedly, supply will overlap demand. The foregoing information has been supplied us by Messrs. Tulloch and Co., importers and exporters of cement, 4, Fenchurch Avenue, London, E.C.

Trade and Craft.

TIMBER AND BRICK DRYING.

In the matter of catalogues the American Blower Company, heating and drying engineers and contractors, of 70, Gracechurch Street, London, E.C., do not do things by halves, for they publish particulars of their goods in various languages—English, French, Norwegian, Swedish, &c. They send us catalogues numbered 115, 117, and 119. By the first of these (in English) we see that in the A.B.C. automatic dry kilns the timber is placed on trucks having steel roller-bearings, and enters at one end, is dried, and comes out at the other end, no handling being required. The air circulation is quite automatic, and is produced and controlled solely by its absorption of moisture, so that the more moisture there is in the wood the stronger becomes the circulation. The wood meets the dampest air at the commencement. The kiln is not costly to erect, and one 120ft. by 20ft. will dry about 20,000ft. (say ten standards) of pine boards daily. Exhaust steam is always used when available, but the cost of live steam is low as there are no condensers, cooling surfaces, fans, or chimneys, and no heat is wasted. Catalogue 117 deals with the A.B.C. fan system of heating and ventilation, while catalogue 119 (in French) gives particulars of the A.B.C. system as applied to brick, tile, cement, starch, soap, and other works. It may be mentioned that the firm's American works are at Detroit and its English works at Bedford; while there are branches at Amsterdam, Brussels, Drammen, Gothenburg, Hamburg, Lille, Moscow, Odessa, Paris, and St. Petersburg.

"THE IDEAL FITTER."

This is the title of the illustrated catalogue, price list and reference-book of the American Radiator Company, of 143, Queen Victoria Street, London, E.C. At first glance one might suppose it an American conception, for it is extremely neat, clear and handy, a feature which we see in most American goods. It is a peculiar fact, rather an unpleasant one perhaps for us, that we rarely seem able to make such clever, compact things as our American cousins; the English oil-can, for instance, is a bulky arrangement, soldered; while the American article has its edges turned up, or the solder is used so cleverly as to be scarcely visible. In the catalogue now under review there are some very pleasing radiators illustrated, both for water and steam, ornamental or plain. The "Colonial Wall Radiator" is built up of sections, one or more of which can be taken out without interfering with the rest in the stack. They are thus very handy. Of special radiators, there is one with a gap in it for fitting round the window, and another, in which the pipes diminish in height, to fit at the side of the staircase. Numerous boilers are shown in the catalogue; besides which there are many valves, cocks and fittings and tools used in connection with heating. At the end some useful data and tables and some "Hints for Fitters" are given. There is also a telegraph code for ordering goods. The company inform us that they will be happy to send a copy of their catalogue free to anyone interested in the heating trade.

NATURAL VENTILATION.

As in many small matters each man has his own particular system, so with the great question of ventilation "there are many Richmonds in the field;" and all this despite the innumerable efforts that have been made on every hand. There is not the slightest doubt that, where possible, nothing can equal "natural" ventilation in its truest sense—that is, say, by throwing open windows and doors and letting the fresh-air current sweep through and carry away the impurities. But this is often impossible, either on account of draught or cold. You have then to employ one of two systems for supplying fresh air and extracting the foul—the natural or the artificial system. The essential difference is that the one requires mechanical means and

appliances and the other does not, and the one that does not—the natural system—has in this respect a great advantage over the other. When the decision has been made as to which system to adopt there still remains the most important question of the position of the air inlets and outlets. It should be remembered that respired air is raised in temperature to 98.4 F., which is nearly that of the blood, besides which it has lost a fourth of its oxygen and received in substitution carbonic acid and putrescible matter. The coal we burn in our grates gives off three times its own weight of carbonic acid, in addition to sulphurous acid, and other gases, and every gas burner using about 3ft. of gas per hour vitiate the air to the same extent as three men. All these things have to be remembered when considering a system of ventilation. The products of respiration and combustion, becoming hotter than the surrounding atmosphere, naturally rise to the ceiling or roof. If you employ a natural system of ventilation, this impure air is drawn off by the extractors and a corresponding amount of fresh air is let in (by the Boyle system) at the floor level; so that the persons in the room or building breathe fresh air all the time. When the inlets are above and the outlets below, the conditions are reversed, and the vitiated air collected near the ceiling or roof is drawn down and re-breathed, which is naturally most undesirable.

The name of Mr. Robert Boyle is a very familiar one to everybody connected with the ventilation of buildings. It is now fifty years since Mr. Boyle, senior, in conjunction with Professor Faraday, first devoted himself to this subject, and his successor, the present Mr. Robert Boyle, has carried on the work with wonderful energy and success, visiting all parts of the globe to inspect the various methods in operation. The new illustrated catalogue which has been sent us by Messrs. Robert Boyle and Son, Ltd., of 64, Holborn Viaduct, London, E.C., and of Glasgow, is the most handsome of its kind that we have seen. It is a good size, and besides being well printed and illustrated on good paper, is enclosed between stout cloth covers. To quote their own words, it is published "not only as a business catalogue, but also as a practical treatise on ventilation and how it may be successfully achieved with the simplest means by an intelligent comprehension of the laws which govern the movements of air and the utilisation of the powerful natural forces which are unceasingly in operation." The Boyle system consists of a patent self-acting "air-pump" ventilator, combined with improved air inlets, the essential head or source of power being in this case produced by the difference in temperature of the inside and outside air. The catalogue is replete with authorities praising the system, and has at the end a supplement with coloured diagrams, illustrating the action of natural and mechanical methods of ventilation. There are some cases in which natural ventilation is rather unsatisfactory, but for all ordinary requirements it is an excellent system.

The Bristol Sewage Bill has been rejected by the ratepayers on a poll by a vast majority.

Sawmill Strike at West Hartlepool.—The strike of workmen employed at Messrs. Harrison and Singleton's Baltic Sawmills, which commenced last Saturday week, has been settled, the men resuming work last Friday.

Lady Sanitary Inspectors.—Two recommendations of the Public Health Committee came up for discussion at last week's meeting of the Edinburgh Town Council; one was for the appointment of two qualified female assistant sanitary inspectors, and the other for the appointment of four additional male assistant sanitary inspectors. (Of lady sanitary inspectors Liverpool has eight, Leeds two, Manchester two, Sheffield two, and St. Helen's one.) The first recommendation was rejected by the casting vote of the Lord Provost; the second was agreed to unanimously.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
Feb. 9	Rugby—Post Office	H.M. Office of Works	Office of Works, Storey's Gate, S.W.
9	New Brompton, Kent—Houses		F. Smith, Architect, Bank-chambers, New Brompton.
9	Cemaes, Isle of Anglesea—Coastguard Buildings	Admiralty	Director, Works Department, Admiralty, London, W.C.
9	Scarborough—Fire Station	Town Council	H. W. Smith, Engineer, Town Hall, Scarborough.
10	Burney—Refuge Destructor	Urban District Council	J. Gresson, Surveyor, Council-chambers, Padiham.
10	Pontarddulais, Wales—Church	Rev. W. Morgan, M.A.	E. M. B. Vaughan, Architect, Cardiff.
10	Newcastle-on-Tyne—Foundations		Leeson and Wood, Bank-chambers, Mosley-st., Newcastle.
10	Manchester—Shed	Tramways Committee	J. M. Elroy, Tramways Dept., Town Hall, Manchester.
10	Leeds—Retort House Roof	Gas Committee	R. H. Townsley, Gas Offices, Leeds.
10	Luton—Schools	School Board	J. E. Brown and Sons, Castle-street, Luton.
10	Cheetham, Manchester—Offices, &c.	Corporation	J. M. M. Elroy, Town Hall, Manchester.
12	Preston—Alterations	Corporation	Borough Surveyor, Town Hall, Preston.
12	Ilford—Sheds	Urban District Council	Surveyor, 7, Cranbrook-road, Ilford.
12	Farnham—Alterations	School Board	J. A. Eggar, Architect, West-street, Farnham.
12	Knottingley—Stores	Industrial Society Limited	C. Keyworth, Architect, Bank-chambers, Pontefract.
12	Maryport—Alterations		H. Higginson, Architect, Carlisle.
13	Eastbourne—Mortuary	Lighting & General Purposes Comtee.	W. C. Field, Architect, Town Hall, Eastbourne.
13	London, W.—Coal Office	Great Western Railway Co.	The Engineer, Paddington Station.
13	Preston—Verandahs	Corporation	Surveyor, Town Hall, Preston.
13	Gosport—Public Library	District Council	The Surveyor, Council Offices, Gosport.
14	Heaton Norris—Wall	Urban District Council	W. C. Sheard, 79, Heaton Moor-road, Heaton Norris.
14	Hull—Shelters	Corporation	A. E. White, Engineer, Town Hall, Hull.
14	Gloucester—Pulling Down and Rebuilding	Corporation	A. J. Dunn, 31, St. Michael's-square, Gloucester.
15	York—Dining Hall	Guardians	Penty and Penty, Lendal-chambers, York.
16	Luton—Buildings	School Board	J. R. Brown and Son, Castle-street, Luton.
19	Egham—Additions to Schools	School Board	J. A. Engall, Clarence-street, Staines.
19	London, E.—Pulling Down	Limehouse Works Committee	S. E. Ratcliff, Board Offices, White Horse-st., Commercial-road East, E.
ENGINEERING—			
Feb. 9	West Ham—Electric Lighting Plant	Union	Clerk, Union Workhouse, Leytonstone, E.
9	Leeds—Water Mains	Corporation	City Engineer, Municipal Buildings, Leeds.
9	Manchester—Lock Gates	Ship Canal Company	W. H. Hunter, 41, Spring-gardens, Manchester.
9	Rotherham	Rural District Council	B. Godfrey, 29a, High-street, Rotherham.
10	Padiham—Bridge	Urban District Council	J. Gresson, Surveyor, Council Chamber, Padiham.
12	Todmorden—Reservoir	Corporation	Town Clerk, Town Hall, Todmorden.
12	Edinburgh—Gas Exhausters	Gas Commissioners	W. R. Herring, Engineer, Edinburgh.
12	Southall, Middlesex—Fire Engine	Urban District Council	H. R. Felkin, Engineer, High-street, Southall.
12	Bath—Electric Lighting Plant	Corporation	G. F. Metzger, 7, Dorchester-street, Bath.
12	Hastings—Transformers	Corporation	L. Andrews, Electric Light Works, Hastings.
13	Bickley, Salop—Waterworks	Rural District Council	J. A. Davenport, 152, Hospital-street, Nantwich.
13	Doveholes, near Buxton—Reservoir	Waterworks Co., Limited	Sterling and Swann, Town Hall, Chapel-en-le-Frith.
13	Faversham—Gasholder	Gas Company	H. E. Jones, Gasworks, Stepany, E.
14	Lampeter, Wales—Waterworks	Corporation	M. W. Davies, 3, Gloucester-place, Swansea.
15	Great Yarmouth—Dynamos and Boilers	Corporation	Preece and Cardow, 13, Queen Anne's-gate, Westminster.
15	York—Converting Wiring	Corporations	C. A. Midgley, City Electrical Engineer, York.
16	Cwm Brombil, Wales—Reservoir	E. Knox	J. Taylor, Sons and S. Crimp, 27, Great George-street, S.W.
16	Lydford—Water Supply Works	Rural District Council	G. D. Bellamy, 6, Courtenay-street, Plymouth.
17	Bootle, Lancs.—Cables	Corporation	W. R. Wright, Electricity Works, Pine Grove, Bootle.
17	Glasgow—Motor Car Trucks	Corporation	J. Young, 88, Renfield-street, Glasgow.
19	Hull—Cars	Corporation	A. E. White, Town Hall, Hull.
19	Loughborough, Leics.—Reservoirs	Corporation	G. V. and F. W. Hodgson, Engineers, Loughborough.
19	Pollington, Yorks.—Well	Goole Urban District Council	J. C. Mellis, 264, Gresham House, Old Broad-street, E.C.
19	Beckenham—Bore Holes	Urban District Council	J. A. Angell, Council Offices, Beckenham.
IRON AND STEEL—			
Feb. 12	Edinburgh—Ironwork	Gas Commissioners	W. R. Herring, Chief Engineer, Edinburgh.
12	Salford—Iron and Steel Work		J. Holt, 6, St. Mary's Gate, Manchester.
13	London, W.—Girders	Great Western Railway Co.	The Engineer, Paddington Station.
14	Amsterdam—Metal Superstructures	Ministry for the Colonies	M. Nyhoff, Bookseller, The Hague.
15	Glasgow—Hand Railways		T. Young, 4, West Regent-street, Glasgow.
PAINTING AND PLUMBING—			
Feb. 14	Chester-le-Street—Painting	Guardians	B. Dickinson, Union Offices, Chester-le-Street.
20	Ossett, Yorks.—Painting		J. Whitehead, Dale-street, Ossett.
ROADS AND CARTAGE—			
Feb. 9	Birmingham—Materials	County Council	J. Wilmot, County Surveyor, Birmingham.
9	Isle of Ely—Materials	County Council	H. F. Simpson, Surveyor, Northern Roads District, Wisbech.
10	Sheringham, Norfolk—Streets	Rural District Council	Mr. Nightingale, High-street, Sheringham.
10	Pontypool—Widening Lane	Urban District Council	E. Cooke, Surveyor, Abersychan.
12	Banbury—Stones	Rural District Council	E. L. Fisher, Horse Fair, Banbury.
12	Hebburn—Street Works	Urban District Council	J. B. Renton, Argyle-street, Hebburn.
12	Uxbridge—Road Works	Urban District Council	W. L. Eves, 54, High-street, Uxbridge.
13	Wilkesden—Works and Material	District Council	O. C. Robson, Public Offices, Dyne-road, Kilburn.
13	Bury, Lancs.—Stone	Streets Committee	A. W. Bradley, Corporation Offices, Bank-street, Bury.
14	South Shields—Granite	Corporation	S. E. Burgess, Chapter Row, South Shields.
14	Fleetwood, Lancs.—Tar Paving	Urban District Council	E. Frobscher, Surveyor, Town Hall, Fleetwood.
14	Chester-le-Street—Road	Rural District Council	D. Balfour & Son, 3, St. Nicholas-bldgs., Newcastle-on-Tyne.
14	Birkenhead—Street Making	Corporation	C. Brownridge, Engineer, Town Hall, Birkenhead.
14	Birkenhead—Materials	Corporation	C. Brownridge, Engineer, Town Hall, Birkenhead.
14	Hackney—Works and Materials	Vestry	N. Scorgie, Surveyor, Town Hall, Hackney.
14	Stockport—Works	Corporation	J. Atkinson, Central-buildings, St. Petersgate, Stockport.
14	Stockport—Materials	Corporation	J. Atkinson, Central-buildings, St. Petersgate, Stockport.
17	Birmingham—Materials	Public Works Committee	City Surveyor, Council House, Birmingham.
19	Newington—Materials	Vestry	L. J. Dunham, Vestry Hall, Walworth, S.E.
SANITARY—			
Feb. 9	Ulverston—Sewerage Works	Rural District Council	C. W. Dean, 3, Benson-street, Ulverston.
12	Annfield Plain, Durham—Scavenging	Urban District Council	T. J. Trowsdale, Annfield Plain.
12	Doune, Scotland—Sewerage Works	Police Commissioners	R. M. Christie, Engineer, Dunblane.
13	Bury, Lancs.—Sewer	Sewage Committee	A. W. Bradley, Corporation Offices, Bank-street, Bury.
14	London, S.W.—Removal of Dust	Crown Estate Paving Commissioners	The Lodge, Park-square West, Regent's Park.
16	Tavistock—Sewers	Rural District Council	C. D. Bellamy, 6A, Courtenay-street, Plymouth.
28	Naas—Sewers	Council	F. Bergin, Engineer, Kildare.
TIMBER—			
Feb. 12	London, W.—Timber	Marylebone Vestry	J. P. Waddington, Court House, Marylebone-lane, W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Feb. 12	Barnsley, Yorks.—Church and Vicarage	£52 10s., £31 10s., £21	Lancaster and Sons, Church-street, Barnsley.
22	Luton—Homes	£21	W. Austin, Clerk, Union Offices, Luton.
28	Findochty, Scotland—Harbour Improvements		Clerk of Commissioners, Findochty, Scotland.
28	Doncaster—Isolation Hospital	£25, £15	F. E. Nicholson, Solicitor, Union Offices, Doncaster.
30	Belfast—Assembly Hall	£100, £50, £25	W. D. Eakin, 12, May-street, Belfast.
31	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
31	Walsall—Municipal Buildings	£100 awarded to each selected competr.	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
April 28	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
May 1	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.

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DEBENHAM, TEWSON, FARMER, and BRIDGEWATER beg to announce that their SALES for 1900 of ESTATES, Investments, Town, Suburban, and Country Houses, Business Premises, Building Land, Ground-rents, Advowsons, Reversions, Stocks, Shares, and other Properties will be held at the Auction Mart, Tokenhouse-yard, near the Bank of England, in the City of London, as follows:—

Tuesday, February 13th
Tuesday, February 20th
Tuesday, February 27th
Tuesday, March 6th
Tuesday, March 13th
Tuesday, March 20th
Tuesday, March 27th
Tuesday, April 3rd
Tuesday, April 10th
Tuesday, April 24th
Tuesday, May 1st
Tuesday, May 8th
Tuesday, May 15th
Tuesday, May 22nd
Tuesday, May 29th
Tuesday, June 12th
Tuesday, June 19th
Thursday, June 21st

Tuesday, June 26th
Thursday, June 28th
Tuesday, July 3rd
Thursday, July 5th
Tuesday, July 10th
Thursday, July 12th
Tuesday, July 17th
Thursday, July 19th
Tuesday, July 24th
Thursday, July 26th
Tuesday, July 31st
Tuesday, August 14th
Tuesday, October 9th
Tuesday, October 23rd
Tuesday, October 30th
Tuesday, November 13th
Tuesday, November 20th
Tuesday, December 4th

By arrangement, Auctions can also be held on other days in town or country. Messrs. Debenham, Tewson, Farmer, and Bridgewater undertake Sales and Valuations for Probate and other purposes of Furniture, Pictures, Farming Stock, Timber, &c.

Detailed Lists of Investments, Estates, Sporting Quarters, Residences, Shops, and Business Premises to be Let or Sold by private contract are published on the 1st of each month, and can be obtained of Messrs. DEBENHAM, TEWSON, FARMER, and BRIDGEWATER, Estate Agents, Surveyors, and Valuers, 80, Cheapside, London, E.C. Telephone No. 503, Bank.

SALE DAYS for the Year 1900.

Messrs.

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Other appointments for intermediate Sales will also be arranged.

Thursday, February 8th
Thursday, February 22nd
Thursday, March 8th
Thursday, March 22nd
Thursday, April 5th
Thursday, April 26th
Thursday, May 10th
Thursday, May 24th
Thursday, June 7th
Thursday, June 21st
Thursday, June 28th
Thursday, July 5th

Thursday, July 12th
Thursday, July 19th
Thursday, July 26th
Thursday, August 2nd
Thursday, August 9th
Thursday, September 27th
Thursday, October 11th
Thursday, October 25th
Thursday, November 8th
Thursday, November 22nd
Thursday, December 6th
Thursday, December 13th

Messrs. FAREBROTHER, ELLIS, and CO. publish in the advertisement columns of "The Times," "Standard," and "Morning Post," every Saturday a list of their forthcoming Sales by Auction. They also issue on the first of every month a schedule of properties to be let or sold, comprising landed and residential estates, farms, freehold and leasehold houses, City offices and warehouses, ground-rents, and investments generally, which will be forwarded free of charge on application.—No. 29, Fleet-street, Temple Bar, and 18, Old Broad-street, E.C.

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*The proprietors of the "Builders' Journal" have therefore pleasure in directing the attention of the profession to their new monthly publication **THE FURNISHER**, which deals exhaustively with all branches of the furnishing trades. This publication is divided into sections dealing with "Furniture and Upholstery," "Decoration," "Metal Work," "Lighting and Heating," "Pottery, China and Glass," and "Silver and Electro-plate." Each issue contains original designs and suggestions by well-known modern designers, and plates are given from time to time, with examples of the best work of some of the older schools. The journal is printed on superior paper, and illustrated in first-class style, and is worthy of the attention of all who have in any way to deal with the furnishing and decorating of public buildings or private dwellings.*

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FEBRUARY 14, 1900.
No. CCLXII.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

City Fountains.

MANY years ago, in the pages of "Little Dorrit,"

Charles Dickens said of

the British travellers in Rome, that all their opinions were borrowed and everything was artificial except the water which rushed and bubbled "from its glorious multitude of fountains." Not every city is so favoured in that particular, for a number of streams flow down from the hills, and, crossing the Campagna by the great aqueducts, so enter the town. Paris, again, boasts of a considerable number, and there are few continental cities which do not make ornamental fountains a conspicuous feature in their embellishment. Brussels has recently erected one to the memory of Baron Anspach in the Boulevard of that name, and its design is worth recording. The bust of Anspach is placed at the foot of a small obelisk of porphyry, which rises from the upper of two basins; these appear to cast water at each other up and down from many jets placed outside the rims. There is no central jet, its place being occupied by the obelisk. Outside all is a mass of flowers; the fountain seems to be embedded in them. There is no pleasanter way of enlivening and refreshing a modern city, no more satisfactory object to fill the centre of a square or of a space where four streets meet, than this. But London has little to show in the way of fine fountains. The two jets which rise in Trafalgar Square from plain unornamented basins are not important enough for the site; they barely suffice to break up the granite desert about them, and the lack of fine detail and of surrounding greenery, their want of scale, and the absence of any effective grouping in the statuary about them, provide an object lesson in the art of "how not to do it." A Parliamentary committee alone could have devised anything so tame and formal; an architect, given a free hand, could soon produce a better arrangement of this, the most conspicuous square in London. At Sydenham, indeed, a series of stately terraces lead to some fountains on the scale of Versailles, but Sydenham is a long way off. The Shaftesbury Memorial Fountain, in Piccadilly Circus, is notable for its design and a little fine detail, but, as almost invariably happens in London, the frame of the picture has not been considered, and the structure requires to be grouped with surrounding objects; the removal of one-quarter of the Circus has not improved matters, for the converging streets now end "in the air;" finally, the fountain is neglected and very dirty, a discouraging fact to the artist of the future who wishes to emulate Mr. Gilbert. An attempt was made as far back as 1862 to introduce a new material for ornamental work in London. This was the once famous Majolica Fountain, which was so prominent an object in the International Exhibition of that year. Its bright colour and the apparent insensibility of the majolica to the destructive London atmosphere were much and favourably commented upon at the

time, but the experiment was never repeated, and the structure eventually found its way to the Bethnal Green Museum, where it now stands facing the main entrance. The whole subject of street and open space designing is constantly being reopened as London is rebuilt, and in view of the general mildness of our climate and the very hot summers of recent years, the question of more fountains is one that Londoners might consider with advantage.

J. C. P.

London's New Railway Stations.

THE Central London Railway, which was to have been opened

this month, is not yet so far advanced, and if we see this welcome addition to our very inadequate methods of locomotion in London inaugurated by May next it is as much as we really can hope for. There are a goodly number of subterranean electric railways for London in various stages. Some are under construction, and some have obtained Parliamentary powers, but have hitherto failed to secure the necessary capital, while others

Southwark to Moorgate Street, and from Stockwell to Clapham, are being constructed, and it is understood that the Moorgate Street to the Angel, Islington, section will shortly be commenced. To these must be added the five projected stations for the Great Northern and City, now being pushed forward by Sir Weetman Pearson's firm, and the five on the Baker Street and Waterloo Line, whose works are prominent at Charing Cross.

The Piccadilly Circus and Brompton Railway, whose powers were granted two years ago, does not appear to have secured any financial support, and so the two stations which it would have had do not seem likely to appear as rivals to the omnibuses; nor has anything been heard of late respecting the projected deep level electric line projected by the District Railway to run beneath the existing rails from Mansion House to Earl's Court, with an intermediate station at Charing Cross. Although, however, certain of these schemes appear to be in a state of suspended animation, it must not hastily be concluded that they are therefore dead. On the contrary, some of the hoary old projects which date back some twenty years—before, in fact, the days of electrical enterprises—



COTTAGE AT CASTLE BROMWICH, FOR LORD NEWPORT. BATEMAN AND BATEMAN, ARCHITECTS. (See p. 19.)

yet are in the merely inchoate state of being just engineers' and financiers' schemes that have not hitherto been drafted into Bills for the consideration of Parliament. In the aggregate, all these various competitors with the omnibuses for the twopences and the threepences of Londoners will total up a number of new metropolitan railway stations which, until analysed, seems almost incredible. Let us, however, essay the task of detailing them. To begin with the Central London, the longest and the most important of all, occupying, as it does, the line of the main artery of traffic between east and west, from Shepherd's Bush to the Bank: there will be no fewer than fourteen stations on these four and a-half miles alone. On the Hampstead, St. Pancras and Charing Cross line, a duly authorised project whose powers have already been once renewed by Parliament, but which is not yet in course of construction, there will also be fourteen stations. On the authorised extensions at each end of that pioneer among London electric railways, the City and South London, there will be eight. These extensions, from

appear likely to be revived. Of these, the long-talked-of "North Metropolitan," whose powers were several times renewed and eventually allowed to lapse, may yet come to fruition. This speculation we are induced to indulge in on reading between the lines of certain authorisations now sought in Parliament by those new and oddly assorted allies, the Great Western and the Great Central Companies. The "North Metropolitan," originally named the "Regent's Canal, City and Docks Railway," was a pet project of that very strenuous person, Mr. James Staats Forbes. There would have been no fewer than fifteen stations on the twelve-mile course from Paddington to Limehouse, along the route of the Regent's Canal. But the many millions required from the public for the financing of that undertaking formed too big a lump for investors to find, and so the idea lapsed perhaps for others to take in hand. Apart from this problematical revival, the new London railways will give us forty-seven new stations, and not even then will London's needs be wholly met.

C. G. H.

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TO ERECT HOMES FOR DIS-
CHARGED SOLDIERS.

OUR fund was started with the object of assisting in the erection of the proposed Soldiers' Homes at Bisley, which are to form the building trades gift to the nation, and especially of enlisting the help of those who could not send substantial cheques or gifts of building materials. This special object we are glad to say is being, to a great extent, accomplished, and if the BUILDERS' JOURNAL Fund fails to reach a colossal total it will at least succeed in gathering in the small gifts of many who, in all probability, would not think it worth while to contribute direct to the central fund. In this way we shall assist what is undoubtedly one of the main objects of the scheme, viz., the inauguration of a national gift which shall be thoroughly representative of the building trades, the result of a widespread co-operative movement embracing all classes who are in any way connected with these trades.

Some Gratifying Letters.

It is very gratifying to find that the collecting forms we have issued are being largely made use of in the way we desired; that is to say, they are being circulated in offices and workshops and returned to us filled in with many small contributions. We shall be pleased to send these forms to any reader who will thus put them to good use. Here are two letters which show the admirable spirit in which the scheme is being taken up in some of the builders' workshops:—

CHELMSFORD. Feb. 7th, 1900.
Gentlemen,
I have much pleasure in sending you cheque for 38s. 6d., collected by me on the form enclosed in my BUILDERS' JOURNAL. The appeal was readily responded to by all. Wishing you every success in a cause worthy of the building trade, to which trade I feel it an honour to belong,
Yours respectfully,
R. BROOKHOUSE.
(Builders' Foreman.)

HORLEY (SURREY). Feb. 7th, 1900.
Dear Sirs,
Herewith I have very great pleasure in forwarding the accompanying amount, viz., £2 14s. 0d., on account of the fund being raised on behalf of the Soldiers' Homes, which is a most worthy one. [Wishing you every success in your undertaking.
Yours faithfully,
C. E. DAVIS,
(Clerk of Works.)

A Word to Architects.

While these encouraging efforts are being made by builders and their employes, we are bound to confess to a certain measure of disappointment at the comparatively small response which architects have made to our appeal. Some few, indeed, have responded most generously, notably Mr. H. L. Florence, F.R.I.B.A., who sent us a cheque for £10, but the profession generally has not yet taken any considerable share in this most worthy enterprise. Yet the fact that an appeal is being made to builders and contractors for gifts in kind might lead one to suppose that the bulk of the money contributions would come from the architects. Doubtless many architects have already contributed to one or other of the many patriotic funds that have been started since the war began, but we hope they will, nevertheless, feel it incumbent upon them to take some share—if only by sending a few shillings to the BUILDERS' JOURNAL Shilling Fund—in a work which is so closely identified with their profession. Are there not among the younger men—the assistants and students—many who might, with a little personal effort, materially swell the fund by collecting shillings from their friends and associates? Hundreds who would not take the trouble to send off a donation by post would willingly give a shilling if asked for it.

The following list of subscriptions includes all sums received up to last Monday afternoon:—

THIRD LIST OF SUBSCRIPTIONS.

	Shillings.
Previously acknowledged ...	1,577
Per A. J. Croughton, Sabine Road, Lavender Hill, S.W.:—	
A. J. Croughton...	1
M. Sim ...	1
A. F. Norris ...	1
Vickers Beardshaw ...	1
William S. A. Emden ...	1
T. Wrenston ...	1
	6
Per A. G. Bridger, Guildford:—	
H. R. ...	1
A. G. B. ...	1
T. H. ...	1
A. G. S. ...	1
A. G. ...	1
E. G. ...	1
W. Edwards ...	1
J. Soutter ...	1
W. D. ...	1
E. Soutter ...	1
	10
Per W. R. B. Richardson, Cromwell Road, Peterborough:—	
William Boyer ...	2
W. R. B. Richardson ...	1
A. W. Wilson ...	1
Percy G. Crawley ...	1
George Frisby ...	1
A. Noble ...	1
James Hicks ...	2
	9
Per T. Mills, Clerk of Works, 60 and 62, Regent Street, W.:—	
T. Mills ...	1
J. S. Johnman ...	1
James Scott ...	1
	3
Amicus Hominum...	1
Per George Henderson, collected among the staff of Messrs. Bradshaw and Gass, F.R.I.B.A., architects and surveyors, Silverwell Street, Bolton ...	44
Per F. Vause, Queen's Road, Newcastle:—	
A. D. Turnbull ...	2
F. Vause ...	2
	4
Per R. Brookhouse, Baddow Road, Chelmsford:	
R. Brookhouse ...	2
Hy. Potter ...	10
W. Seeley ...	2½
F. Wells, jun. ...	5
J. Hunt, Stanford ...	1
J. E. H. ...	2
Mr. Perkins ...	1
F. Barber ...	1
S. Baker ...	1
E. Brand ...	1
J. Palmer ...	1
H. S. Hunwick ...	1
A. Mabson ...	1
G. Golding ...	1
J. Pritchard ...	1
H. Johnson ...	1
A. Phillipson ...	1
	33½
Per C. E. Davis, Clerk of Works at Messrs. Lanston Monotype Corporation, Limited, Works, Salfords, Horley, Surrey:—	
J. S. Heyman ...	10
J. A. Heyman ...	5
C. E. Davis ...	5
Mrs. Davis ...	1
H. Davis ...	1
G. Shoubridge ...	1
W. Penfold ...	3
H. Holland ...	1
T. Webber ...	1
W. Sawbridge ...	1
A. E. Goldie ...	1
J. Bailey Carpenter ...	1
Mr. Brackpool ...	1
W. Sells ...	1
Robert White ...	1
J. Holland ...	1
C. Sholebridge ...	1
J. Hentley ...	1
A. Penfold, sen. ...	1
E. Richards ...	1
E. S. Carey ...	1

	Shillings.
E. Crate ...	1
J. Duffield ...	1
A. Sollis ...	1
J. Spreadboro ...	1
J. Shaw ...	1
P. Bothrig ...	1
E. Hucking ...	1
W. Humphrey ...	1
W. Barbary ...	1
G. Tickner ...	1
J. Barber... ..	1
W. Worsell ...	1
C. K. Bilchley ...	1
F. Peters... ..	1
	54
Per Messrs. Woodhouse and Willoughby (Manchester):—	
J. H. Woodhouse ...	5
G. H. Willoughby ...	2
F. Ward ...	1
O. C. Mather ...	1
O. Race ...	1
C. N. Taylor ...	1
B. S. D. ...	1
L. G. Pearson ...	1
H. Hill ...	1
	14
Per H. Townley Sugden, F.R.I.B.A. ...	6
Student (Plymouth) ...	1
	1,762½

Other Contributions.

We published last week a full list of contributions in kind, for which promises had been received at the offices of the Executive of the Building Trades' Gift. Just as we go to press we receive from the chairman of the executive the following further list, showing that a large number of additional contributions have come in since the publication of our first list. Notable among these is the very handsome donation of 750,000 stock bricks from Messrs. Eastwood and Co., Lim. This, we understand, constitutes the whole of the stock bricks (facers excepted) wanted for the whole of the buildings.

FOR THE ENTIRE SET OF BUILDINGS.
Messrs. Eastwood and Co., Limited.—750,000 Stock Bricks for the whole of the buildings.
Messrs. Pilkington and Co.—Asphalte Paving under floors throughout.
FOR INDIVIDUAL SECTIONS OF THE WORK.
Messrs. W. H. Lorden and Son (Upper Tooting).—twelve Window Sashes and Frames.
Messrs. E. and C. Braby.—1,000 feet super. of Opal Tiling.
Messrs. Dent and Hellyer.—Sanitary Fittings for one Home.
Messrs. Stephens, Bastow and Co. (Bristol).—forty Doors.
The Sub-Wealdon Gypsum Company (Robertsbridge, Sussex).—25 tons S rapite Plaster.
Messrs. Fredk. Braby and Co.—1,600 square feet of zinc roofing.
The Poole Steam Joinery Works (Poole).—The architrave mouldings for one Home.
Messrs. J. and F. Gridley (Woking).—The Slate battens for three Homes.
Mr. B. E. Nightingale and Workmen.—Staircase for one Home.
The Lift and Hoist Company.—A service Lift.
Messrs. Durrants' Gully Company.—Twelve Patent Road Gullies.
Messrs. J. W. Falkner and Son.—Forty Doors for one Home.
Messrs. Cartland and Sons (Birmingham).—Four sets swing centres.
Messrs. W. W. Howard Bros. and Co.—£25 worth of wood materials.
Messrs. McTear and Co. (Belfast).—Roofing felt for three Homes.
The Festiniog District Slate Quarry Proprietors Association (Merioneth) (Per Mr. John George Ashmore).—10,000 Portmadoc Slates.
Kensington Blind Works.—Outside Blinds for one House.
Messrs. Malcolm, Macleod and Co.—1,000ft. of granite paving.
Messrs. Burt and Potts.—Metal Casement Windows for ground floor of Recreation House.
Mr. Thomas Faldo.—Vertical Damp Course for three Service Blocks.
Messrs. Burke and Co.—Tiling for varandahs and connection corridors.
Mr. John Marsland.—Six Dwarf Cupboards.
The Patent Victoria Stone Company.—100 feet cube Victoria Stone for entry steps.

Altogether it is evident that the members of the building trades are determined to make their special gift one of the most noteworthy and admirable of the many demonstrations of patriotism which the South African war has called forth.



"THE HOMESTEAD," WOODBOURNE ROAD, EDGBASTON. BATEMAN AND BATEMAN, ARCHITECTS.

Men Who Build.

No. 58.

MESSRS. BATEMAN & BATEMAN.

THERE are surely very few architectural practices in this country which can boast such long established traditions, and so remarkable an ancestry, as does the distinguished Birmingham firm whose work is the subject of this article. Indeed, before ever Birmingham gave promise of swelling to any such importance as now attaches to it, and before any conjecture could be formed of its present growth in culture and commercial activity, or of its attaining the importance and notoriety which now attaches to the city, the name of Bateman was, and has remained, one of the most conspicuous in the architectural history of the place. For three generations the mantle of the father has fallen in succession upon the son, and from generation to generation the traditions of the firm have been modified with the changing ideals and needs of the life of the time, till in the work of the present firm we may observe just that analytical, virile, inceptive attitude towards architecture which is at once the distinguishing quality of the best inspired impulses in the applied arts of the present day, and in diagonal antithesis to the tradition-worship which held all practitioners of architecture enthralled scarcely so long as sixty years ago. How far back reach the traditions of this firm, and of how modern a growth is Birmingham as we now know it, is vividly brought before the mind by many reminiscences of the conditions under which the early work of the firm was done. Thus it is on record that at the time Mr. Joseph Bateman, the grandfather of the present acting representative of the firm, began to establish the practice, the site of the old town hall and present art gallery (which in the first steps of a picturesque decay seems to the casual visitor to be one of the old landmarks of Birmingham) was, with its vicinity, laid out in meadows which had a local celebrity for the rabbits to be taken there. It is said that Congreve Street, lying behind the art gallery, owes its name to this old association of the place. Even the present senior partner of the firm, Mr. John J. Bateman, who still takes an active

part in the business, can remember how in the early days of his professional career he was once employed in assisting to do certain work that had been occasioned by the damage wrought by the mob in Birmingham at the time of the Chartist agitation.

The illustrations appearing in these pages show refinement, reserve and a great resource and enthusiasm in their design, and include public buildings, business premises, mansions, small houses and cottages, in all of which these same distinctive characteristics of enthusiasm and imagination and unimpeachable good taste are manifested. Mr. Charles E. Bateman, F.R.I.B.A., the junior member of the firm, with whom, as acting partner, the firm's designs are now gradually becoming personally associated, is reading a paper before the Architectural Association next March upon small houses, and no doubt we may then have an opportunity of examining a type of plan to which the whole profession has, of late

years, given a great deal of attention, and in the management of which Mr. Bateman has been particularly successful.

The three views of Vectis Lodge, and those of the Gable House and the cottage at Castle Bromwich are interesting, if not the most characteristic specimens of his work. A small house, as is well exemplified in Messrs. Bateman's designs, is—its inside. It may truly be said it begins and ends with that. An elevation which arises from a compact and convenient plan, and which accentuates the position and uses of its two or three reception rooms, will require little but a tasteful choice and usage of material, and a slight accentuation of predominant features to give it a finished appropriateness and the charm of perfect fitness which, in a small house or cottage, no architectural "forms" or accessories can dignify or embellish. The design of a small house is only to be presented by carefully detailed plans



THE GABLE HOUSE, KINGS HEATH, WORCESTERSHIRE. BATEMAN AND BATEMAN, ARCHITECTS.



VECTIS LODGE, EDGBASTON. BATEMAN AND BATEMAN, ARCHITECTS.

which show ingle-nook, seat, dais, cupboards, and exemplify all the minute forethought which must be expended in fashioning a small house which is to be lived in without the great discomforts of a small house. In a mansion, or a large house, entirely other issues are to be considered, but in a small house there is little more to be solved when the great difficulty of convenience and compactness has been vanquished with success. For this reason internal perspectives cannot do justice to such designs, even if the distortions incidental to the method are nullified. If a small room is perfectly convenient it is essentially beautiful, unless marred by bad colour or decoration, but neither perspective drawing nor photograph can give an inkling of this refinement of convenience which constitutes the true excellence of a design; what the drawing and the photograph succeed in conveying and idealising is the picturesque

and bijou qualities of the building, which are precisely those qualities which mar the efforts of those who design small houses, and are such as should make every sensible person extremely cautious and distrustful of having an architect's small house fobbed off upon them. There is much to be said on all scores, both of science and art, against the ordinary British middle class family abode:—a hall door and a bay window; a square drawing-room and a square dustbin; a passage leading from the drawing-room to the dustbin, and a smell of cooking in all three; but on the other hand there is a commendable sturdy lack of sensibility in this British abider, and his distrust of a certain impossible dandyfied elegance in the small houses of many of our architects is eminently healthy, and the instinct is eminently salutary for the morals and stolid traditions of the nation. After all, people live their lives as fully in a small house as in a mansion; indeed the realities of life—its tragedy, pathos, heroisms and full sweetness—are not so commonly the experiences of the affluent and independent as of those who are popularly considered less fortunate. Nearly all small houses are tricked out in a way which might perhaps be considered reasonably fitting in a Kensington flat "to be let" for "the season," but how are we to associate the dignity attaching to a home, and the full sentiments of human life with its joys, sorrows, and mysteries, with surroundings such as would cause the ordinary woman to throw up her hands and exclaim, "*Oh! how sweetly pretty!*"

It is not to be understood that these remarks have any particular reference to the work of Messrs. Bateman and Bateman. Indeed, as the practitioners of this phase of architecture incline, Messrs. Bateman and Bateman are distinguished for simple unaffected plans. It is, however, almost inevitable in a small house where the few features have a special prominence and call for special treatment, and the actual smallness of the various parts must be disguised as far as is possible, that it should be extremely difficult to keep a uniform scale throughout the building without breaking it up and procuring a *bijou* effect, which, when strongly marked, is much to be depreciated.

There is one experiment which Messrs. Bateman have made of late years which is deserving of wide consideration, and which, if

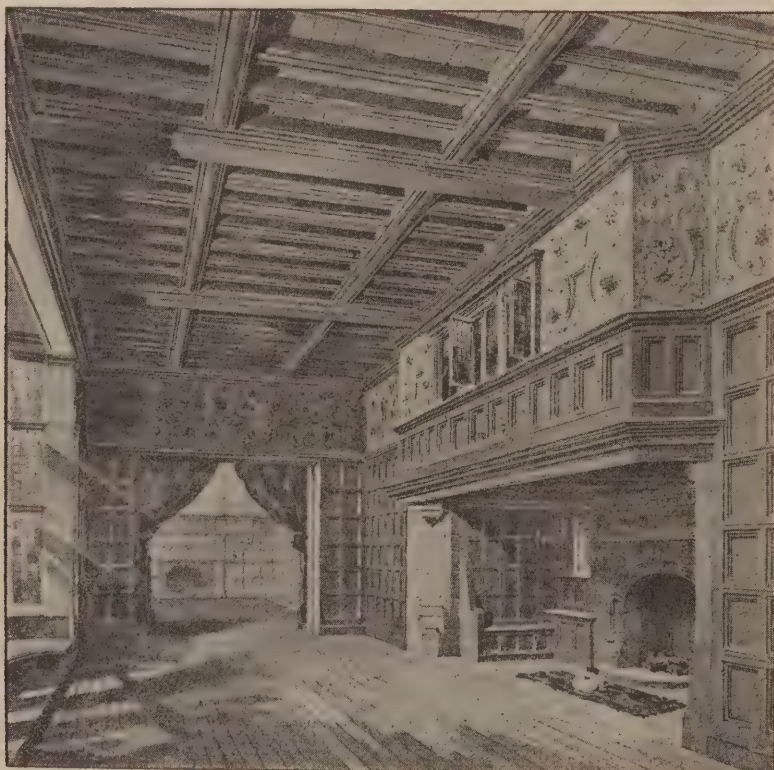
their examples should be followed at all generally, will be likely to arouse a good deal of theorising and debate in professional circles. The circumstances under which it is rightly applicable, however, do not very commonly arise. We refer to the use of old material in a new building. Some years ago an old mill was pulled down at Castle Bromwich, near Birmingham, and at that time Messrs. Bateman holding a commission to build a block of two small houses on Lord Bradford's estate hard by, and the design having the general



VECTIS LODGE, EDGBASTON. BATEMAN AND BATEMAN, ARCHITECTS.

character of a cottage, they secured the sound bricks from the *débris* of the mill and built the houses with them.

The bricks were old, and were the ordinary bricks obtainable at the time the mill was built, and what were the weather sides and ends of the bricks as laid in the mill do not appear in the walling of the cottages. To what is due the unquestionable charm of colour, and, more particularly, of texture, in Messrs. Bateman's building, it would be hard to say. It is certainly not due to any special quality of colour or substance in the bricks, which were originally of that mottled salmon red and grey which is generally associated with common bricks and is universally tabooed for facings when any choice can be made. The success of the walling must chiefly be due to the texture of these bricks. They were originally rough bricks, and from handling and being cleaned of mortar with the trowel, have been made rougher again, although the bricks laid as facings are always sound and square. Messrs. Bateman have had them laid with a wide white flat-pointed unstruck joint, and the result must have satisfied their most sanguine conjectures. Judging from this building, which is finished with Bath stone copings and dressings, any architect may avail himself of old brickwork with perfect confidence provided the design does not demand a smooth and equal texture in the walling, and sharp arrises. That bricks may be used thus in buildings quite other than those having the character of cottages is exemplified by the premises of the Birmingham Guild of Handicraft, in which Mr. Arthur Dixon, whether in imitation or of his own initiation, has used bricks from the walling of a demolished building with equal success, if not with the peculiar appropriateness which marks Messrs. Bateman's design. It should here be remarked, lest the reader should get an impression that the use of these old bricks produces an effect of old brick walls in the new building, that such is not in any way the case. It is possible that in fifty years such brickwork might impress the beholder as being a hundred years built, but in neither of the designs referred to is the part of the



INTERIOR, VECTIS LODGE, EDGBASTON. BATEMAN AND BATEMAN, ARCHITECTS.

freshness of the building disguised, nor can the method be considered economical except under particular circumstances. It may be mentioned that Mr. Bateman and his son have now made their home at Castle Bromwich in one of these same houses.

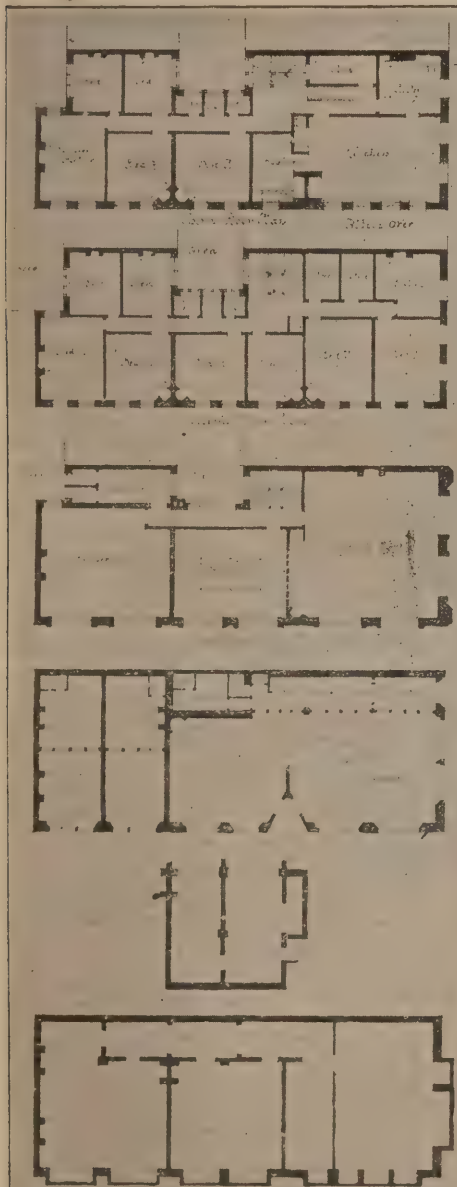
While mention is being made of Castle Bromwich, a word may fittingly be said of the church. In this connection Mr. Charles Bateman made an incursion into archæology which must have put local chroniclers to the blush, and which certainly added a valuable chapter to the history of the locality, and forms an interesting note to what we know of church restoration and adaptation in the last century, or to be clear of ambiguity—in the eighteenth century. To state in a few words what is set forth at length in his illustrated monologue on Castle Bromwich Church, he discovered, and was finally able to reconstruct in plan and section, a wooden church with oak pillars and half-timbered walls which was cased and enclosed by the somewhat gloomy Renaissance church, and which had remained completely lost and unknown. It must seem an extraordinary fact that though complete and in actual existence little more than a hundred and fifty years ago, there was no record of what had become of the old building, and its existence was entirely unknown until Mr. Bateman's exhaustive survey revealed these curious and interesting facts.

Some of the earlier buildings erected from the designs of Mr. J. J. Bateman are the Birmingham workhouse; the Manchester and Inns of Court hotels, London; the Church of the Messiah, in Broad Street, Birmingham; St. Cuthbert's Church, Winson Green; and churches at Tettenhall Wood and Water Orton. For the Corporation of Birmingham he designed the branch free libraries of Gosta Green and Deritend and the fish market; and for the Corporation of Dudley the free library, school of art, and art gallery in that town. At Rugby the George Hotel and Club House, and additions to the school and masters' houses for the late Dr. Tate, were erected from his designs, and at Leamington a bank. Of buildings in Birmingham may be mentioned Queen's College; Messrs. Hyam's and Messrs. Osborn's premises in New Street, 57, Colmore Row, and Church Street; the Quadrant; Swan Hotel, shops, and Messrs. Turner's premises in Worcester Street; the Hockley and Balsall Heath dispensaries; and a large number of manufacturing premises. In domestic work he is represented by Stechford Hall, Gilbertstone; Ashwell Hall, Oakham; and numerous houses round Birmingham and in the country. Some of the above works were carried out in conjunction with Mr. B. Corser.

Since Mr. C. E. Bateman joined his father the following works have been executed:—Messrs. Hinks' premises in Charing Cross

Road, London; The Cedars, Calthorpe Road, Edgbaston; No. 3, Cannon Street, for the "Birmingham Daily Post"; 154, Great Charles Street; a colony of houses at King's Heath; Brass Foundries, Constitution Hill and Leopold Street; premises in Cannon Passage; Glass Works, Stourbridge; the Birmingham District and Counties Bank, Broad Street; gun factory for Messrs. Westley Richards and Co.; The Homestead and Vectis Lodge, Edgbaston; and houses at Barnt Green, Coventry; Hampton-in-Arden; Abergavenny, and Langham, Oakham; also decorations, fittings, tablets, &c., in King's Heath; St. Mary's, Birmingham; Water Orton; Dunston; Stoke; Salkeld, Derby; Walsall; and other churches.

The Dover Works.—The first block recently laid in connection with the Government defensive works at Dover Harbour by Messrs. Pearson and Sons, the contractors, weighs forty tons and is one of the immense blocks of stone and concrete being manufactured by them on the Stour marshes, outside Sandwich. Those desolate flats are now occupied by the contractors, who have laid down a special railway and got together a huge plant, utilising the wastes of shingle and the unfathomable mud of the mouth of that sluggish river as the raw material for the concrete.



The Cannon Street Hotel Birmingham.



ARCHITECTURAL ASSOCIATION.

WORKING CLASS DWELLINGS
IN BLOCKS.

By THOMAS BLASHILL, F.R.I.B.A.

At a meeting of this Association held last Friday evening at No. 9, Conduit Street, Regent Street, W., Mr. G. H. Fellowes Pryne, the president, in the chair, the following gentlemen were elected members: C. Brett, D. A. Forster, W. T. Loveday, H. Redfern and J. G. Walker. The president said he hoped that members were competing for the prize for measured drawings offered by the Architectural Union Company, which some time ago Mr. Arthur Cates had announced, at the request of the company, would be withdrawn unless more interest was taken in it. The committee of the Association then had requested that it would be of use to have a subject suggested. This had now been done as an alternative subject for those who might not have already prepared drawings, and this suggested subject was a study of four tracery windows illustrating the development of tracery, consisting of a half interior, including wall arching and a half exterior of each window drawn to a lin. scale showing the jointing, full size details to be given in each case and the original measured sketches to be submitted. Mr. Thomas Blashill then read his paper on "Working Class Dwellings in Blocks" as follows:—

The invitation to read this paper recalled to my mind an occasion long ago when the Association devoted an evening to the same question. On November 13th, 1863, Mr. H. A. Darbyshire, who was then and afterwards largely concerned in this kind of work, read a paper "On the Construction of Dwellings for the Poor," and I, being then the immediate past President, took part in the discussion. Mr. Darbyshire, who gave us much useful information, began by saying that the subject was full of interest, and in skilful hands might be treated with novelty, but, as it had been so much discussed, he had little hope of giving additional information or enlightenment in the quarter of an hour which he proposed to occupy with his paper. One reads this with a melancholy interest after an interval of six-and-thirty years, during which, in spite of the work done by the author of that paper, and in spite of all that has been done by societies, by private individuals, and by the public authorities, the housing question is even more than formerly a matter of serious concern.

There are many well-meaning persons who shudder at the mention of a block or barrack building, desiring to see our working classes housed in two-storey cottages behind gardens, leafy, floral, and rustic fenced. In theory I agree with them, but the practical man must recognise that when the middle class has taken so kindly to "mansions" or "flats," it would be waste of time to argue against the housing of a working-class family in a "dwelling" situate in a block.

The great difficulty which faces the working man who must live near the centre of a town is the increasing scarcity of land that is suitable for him, but not capable of being used in more remunerative ways. To this must be added the increasing cost of building, and they inevitably lead to an increased outlay on rent. All we can do as architects is to exercise the most rigid economy in planning, in fittings and in finishings, with a good deal of reserve in the design of elevations. Besides this, ordinary materials and articles must be used in ordinary ways. An opportunity of designing a working man's dwelling is not the occasion for experiments which might be tried, in his absence, in the house of a colonial millionaire. This has always been the besetting sin of the designer of "model" dwellings. In some published designs, probably the best at their date, the houses were to be constructed with special bricks that would have to be laid by specially trained bricklayers; there are special drain-

pipes and special window casements, with floors of a costly and uncommon fireproof construction, finished, even in the bedrooms, with a smooth vermin-proof surface of Portland cement. Looking candidly at these designs, they do not seem suitable for working people of any known kind. The population, like the buildings, would have to be special and "purpose made." We must consider what these people are accustomed to, what they want, and what they can afford.

I suppose the bulk of the families for which new dwellings are required are now lodging with other persons of about their own class, or take rooms in houses that are let out in tenements. All that is private to them is the bare rooms. The scullery or washhouse, the closet and dust-bin, are used in common and with much less inconvenience than one might expect. The people are satisfied with such arrangements, and the families are helpful to each other. Directly you provide a complete dwelling that cuts off family from family, difficulties arise before unknown. Everything must be private and special to each family. If you imitate the old-fashioned arrangements by providing adjuncts to be used in common, extra supervision is necessary, and this is a serious item of expense.

Then points of "hygiene" not raised by the working man, not appreciated by him, to some of which he is bitterly opposed, and for none of which he will willingly pay, come into prominence. Ventilation is his horror when it takes the form of staircases exposed to the air, thoroughly ventilated lobbies, or anything that causes movement of air in or about the dwelling. These are points on which you cannot argue with a medical authority; he is doubtless right, but if you design your workmen's dwelling in every respect on his lines it will probably not be occupied by a working man. There must be some point short of absolute perfection with which a reasonable man may be satisfied and beyond which we need not insist upon forcing our ideas, however defensible they may be, upon people whose risks of starvation and of being turned into the street admit of no dispute.

In the first place, I should not be so fastidious in the matter of site, subsoil, and surroundings as a Government inspector might be in the case of a hospital or a gaol; your occupiers will not be patients or prisoners. Make the aspect of the principal rooms as good as you can and strictly obey the Building Acts and Public Health Regulations, trusting to the general outdoor habits of the people and to their common sense for the rest.

Let us assume that your block can only be lighted by windows at front and rear. It may be so designed that the plan can be repeated down the whole length of a street. It is generally better that entrance to the staircase should be at the rear. This gives the tenants direct access to the playground, and keeps off the loafers and criminals who, in certain localities, infest staircases accessible to the street. If there is a choice, it is generally better to put the living rooms overlooking the street; but upon this point, and others of the like kind, the important thing to the working man is to get a dwelling, let the aspect and the prospect be what they may.

Get into early communication with the district surveyor and the local public officers and fully explain your proposals; they will save you much after trouble and may give you sympathetic help. Do not be tempted to threaten that if they will not pass a certain arrangement on which you have set, your heart you will find lawful means of doing worse.

A block dwelling will usually consist of four square storeys with a Mansard storey in the roof. You will want 40ft. clear open space in front, and, subject to the Building Act, as much as you can get in the rear. A sixth storey would probably let well, but will require thicker walls and more open space. A lower building will hardly pay for the cost of foundations and roofs.

The ground floor level should be a foot at least above the back of the footway pavement; sometimes a half-basement is made but the front area and the whole of the open space at rear should then be sunk below the level of

the floor. Each storey will be 8ft. 6in. high in the clear. The staircase should be 6ft. 6in. to 7ft. wide for the two flights.

The floors of rooms should be made at least "fire resisting." Pugging between the wood joists would be sufficient, but all the floors in the dwellings put up by the London County Council are made of coke-breeze and cement carried by steel joists. They are thinner than wood floors, saving a course of brickwork in all walls, and we found them somewhat cheaper; but this must depend on the price of steel. Care is required in mixing the coke-breeze concrete and in applying it so as to be firmly held by the flanges of the joists, which should be rather wide. I advocate here fire resisting floors for convenience of construction as well as cheapness, but fires in these block dwellings hardly ever extend from one room to another whatever kind of floor is used. Extension of fire from one tenement to another is almost unknown. The concrete under the ground floor has a covering layer of coke breeze and cement concrete and all floors have thin floor boards nailed down close on the coke breeze after this is quite dry.

Some useful hints may be gained from the particulars issued by the London County Council a few months ago for designs for blocks on their Millbank Estate; but these must be used with discretion. The Council, having expended about £50 per head of all the persons removed from insanitary areas, stipulates that the new buildings shall be so designed as to let, without further loss to the Council, at the rents that rule in the neighbourhood. They have to pass very strict medical criticism. One result is that the tenements are made very complete in their arrangements and the rents are beyond the means of the persons turned out. I am afraid that any really good complete sanitary dwellings will get into the hands of those who are comparatively well off, and not till this class has been satisfied will the working man of small earnings have his turn.

In the competition the Council demanded through ventilation from front to rear of each tenement, no back-to-back dwellings being allowed. The staircases were to have horizontal ventilation through windows opening direct to the open air. The average area of living rooms must be 160ft. superficial, that of bedrooms 110ft. If two bedrooms were provided, one must have an area of 120ft. No living room was to be less than 155ft., and no bedroom less than 100ft. This is very good, but the usual size demanded for a living room has been 144ft. and for a bedroom 96ft., which are the dimensions given to us by Mr. Darbyshire. In many modern cottages such rooms are only 120ft. and 60ft. or 70ft., and I am not aware of any serious mischief that has arisen from these small dimensions where other things are satisfactory. No bedroom must be connected with any other bedroom, and in general these are entered from the living room.

A dwelling should consist of a living room with one or two bedrooms—sometimes a third. The inmates will be reckoned at two persons per room, and no doubt the living room will be used by night as well as by day.

Dust-shoots, by the County Council conditions, are not to be provided, but each tenant will have a dust-pail, and there will be a dust-bin in the common yard into which pails may be emptied at any time. I determined from the first to have no dust-shoots in the Council's dwellings. They are unwholesome in themselves, and they involve an underground chamber that for many days together is filled with decaying vegetable and animal matter, and is difficult to empty without nuisance. The parishes met this idea in different ways, but all fell into the idea better than I had expected, their men collecting the pails either in the yard or at the doors of the dwellings. But some architects of experience prefer the dust-shoot. Each tenement must have its own scullery and closet. Washing or drying accommodation was demanded by the Council, but not baths; and some arrangement must be made, perhaps in connection with a caretaker's lodge, by which the tenants could draw hot water for tea or for early breakfast. Food cupboards were not demanded.

Bearing in mind such conditions as these, so far as is practicable, we may proceed to consider the kind of dwelling that can be designed with reasonable expectation that it will be inhabited by the working man. Upon this point I may be permitted to say a word about the designs which were submitted in this competition. It was clearly laid down that the buildings must involve no charge on the rates, so that every outgoing which the Council would have to meet must be paid out of the rents. Some competitors showed covered playgrounds which occupied the place of rooms, and other luxuries, all very nice, were thrown in. All the designs were far too costly in plan or in elevations, or both, and for that reason none could be carried out.

The working man's dwelling is divided sharply from that of the ordinary clerk and from the "flat" by having no accommodation for a servant. It is inhabited by the family only; they wait on themselves and on each other. We may classify the usual kinds of block dwellings in this way:—

1. The self-contained dwelling, in which every part of it, with its offices, is inside its own outer door. This will be most costly to construct but the management will be cheaper.

2. The associated dwelling, in which some or all of the offices are either used in common or are, at least, separate from the living rooms and approached by the common passage or corridor. In proportion to the degree in which offices are used in common will be the expense of supervision by caretakers and of work that will have to be done at the expense of the owner. The rent obtainable will be rather less.

There is great variety in the planning of each of these kinds of tenements so as to get a sufficient number of rooms from the staircase. Neither the staircase nor the passage will produce rent, and both are costly. There is also great variety in office accommodation allowed to each tenant. This has a most important bearing on questions of cheapness and of rent.

For an example of a block of self-contained dwellings, I may take those built on the Cable Street area by the London County Council. They were designed after some previous experience which the Council had had, and they fulfil all the accepted conditions of such dwellings. There is through ventilation, the closet is separated by an open lobby from the dwelling, there are small sculleries with coppers so that the family washing may be done at home. The entrances are direct from the street, but there is a through passage on the ground floor for access to the yard, which is an element of cost. As only five habitable rooms are provided on each floor to each staircase the plan, so far, is not economical; but there is not an inch of space wasted in passages inside the dwelling. The balconies are a pure luxury, but as they are much appreciated they probably contribute something towards the rent. For economy they might be left out.

Let me say here the little I have to say about external appearance. Our earliest blocks were of four storeys only and were finished with flat roofs on which clothes were to be dried and where the dwellers on the upper floors were to promenade or to play. The clothes were said to be more dirty after drying amongst the chimneys than they were before they were washed, and the tenants complained at first that they could hear footsteps on the flat down two storeys of the building. When we began building five storey blocks the plain square elevations gave dissatisfaction, so I took a good deal of pains with the Cable Street fronts, substituting mansard roofs, varying the outline, and using bricks of different colours. They cost too much, and in later designs many devices were tried in order to get a decent appearance at a moderate cost. Some variety has been obtained by the use of cheap terra cotta bricks and in other ways, and I think that quite as much money has been devoted to the elevations as can generally be afforded. A walk down Harley Street or St. James's Palace brings home to one the question why a working man's dwelling should be made

picturesque when he does not require it and will not pay for it. It is done to please the owner and the owner ought to pay for it.

Usually in a self-contained dwelling from five to six rooms, forming two tenements, are approached on each floor from each staircase. I have seen designs in which there is a staircase to four rooms, but these hardly come within the sphere of practical architecture as applied to this question. So far as I know, the only plan of self-contained dwellings in which more than six rooms are accessible on one floor from one staircase is that intended to be carried out in the block called Gainsborough Buildings, at Millbank. This contains ten rooms per staircase, and the through ventilation, if not so perfect as in some other types of plan, is, I think, practically sufficient. The weakest point is the two-roomed tenement, which, for through ventilation, depends entirely on the entrance door opening from the staircase. This is a reason for leaving all staircase openings unglazed and for putting a fanlight, made to open, over the entrance doors of the tenement. If the occupiers persist in keeping the fanlight closed they must take the consequences. I have known them get the staircase openings closed also, and I quite think it must be worse for them; but up to this date I do not know that it has told on the statistics of death or illness in the particular buildings where this has been done. I anticipate that this plan will be cheap, as the cost of the staircase, a very expensive item, is divided amongst fifty habitable rooms, whereas the cost of the staircase in all other through ventilated plans of self-contained tenements known to me is divided between only twenty or thirty rooms—a very material difference. But, on the other hand, there is some waste of room in internal passages and so the economy of this plan remains to be tested.

It will be observed that in both these self-contained plans, that is the one on Cable Street area and this one proposed at Millbank, there are rather considerable breaks in the lines of the outer walls. This cannot be so economical as a perfectly rectangular plan in which the area is well utilised for rent-producing space. Probably a plan with nearly straight elevations, and with a depth of about 28ft. from front to back, is the most economical arrangement.

In both these plans every desirable part of the dwelling is enclosed within the entrance door, for the scullery has a copper, and a wash-house would be unnecessary. If there is a public wash-house near, it is not necessary to make the scullery so large. The closets are cut off from the tenement by an open lobby. If the occupiers close up the opening by old sacks and cube sugar boxes, the results, if any, will be duly worked out by the Registrar-General. It has not been unusual in artisans' dwellings to enter the closet from the scullery, but the regulations under the Public Health Act now prohibit this arrangement, because food is, or may be, prepared in the scullery.

A third arrangement of self-contained tenements is shown in a block that is about to be erected by the London County Council at Poplar. It may be called a gallery plan, for all the tenements are approached from galleries that extend along the front of each storey. This means of access has been adopted in many places, and the idea is tempting, as the planning is most simple. The block is perfectly rectangular, and one staircase will serve a large number of dwellings. Still, the cost of the balconies must be a considerable item. Extreme sanitarians object to the obstruction of light by the projecting balcony. If you offer to enlarge the windows they say the balcony still obstructs direct sunshine; but if in the future we are all to have all our rooms fully exposed to the sun, it is a serious innovation, and I do not think the beginning can be made with houses of this class. Many persons, however, who are just able to stand the air in the street may find that in times of storm the balconies of the higher stories are too much exposed. The Corporation of Manchester has covered a large square plot with dwellings on the gallery plan surrounding an open court, and this gives a considerable amount of shelter, as the galleries

face the court. Galleries in exposed places might have their railings lined with corrugated iron, though this would obstruct the view of the street. But the value of a view of the street from upper windows may easily be exaggerated.

So far I have assumed that the site will only permit the block to be lighted in front and in rear, but there are cases where light can be got all round. Such a case is the London County Council's block in Brooke's Market, Holborn, where the self-contained dwellings are arranged with much greater facility than can usually be done. In a square block like this there need be no waste space. Some of these bedrooms are entered from sculleries, which, however, are unusually well lighted and ventilated; they might just as easily be entered from the living rooms.

Associated dwellings vary greatly in the extent to which the common use of the offices may be carried. Both the closets and the sculleries may be detached, and so placed as to be entered from a corridor. This will prevent the access of foul air from these places direct to the habitable rooms; but if occupiers are induced to keep their solid and liquid refuse too long in the rooms this advantage is only theoretical. And if the rooms, instead of having a through current of the fresh outer air, are ventilated largely from a corridor which gets the flavour of the sinks and closets, the result may be unsatisfactory. Of these flavours, that of the sink is most difficult to prevent. Our modern closets, if managed with any intelligence, ought to be free from smell.

If the closets and sinks are to be kept clean by the tenants, there must be a separate set for each tenant, the closets, at least, being kept locked. This very much reduces the economy of the associated arrangement—indeed, it is not really "associated" if the offices are still kept exclusively for the respective tenements. There are objections to the arrangement of closets in a corridor where everybody using them is under the observation of neighbours; there are objections to closets or groups of closets being too much secluded, as they become lurking-places for rough and mischievous youth; there are objections (which may find expression in reduced rental) if a tenement is approached through an avenue of closets and sinks. If the class for which we are providing dwellings is indifferent to these considerations, sensitiveness in such matters may be expected to increase.

I will take by way of illustrating the varieties of associated dwellings the different blocks erected by the London County Council on the Boundary Street area. In Sonning Buildings four tenements on each floor consisting of thirteen rooms are approached from one staircase. All closets are detached, and are grouped together near the staircase, one being allotted to each tenement. One small scullery for drawing water, but not for working, is common to the four tenements. In Taplow Buildings five tenements on each floor, consisting of thirteen rooms are approached from one staircase. In two cases the closet and scullery is included in the tenement, which is, therefore, self-contained, and in the three remaining cases the closets are approached from the corridor, one scullery sink being common to the three.

In all these cases of associated dwellings, although as many as thirteen rooms are approached from one staircase, there is a rather large proportion of passage, and in a large part of the block there is only one line of living rooms instead of two, which is uneconomical. There is some saving in cost, but on the other hand there is, as I have said, some reduction in rental value as compared with the self-contained plan.

I should be inclined to adopt as a rule the self-contained plan, each tenant being responsible for his own dwelling. But where this would be beyond the reach of the class to be provided for, I should dispense altogether with the scullery, the housework being done in the living room. In that case the water tap, with the place for dust pail, would be in the open lobby disconnecting the closet from the tenement.

If a lower class of tenement should be required it might be on the associated plan. The group of four tenements off one staircase might have two closets only, one for men and the other for women, and one draw-off tap. People of this class—I mean families earning very low wages—do not keep perishable food in the house, and do not need a ventilated larder. The amount of dust which they have to dispose of is extremely small; if they should object to carry it downstairs, a perpendicular distance of thirteen yards at the most, to a dust-bin in the yard, I should say they do not really want a new dwelling, but ought to make shift in an old one.

Mention has been made of the provision of hot water at certain times. This great convenience was first afforded by the Guinness Trust in dwellings designed by Mr. Macartney. Many other conveniences may be suggested, some of which may be made remunerative.

I think that in addition to the common dust-bin in the yard, which should always be provided, there should be closets and urinals, which would diminish the use of the men's closets upstairs. Some kind of shed or work-room might be given where the men could do little repairs for themselves, as they do in the Rowton houses. The men would probably pay a trifle for small lockers that would hold a labourer's tools; street tradesmen, in some districts, would pay for sheds just large enough to hold a barrow with their stock during the night. In the Dufferin Street dwellings, undertaken specially for costermongers, stables for donkeys were provided. In several cases the County Council has utilised a portion of a rather large back yard by making two-storey workshops, of which the tenants of dwellings have the first chance.

With regard to washing accommodation, it will pay in highly-rented dwellings, and it may be possible in cheaper buildings, to provide a small washhouse for every five tenements, which will allow of its use by each tenant one day in the week, Saturday not being a washing day. If the washhouses are amongst the dwellings the air is often full of moisture from the steam, and the smell is unpleasant. I think it best to put them in the yard or they may be put on the top of the dwellings. In the Boundary Street area the County Council has provided one large common washhouse with all modern contrivances as well as a club-room; but you cannot saddle the poorest class of tenants with the cost of such conveniences, unless perhaps where a very large number of dwellings are built.

I have thought it best to instance, both for illustration and for criticism the designs that have been carried out under my direction by the London County Council. They have been designed under conditions of extreme pressure from various quarters. The Council has had to charge only the rents ruling in the localities in which it was building, and out of the rents has had to meet all outgoings and the sinking fund for repayment of cost of buildings and land which the Treasury very needlessly, as we think, demands. They have had to be designed under hygienic conditions imposed by Government departments that are not imposed by building Acts or carried out voluntarily by those who build or live in this class of dwellings. I have pleasure in acknowledging the great skill and energy that has been brought to bear on every detail by Mr. Owen Fleming, in charge of the housing branch of the architect's department, and his colleagues.

I should like to draw attention to the great variety there is in these plans, and at the same time to say that, so far as I know, they have in every case been found highly suited to the requirements of working men's families. This may result partly from careful administration and partly from variety in the taste of the tenants, and I think it tells against a rigid adherence to any one particular plan.

One might have hoped that on any subject connected with block dwellings valuable lessons could be learned from Continental cities, where large buildings, consisting of many tenements are the rule. But after searching the chief of these cities, particularly in Germany, and consulting many books, I am surprised at the

poor results. The favourite plan just now seems to be to put blocks or rows of workmen's flats in yards behind flats of a superior class, an arrangement opposed to all our ideas. Frequently the tenement consists of a rather large room which contains all the beds, with a smaller kitchen, probably used for sleeping, with use of a closet that serves for several occupants. Lodgers are often taken who, including washing, pay a material portion of the rent. There is a system of providing a lodger's room with entrance from the staircase as well as from the tenement, and where two such rooms adjoin they might be let as a complete tenement.

I see that when we first discussed this matter on Mr. Darbyshire's paper I insisted that it was essential for these buildings to be made to pay so as to induce capitalists to invest money in them. I see every reason to repeat that view after a further experience of six-and-thirty years, and I am afraid that, owing to the increased cost of building, this becomes year by year a matter of greater difficulty. I must leave the question of cost untouched just now. I hope, however, that the discussion of this paper may bring out ideas helpful towards the solution of the housing question, which, as regards the working population of our towns, is the great question of the present day.

The Discussion.

Mr. Fellowes Prynne, in opening the discussion on the paper, said he was inclined to disagree with the statement by Mr. Blashill as to the financial basis of the workmen's dwellings schemes; with the present prices that obtained it became practically impossible to make it a profitable speculation. The state of affairs at present was a disgrace and it had become a government question, in which the State really should make an advance. Either a revolution would take place or some definite Government action must be taken in the matter. In this way the efforts of councils and other public authorities were in the right direction. Touching the subject of separate buildings (not in long blocks), they were a very great advantage where the light could be got all round.

Mr. Mervyn E. Macartney said he felt with the president that it was very important to get light all round. Too much attention could not be paid to sun and light, more almost to sun than to anything else. He would keep blocks down as low as possible. With regard to the number of persons that should be housed on a confined area he thought the usual number was about 800 persons to the acre in most of these blocks. He preferred the staircase excluded from the inside but not exposed to the external air. As a rule the staircase was an extra living room or playground for the children, and if it was entirely exposed it would not be a very suitable place for them. He therefore thought an internal staircase with a good-sized well-hole and a door at the bottom which was not entirely closed, that was to say, which could be put up on necessity, was the best method.

Mr. Owen Fleming said he had gone down and lived for the last five years in model dwellings in Stepney and had experienced the many objections to them. There were the many distressed happenings every day in a crowded community; there was child birth and death; and when the whole family was crowded into a couple of rooms there was no interest in life. It was almost impossible to live under the circumstances. But what was to be done? There were men earning a wage not sufficient to live with; and therefore the best must be given for their money. This money had to be considered very, very carefully. Take, for instance, such a point as distance between party walls; if these were less than 30ft. apart, the other walls could be made 14in. less than under the Act. He thought this was one of the reasons why in the first plans the architects came out on the wrong side. With regard to the overcrowding in model dwellings, the London County Council had carried out two great schemes at the Boundary Street area and on the Millbank area,

at which latter they had had to provide for over 8,000 persons on roughly about forty acres. If anyone would take the trouble to go down to the Boundary Street area and stand in the central area and look around and down the radiating approaches he did not think it would occur to him as being overcrowded. He thought that viewed in the same way it would be considered that the architect had been very extravagant with his space on the Millbank area. With regard to staircases, the children did not, as far as he knew, play on them, but in the yard. There was the advantage in having an open well staircase outside the building that the smells from lower floors did not become oppressive on a hot day. He had found the architectural appearance of these buildings was appreciated by their inmates, and he was convinced of the advantage of giving some attention to their external appearance, but whatever views might be held about this point they had got to make it pay, and unless it were made to pay the design failed.

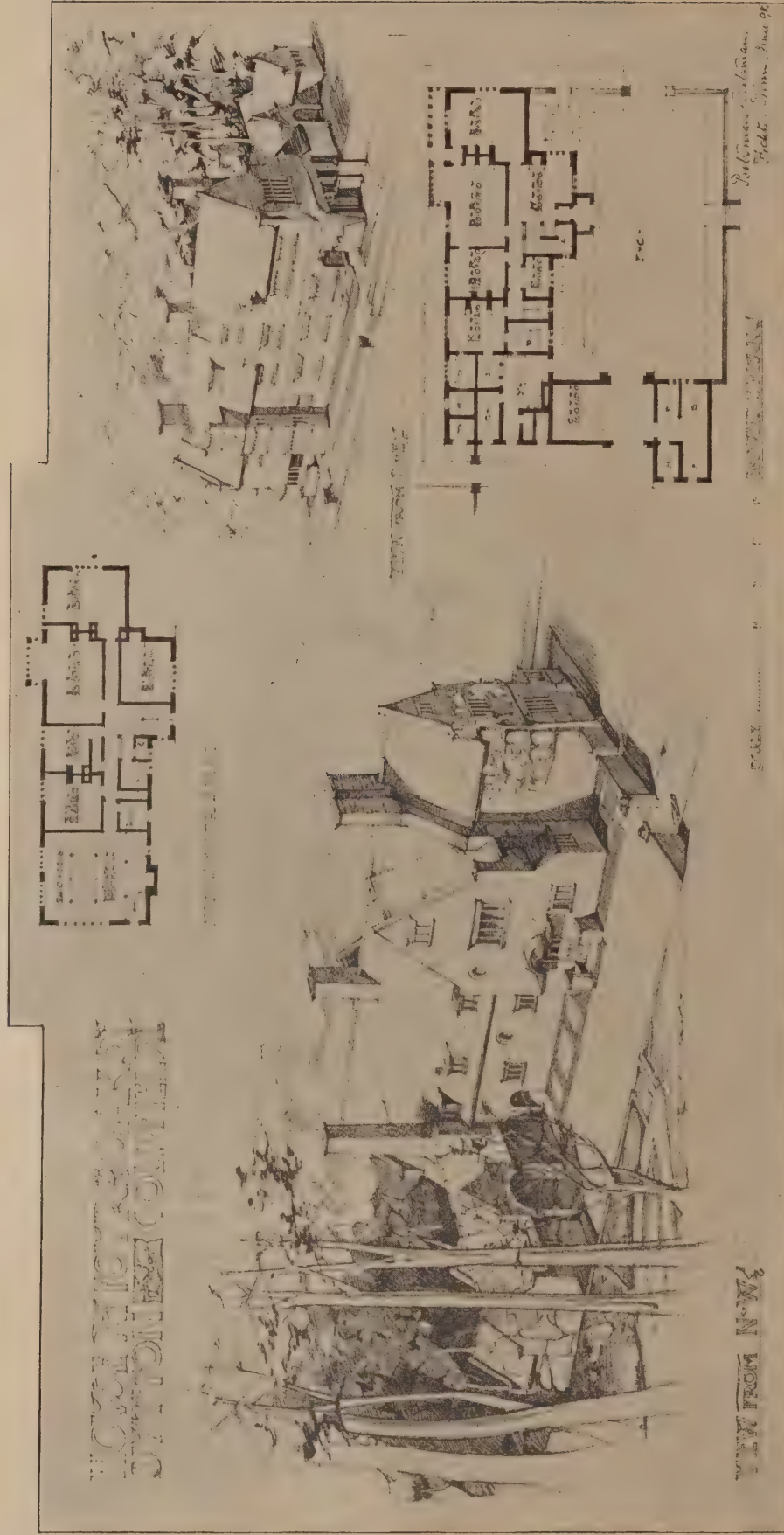
Mr. Charles Joseph thought the question as to the number of persons on the acre did not seem to be of the highest moment as long as too many were not crowded upon the floor area. The cost seemed to depend upon the way the buildings were planned; angles were a great expense, whereas building square could be done with great cheapness. Also the walls should come close to each other to avoid making them thick. Under the old Building Act six-storey buildings could be erected with only 14in. walls, whereas under the new Act they had to be built 18in., but yet the buildings erected under the old Act had not fallen down. As far as he had been able to discover there was no higher death-rate in back to back tenements than in others, and these had the advantage of avoiding external walls, which were costly.

Mr. W. H. Seth-Smith, in proposing a vote of thanks to Mr. Blashill, said the great question of finance was a burning one which would have to be settled somehow, either by running up the buildings higher and reducing the cost of the ground rents, or by Government subsidising them. He shared the views of those who deprecated the limiting of the number of persons to the area, as with the steady improvement in sanitation there was not the same necessity as formerly. Mr. F. G. F. Hooper then seconded the motion, and Mr. H. W. Pratt and Mr. F. W. Lane supported it.

Mr. C. H. Brodie said his experience was that it was very rare for a closet to be found inside the dwellings used by the lower classes, and that as they were thus used to going outside he saw no reason why they should be placed inside where they were a constant nuisance. In Vienna he was told it was quite a common occurrence for several fine suites of rooms to be on the first floor, with a separate entrance, and he thought if this were done in this country it would help to reduce the rents for the poorer apartments. Shops could be placed below in the same way wherever possible. It was a mistake to take simply the area within the boundary of the site to compare it with the number of people on it. The area really should include half the surrounding roads and open spaces. In the case at Millbank, part of the river and a portion of Battersea Park ought to be included in the area.

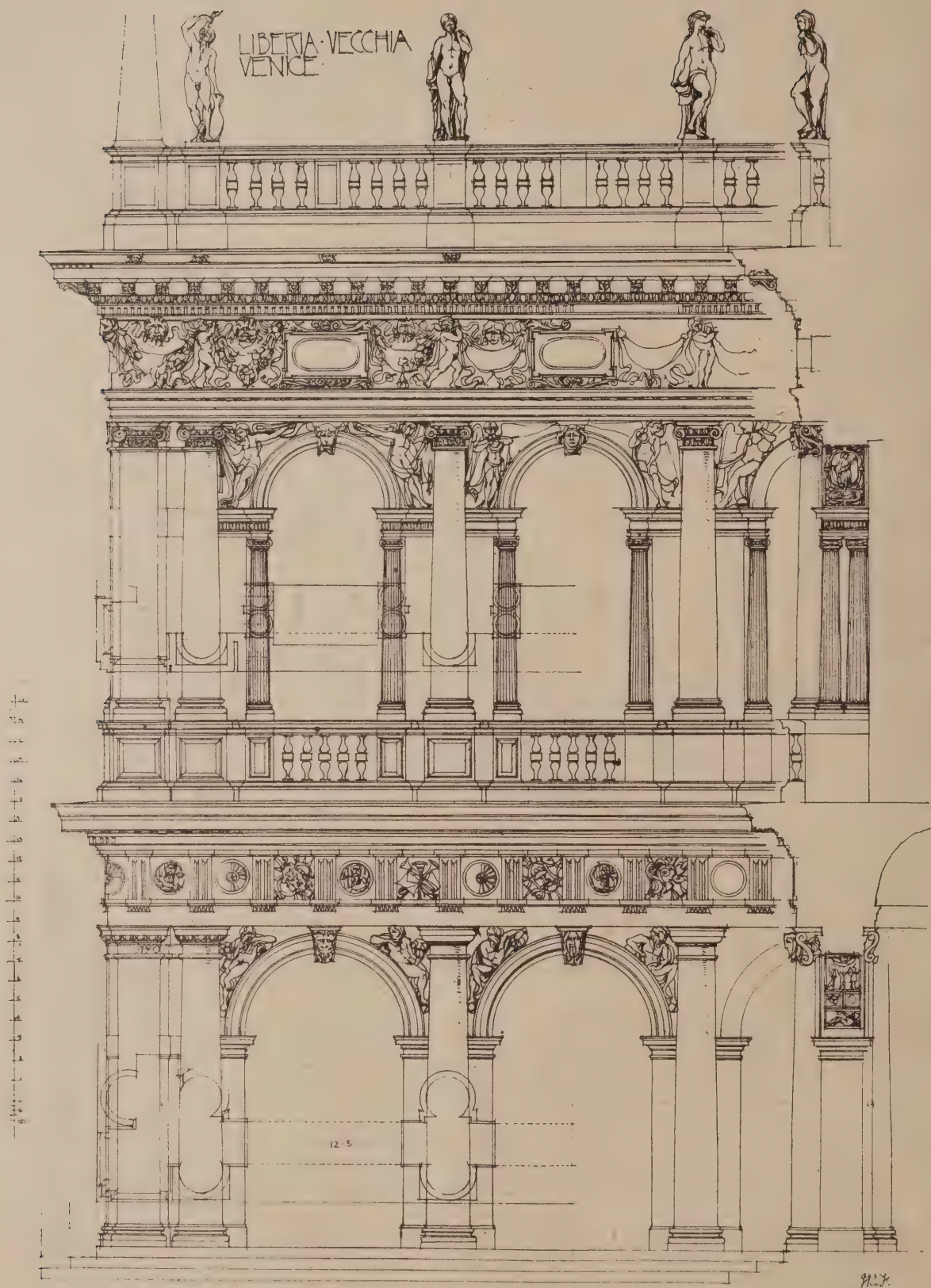
The vote of thanks was then carried by acclamation, and Mr. Blashill, in reply, said the London County Council had not rehoused upon the lines on which they had been compelled to go; they had taken in a different class of persons. A little higher rents were received from the top floors in some cases where persons preferred to be at the top. In the earlier tenements the walls were not plastered, but simply painted with two or three coats. A good plan was to keep the paper, when such was used on the walls, about half an inch from the top, by which means vermin could be prevented from finding a lodgment there. Mr. Brodie had mentioned the system of having two sets of rooms in Vienna; this also obtained in Paris; another method of cheapening the rents was to put the general dwellings behind the workmen's dwellings.

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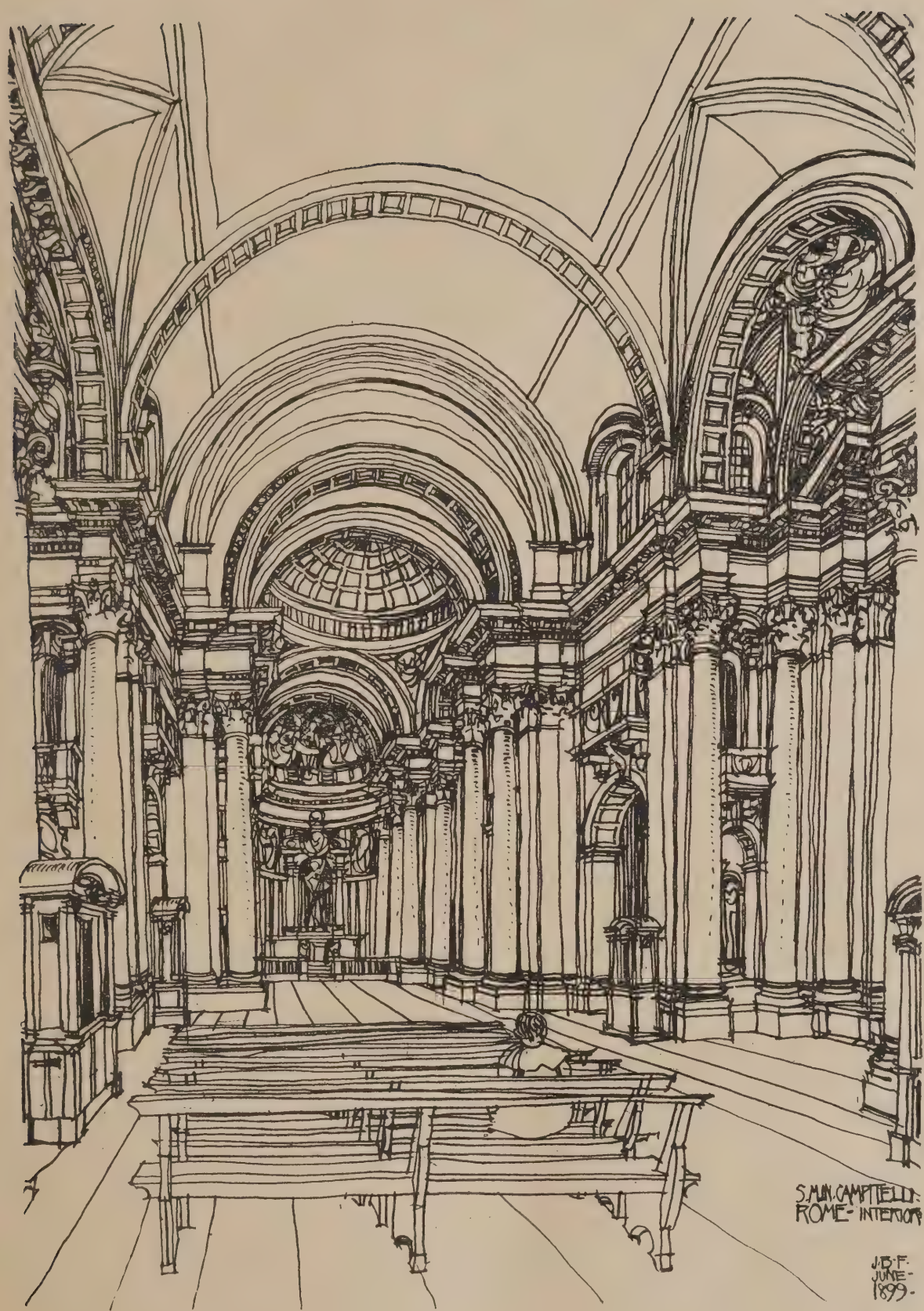


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Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Metrical System and Building.

GRAVESEND.—G. B. L. writes:—"I should be glad if you could give me some particulars of the metrical system and its application to architecture, building plans, surveys, and accounts."

In this country the metrical system is not applied to the purposes referred to. A comparison of this system with the Imperial system is, however, given in Whitaker's Almanack, and could, no doubt, be found also in any standard table book.

HENRY ADAMS.

Prison Cell Doors and Windows.

GLASGOW.—W. E. S. writes:—"I should feel obliged if you could give me the names of some firms who supply prison cell windows, doors, and other fittings. I have the new catalogue of Mr. James Gibbons, St. John's Works, Wolverhampton, but, though he supplies cell doors, cell windows are not included in his list."

Messrs. Rudge and Griffiths, The Foundry, Stafford, are makers of air grids, windows, and fanlights for prisons. Prison cell doors are made by Messrs. E. Cotterill and Co., 36, Ludgate Hill, Birmingham. In ordering doors it should be stated if a ration trap is required.

G. H. J.

Civil Service Appointments.

WANDSWORTH COMMON, S.W.—G. H. C. writes: (This reply also relates to the query of E. O., Chelsea):—"Can you inform me where I can get particulars concerning appointments under the government suitable to myself? I was articled to an architect and have spent about seven years and a half in the profession in offices and on works, and have gained several good certificates in subjects connected with the profession."

The appointments under the government for which an architect would be eligible are:—Assistant Civil Engineer under the Admiralty; Assistant Surveyor, Royal Engineer Civil Staff; Assistant Surveyor in the Office of Works; Assistant Surveyor in the Director of Works Department, Admiralty. Particulars of all these appointments, and the subjects of examination, can be obtained free of charge from the Secretary, Civil Service Commission, London, S.W.

HENRY ADAMS.

Cleaning a Stone Altar and Reredos.

HEREFORD.—R. A. D. writes:—"How can I remove stains and splashes from a Caen stone altar and reredos without scratching the surface?"

To clean a reredos and an altar of Caen stone a capable soft-stone mason should be employed. Fine glass-paper, wrapped around pieces of wood of the reverse section of the mouldings, could be used to clean the stone. Great care must be taken to avoid destroying the arisies. Do not, on any account, attempt to glass-paper any carving. To clean the carving, if there is any, spirits of salts in clear water should be used, with a rather stiff hair brush—about half-a-pint of acid to a pail of water. If much difficulty is experienced in removing the splashes, use plaster of Paris mixed with potash. This should be laid on the spots only, and allowed to remain several hours. Thoroughly brush off all dry dust before using any water. Finish by washing the whole surface of the stone with clean water.

G. H. J.

Mitering Machines.

BIRMINGHAM.—REGULAR writes:—"Which is the best kind of mitre machine for picture framing?"

For small work, the mitre cutter known as Booth's, which, or a modification of which, can be had at any large tool shop, to cut up to 2 in. mouldings, for about 12s., or of double this capacity for about a guinea. For larger work, Shute's mitre cutter (F. W. Reynolds and Co., Blackfriar's Road, London, S.E.), to cut up to 5½ in., at £2 15s., or to 7 in. at £6 10s., would be found a reliable tool. But the very best tool for these (and other) purposes, which will shave square as well as mitre cuts, is a machine which was exhibited at the late Building Trades' Exhibition by the S. A. Woods Machine Co., of Boston, Mass., U.S.A. Particulars of this tool can be obtained from the English representative of the company, Mr. J. Roberts, care of Arthur Waring and Co., Ltd., Warrington.

H. E.

Reducing Brickwork.

F. A. writes:—"What is the best method, in abstracting, of reducing brickwork of any thickness to 1½ or 1 brick?"

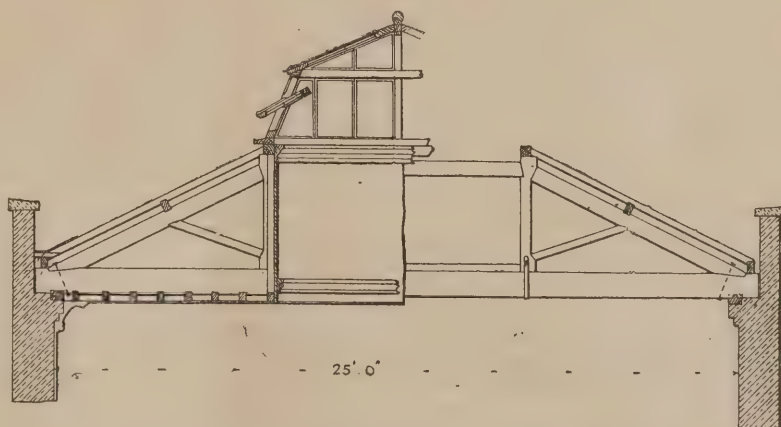
Brickwork is abstracted under two columns, 1½ B and 1 B. In entering walls of thicknesses other than 1½ and 1 B, the required amount is made up under the two columns. For example in a two-brick wall twice the amount is entered under the one-brick. In a 2½ B wall, the entry is made once under each. In this manner walls of any thickness may be abstracted. To reduce to rods the two columns are totalled. From the total of the 1 B column one-third is deducted, giving an equivalent amount of 1½ B. This amount is added to the total under 1½ B, and the result divided by 272 to give rods.

HENRY ADAMS.

Roof for Billiard Room.

GRAVESEND.—VESWOR writes:—"Can you give me a sketch of a suitable truss for the roof of a billiard room? It is to span about 25 ft. The room of course is to be top lighted and there must not be any prominent tie-beams to cast a shadow across the billiard table. I should also be pleased to have any suggestions regarding the designing of a first-class billiard room."

A suitable truss for the roof of a billiard room would be a queen-post truss, as shown in the accompanying illustration. A lantern light



DESIGN FOR BILLIARD-ROOM ROOF. BY HENRY ADAMS.

is built in between the trusses, which are arranged so as not to come over the table. The design of a billiard room depends upon circumstances, the nature of the establishment to which it is attached, public or private, the amount to be spent upon it, &c.

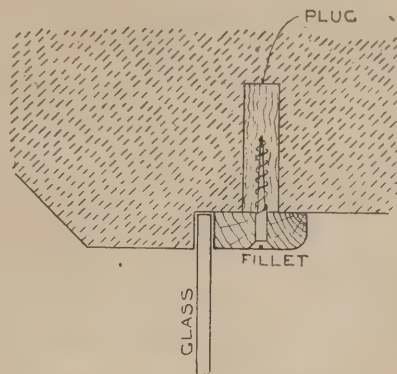
HENRY ADAMS.

Fixing Glass in Stonework.

LONDON, S.W.—W. E. writes:—"How is plate-glass secured to the stone mullions and transom of a window, without wood sashes?"

A section through a window showing head, transom and sill would be of service; also, particulars as to how the glass is put into the grooves."

Various methods have been tried for securing glass in stonework, but the method usually adopted is to build a light angle iron frame, with an adjustable fillet, into rebates formed in the stonework, illustrations of which can



FIXING GLASS IN STONWORK.

be found in any manufacturer's catalogue. Another method, dispensing with the introduction of a frame, would be to bed the glass itself into the stone rebates and secure it in position by means of iron or hardwood fillets screwed to wood plugs, as shown in the accompanying illustration.

HENRY ADAMS.

Council's Power to Appropriate Land.

HANDSWORTH.—AN ARCHITECT writes:—"The legal notes in your excellent journal for January 31st are not only interesting but useful to architects. It is well to have a clear idea as to the powers of the surveyor as servant of an Urban District Council when dealing with building plans. I have a letter stating that certain plans of mine will not be passed by an Urban District Council until about 100 yds. of my land are given up to the Council to widen a lane. They offer no compensation for the land, which is the boundary of an ancient and well-defined bridle-path leading to the parish church. Have the Council the power to take land in this manner?"

The surveyor of an Urban District Council

has no "powers" when dealing with the plans of an architect for building. He has duties towards his employers and the public, whose servant he is. Whatever powers exist in reference to such matters are vested, not in the surveyor, but in the Council. These powers are limited by law, and, it is hardly necessary to say, do not entitle them to take compulsorily any man's property without making compensation. The Council cannot make their approval of our correspondent's plans conditional upon the surrender of any property to them. If the plans are not in con-

travention of any valid by-law, the Council are bound to approve of them, and can be compelled to do so by *mandamus*. If they are in contravention of such by-law, the Council cannot effectually approve of them.

H. P. B.

How to Value Houses and Land.

SUBSCRIBER writes:—"Will you please state fully how to value houses and land? Do you deduct property tax and income tax in addition to insurance and any other local taxes, and is 16½ years' purchase generally a good basis to accept?"

The valuation of house property differs materially from that of land. The value of a house depends upon its class, position, state of repair, &c., and it will command a widely differing number of years' purchase accordingly, ranging usually from 16½rds. to twenty-five years in medium localities. The value of land depends upon whether it is (1) only of agricultural value, (2) of accommodation value, (3) of building value; commanding in the first case perhaps 3 per cent., or 33½ years' purchase of the net annual value, in the second 4 per cent., and in the third 4 to 5 per cent. Therefore, it is impossible to give as a basis a set number of years' purchase. It is not usual to deduct property tax or Schedule A income tax, for the reason that all kinds of property, landed or otherwise, are chargeable; but all other taxes paid by the owner, in addition to repairs, insurance, land tax (if unredeemed), tithe, water rate, &c., and ground, &c., rent, if a leasehold property, must be deducted. Take the following example: A leasehold house, rent £100 per annum, term forty-five years, ground rent £14, with 125 acres of freehold land, five acres of which are near a town, let for football ground at £2, the remainder at £1 per acre.

(1) HOUSE.			
Gross Annual Rent	£100		
Deduct—Repairs 5%...	5 0 0		
Insurance 1½% on cost	1 0 0		
Rates, taxes, &c.....	5 0 0		
Collection and management 2½%	2 10 0		
Empties and bad debts 2½%	2 10 0		
Ground rent.....	14 0 0		
		£30	
Net annual income		£70	
7% for 45 years=13'6 years' purchase		13 6	
Value of Leasehold.....	952 0		£952 0 0
(2) LAND.			
120 acres at £1.....		£120	
Repairs, tithe, taxes, and management		20	
		£100	
Years' purchase	30		£3,000 0 0
5 acres at £2		£10	
Deduct repairs (nil), rates, and taxes		1	
		49	
Years' purchase at 4%.....	25		£225 0 0
Total value			£4,177 0 0

E. BRAND, P.A.S.I.

Rates and Rating.

GRAYS.—R. W. writes:—"Is there any method of enforcing, from the Assessment Committee of a Rural District Council, a deduction of one-fourth, when the gross rental is under £20, beyond the expensive process of an appeal to Quarter Sessions? What ought to be the rateable value of tenements let at 6s. per week, in a district where the rates equal 8s. in the £, and the water rate 7½ per cent.?"

No, I am not aware that you can enforce any specific deduction from an Assessment Committee, as they are supposed to exercise their judgment as to a sufficient deduction for each particular case. If you dispute this judgment the only way is to appeal, and a notice of your intentions will of itself often bring about a readjustment of affairs, if the Committee plainly have a feeble defence. The rateable value of the said tenements might be as follows, although without knowing the real

facts of the case it is only possible to approximate:—	£ s. d.
Annual rent at 6s. per week...	15 12 0
Deduct—Rates=8s. in £1 £ s. d.	
on £11 (rateable) 4 8 0	
Water rate, say ...	0 16 6
Repairs, 10 per cent. 1 11 0	
Insurance, say ...	0 3 0
	6 18 6

Rateable value ... 8 13 6

E. BRAND, P.A.S.I.

Views and Reviews.

THE YEAR'S ART.

The twenty-first annual issue of this excellent reference book has just come to hand. This work is now recognised to be the most complete and standard work of its kind. With this number a series of portraits has been included of some of the more important workers in the field of Decorative Art. As the able editor, Mr. A. C. R. Carter, points out, the book has wisely not been confined for some years past simply to a record of the progress in Pictorial Art; and the Arts and Crafts Society has afforded an opportunity of showing this wider interest in the decorative arts. Mr. Edward F. Strange contributes an article on this revival under the heading "Applied Art." The volume is most handy for reference and contains information of almost every art museum, exhibition or society. Most interesting reading is always to be found in the section devoted to the Artists' Sales at the Royal Academy and New Gallery, and the Art Sales of the past year. A leading feature is made of the list of artists with their addresses and an indication of the galleries at which their work was exhibited during 1899. The very complete index enhances the value of the work immeasurably.

"The Year's Art, 1899." Compiled by A. C. R. Carter. London: Virtue and Company, Limited, 25, Ivy Lane, Paternoster Row. 3s. 6d.

ART AND THE POETS.

We so seldom nowadays see steel engravings used as book illustrations that we feel grateful to Messrs. Virtue and Co. for having re-issued in a cheap form this very charming collection of engravings and excerpts from the poets. The engravings are from pictures by Turner, Martin, Stothard, Roberts, and other British artists, some of whom were better known a generation ago than they are to day; although the illustrations are by no means of equal merit the best of them are extremely beautiful and afford a welcome relief from the ubiquitous process block. One can well believe that the compilation of this book was a delightful task for the editor, Mr. Robert Bell; his aim has been to bring together some of the choicest works of British poets, painters, and engravers. With such an aim it was scarcely possible to produce a dull or unattractive volume. But as the editor rightly says in his introduction, "the best materials may be marred in the preparation," and we are bound to say that to a certain extent that is just what has happened in the present instance. For example, what a strange and indefensible use is made on page 168 of that noble passage in Milton's "Comus" which begins:

"So dear to Heaven is saintly chastity,
That when a soul is found sincerely so,
A thousand liveried angels lackey her,
Driving far off each thing of sin and guilt."

Our anthologist has actually begun his quotation at the third of these lines; that is to say in the middle of a sentence, with the object—apparently—of so perverting the sense of the original that the lines may the more fittingly accompany a picture of angels watching over a sleeping child. This strikes us as sheer barbarism. Very little better is the way in which a passage from Spenser's "Faery Queen" has been quoted (on page 112). The two concluding lines of one stanza are followed, without any break, by the whole of the next stanza, thus effectually disguising the perfection of poetic form which belongs

to the Spenserian stanza; it would have been much better to quote the whole of both stanzas, leaving a proper break between them.

As regards the choice of poetic extracts, we are not disposed to be over critical; if to our thinking the editor has admitted much that is mediocre to the exclusion of many passages of infinitely higher quality, we have to admit that the making of anthologies is essentially a matter in which—if such a very unpoetical expression may be allowed in this connection—one man's meat is another man's poison. The only completely satisfactory anthology is that which every man makes for himself. Notwithstanding its defects, however, the book is emphatically one to be purchased and taken care of. It has been most attractively produced, and, in view of the decay of steel engraving, the opportunity of obtaining such a collection of excellent examples of an almost extinct art is not likely soon to recur.

"Art and Song." Edited by Robert Bell. London: H. Virtue and Co., Limited, Ivy Lane, Paternoster Row, E.C. Price 6s. net.

LOCAL GOVERNMENT ANNUAL.

The ninth issue of this useful little work contains many new features, including the charges for water and gas levied by the London companies; the population of the provincial unions; a complete list of all the parks and open spaces of London, with the authorities controlling them; abstracts of the fourteen Acts of Parliament affecting local government which were passed last session, and some seventy pages of short articles and paragraphs under eighteen heads, dealing with every branch of local government. This section is called "The Local Government Companion." In it we find some sixty "mems. for members and officials"; points about parish council law; how to obtain charters of incorporation and what they cost; information respecting the growth and cost of electric traction; the housing question, and where and how it is being solved; the legal decisions of the year affecting local government; the principal adoptive Acts; the laws of continental countries in regard to tuberculosis; facts about the local Government Board and its work; figures bearing upon municipal rating and finance; and many other interesting facts. The directory portion contains the names of the chief officials of every public body in England and Wales, including every department of public work, whether ordinary or special. The facts are most pithily put and so clearly arranged that any point upon which information may be required can easily be looked up in a few minutes in business hours. The handbook is not a large one, but that is not saying it is not comprehensive. Much could be added but without any particular advantages.

"The Local Government Annual and Official Directory, 1900." Edited by S. Edgecumbe-Rogers. London: "The Local Government Journal" Office, 2, Dorset Street, Fleet Street, E.C. 2s. 6d.

A HANDBOOK TO THE STUDY OF POMPEII.

It is most probable that in the future the study of Pompeii will be taken up more thoroughly by the architectural student than it has been, and already the need has been felt for a comprehensive handbook providing an introduction to the study of the remains of this town. To say that this need has been supplied by Mr. Mau and Mr. Kelsey would not be doing them full justice; for not only does the book serve the purpose of a handbook and guide, but it will be found most interesting and useful to the general reader who may never have the chance of visiting the site of this ancient Campanian town. Pompeii, of course, has always had a great fascination for the archaeologists, by whom it has been largely visited; but however interesting archaeology may be, it is only useful to the present day so far as it investigates the knowledge of the ancients and gives it to us as an aid to our art and science. From this point of view Pompeii must rank very high; it, as no other source outside the classical authors, helps us to understand the ancient world. The town was not a great one or more remarkable than its neighbours, but from this very

reason it is representative of every-day life at the time of its overwhelming, which, coming in the way it did, has preserved the surroundings of life as a whole, with all the humblest details intact. Being thus typical of the ordinary life of the time, Pompeii does not show us the noblest creations of ancient art, for these, as is most natural, are only to be found in the great centres of wealth and population, where genius would find material encouragement. It need not be feared that, as this book is interesting to the general reader, it will deal inadequately with the matters of interest to the architectural reader; the book does full justice to the architecture. Architecture need not become wearisome to lay-readers if properly treated, and although the architectural portion of the text considerably outweighs the others, the interest hardly flags for a moment. The work is a free translation from the German of Professor Mau, of the German Archaeological Institute in Rome. The work of translation has been excellently done by Mr. Kelsey, an American. In several chapters the German manuscript has been abridged, while in others slight additions have been made. The volume is well and fully illustrated, printed on good paper, and handsomely bound.

It is strange how the impression has got about that the overwhelming of Pompeii in 79 A.D. was by molten lava. The fact is that a violent eruption of Vesuvius hurled to a great height the accumulation of volcanic ash and pumice-stone that had been heaped up on the mountain by former eruptions, these coming down again upon the surrounding country. On the west side of the mountain the debris mingled with torrents of rain and flowed as a vast stream of mud down over Herculaneum; but on the south side it spread out into a thick cloud, which covered Pompeii and the plain of the Sarno. Out of this cloud first broken fragments of pumice-stone about the size of walnuts rained down to the depth of 8ft. to 10ft.; then followed volcanic ash, wetted as it fell by a downpour of rain, to the depth of 6ft. or 7ft. At Pompeii only the roofs of the houses, where these had not fallen in, projected above the surface. Although masses of flowing slag fell with the pumice-stone there cannot have been much heat, as cavities have been discovered which human forms originally occupied, showing that the bodies must have remained undecomposed long enough to allow the ashes to harden around them.

The first excavations were undertaken by the survivors shortly after the destruction of the city. It is seldom that a house is found undisturbed, and little household furniture of value has been found. Not only was furniture removed, but the excavators carried away valuable building materials as well, as in the case of the buildings about the Forum, which were almost completely stripped of their marble. The present excavations have been carried on in a most able manner, and up to the present time about one-half of Pompeii has been uncovered; but it is to be regretted that many articles of furniture and objects of art that could be easily moved have been taken to the Museum at Naples. Of course, the keeping of small sculptures in the exact positions in which they were found, as has been done in the case of some houses, necessitates extra expense in maintaining the houses locked and guarded; but it is well worth it. The most regrettable thing that has occurred in this respect has, perhaps, been in the treatment of paintings. Generally the best pictures have been cut from the walls and transferred to the Museum, while the decorative framework has been left undisturbed. In this way the effect of the decorative system as a whole has been destroyed, for the picture forms the centre of a carefully elaborated scheme of decoration which needs to be viewed as an artistic whole in order to be fully appreciated. When we consider that Pompeii probably provides the finest specimens of decorative methods of wall painting, we can appreciate the great advantage of keeping these walls intact, as is happily now being done.

Six centuries lie between the dates of the earliest and latest buildings at Pompeii, and

the architectural history of the city falls naturally into six periods, according to the styles of construction. Exclusive of wood, the principal building materials were Sarno limestone, two kinds of tufa (grey and yellow), lava, a variety of limestone wrongly called travertine, marble and brick. Bricks were used only for the corners of buildings, for doorposts, and in a few instances for columns, and occur simply as a facing for rubble-work. The bricks are generally less than lin. thick, shaped like a right-angled triangle, and were so laid that the side representing the hypotenuse—about 6in. long—appears in the surface of the wall. The styles of masonry are characteristic, and may be distinguished as masonry with limestone framework, rubble-work, reticulate work, quasi-reticulate work, ashlar work, and, in the case of columns and entablatures, massive construction. The third period of Pompeian architecture, known as the Tufa period, on account of the favourite building material having been grey tufa, was of a decidedly high artistic character. This period coincides with the first style of wall decoration—the Incrustation Style—which aimed at imitating in stucco the appearance of a wall veneered with coloured marble. The second style of wall decoration is known as the Architectural style, for in part, as the first style, it imitated a veneering of marble, not, however, with the help of slabs or panels modelled in stucco, but by the use of colour only, laid on walls finished to a plane surface; in part it made use of architectural designs, which were painted either correctly or with at least some regard for proper proportions. This style gave place to a third, or Ornate Style, which is characterised by a freer use of ornament, and the introduction of designs and scenes suggestive of an Egyptian origin. The fourth, or Intricate Style, represents, with its involved and fantastic designs, the last stage in the development of Pompeian wall decoration. At Pompeii we see accomplished in less than two centuries a complete revolution in matters of taste relating to architecture. An entirely new feeling had been developed. A beauty of contour and of symmetrical proportion found in Greek architecture had no charm for the Pompeian of the later time; its place had been usurped by a different form of beauty, that produced by the use of a variety of brilliant colours in association with forms that were intricate and often grotesque. The study of Pompeian houses is most important, for the chief sources of our information regarding the domestic architecture of ancient Italy are these remains and the treatise of Vitruvius. The Pompeian houses present many variations from the plan described by the Roman architect; yet in essential particulars there is no disagreement, and it is not difficult to form a clear conception of their arrangements.

A word must be said in praise of the useful restorations illustrated in the book. The drawings are not fanciful, but have been made with the help of careful measurements and of computations based upon the existing remains.

"Pompeii: Its Life and Art." By August Mau; translated by Francis W. Kelsey. London: Macmillan and Co., Ltd. 25s.

Heavy Failure in the Leicester Building Trade.—The Official Receiver of the Leicester Bankruptcy Court has issued a statement of affairs under the bankruptcy of George Tuffley, of Earl Howe Street, Leicester, builder. The summary shows unsecured liabilities of £11,032, and assets £632, leaving a deficiency of £10,400.

Winning Ore from the Sea.—The Hodborrow Iron Ore Company, Milloom, Cumberland, will shortly commence work upon the new sea wall that the company has in view for the purposes of winning the hematite iron ore that is lying seawards (under the tide at high-water mark) of their present sea wall, built some fourteen years ago. The new wall will reclaim about 170 acres of land from the sea, and will be 6,750ft. in length. The cost is stated to be about £220,000. Deposits giving 13ft., 24ft., 36ft., 49ft., 58ft., 70ft., 90ft., 98ft., and 102ft. of solid ore have been proved.

GAS ENGINEERING.

IN reviewing the progress made in the generation and supply of gas, the president of the Society of Engineers, Mr. Henry O'Connor, in his recent inaugural address, said that where a sufficiently large quantity of coal was required, the most efficient plan of transporting it to the retort house was by overhead railways and special self-emptying trucks. The simplifying of regenerative furnaces was advocated, and allusion was made to the saving of fuel by this system of firing and by the thorough knowledge of its principles. Some observations on sloping retorts, with their advantages and disadvantages, led to the description of stoking machinery and a simple and cleanly arrangement of shower baths for stokers was described, the same being intended to take the place of the usual plunge baths, which so rapidly become fouled. Mention was made of the advantages of coke as fuel, on account of the large percentage of carbon in it, and the great increase in the use of coke breeze was incidentally referred to. Some remarks followed upon the recovery of cyanogen from the gas, and on the different methods generally adopted for its removal in the forms of ferrocyanide of potash or soda and sulpho-cyanide. Weldon mud and precipitated oxide of iron, which are by-products of other manufactories, formed admirable substitutes for bog ore in the purification of gas from sulphuretted hydrogen, more especially with the use of oxygen, made by the Brin process, for their revivification *in situ*. There was great need of early and systematic planning in connection with successive extensions of a gas works. With regard to gas engines, the president observed that they were not sufficiently pushed by gas engineers, as they did not use them to the full extent possible in their own works, and could not, therefore, expect others to employ them for the many purposes for which they are so admirably adapted. The large size of some of the gas engines made on the Continent enabled them to be used very economically for the supply of power. A description was given of a novel internal combustion engine invented by Mr. P. F. Macallum, which had given very admirable results when tried experimentally on a small scale, and which it was predicted by experts would be capable of providing 1 h.p. per hour with only $\frac{1}{2}$ lb. of coal. Strikes among the gas workers and the cost to the various gas companies had led to the introduction of carburetted water-gas, which had now proved so useful in this country that plant for nearly 100,000,000 cubic ft. per day had been erected. The president agreed with the opinion that it was not to be feared that there would be more accidents owing to its introduction than with ordinary coal gas. The undoubted great advantages of the system and the simple nature of the process were commented on. Acetylene, which was at first thought likely to prove a rival to coal gas, had been only found useful for country houses beyond reach of mains. With regard to the Welsbach incandescent burner, a stronger mantle was advocated. This led to an allusion to the need of greater knowledge of gas matters on the part of the ordinary gasfitter, and to the suggestion that lectures should be given by gas managers and others upon the points to be most carefully borne in mind by the gasfitter and the general public.

The Dublin Master Builders' Association held its annual dinner last week, when the president, Alderman the Right Hon. Joseph M. Meade, occupied the chair. About 120 gentlemen were present.

Cartwright Memorial Hall, Bradford.—The Cartwright Memorial Hall Committee of the Bradford Corporation have agreed to allow contractors to tender for the whole, or any particular part, of the work in connection with the erection of the Cartwright Memorial Hall. Originally, tenders had to be for the whole of the work, which caused much dissatisfaction.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Beauty is truth; truth beauty."—KEATS.

The Ruskin Union.

THURSDAY last being the eighty-first anniversary of Mr. Ruskin's birthday, a meeting was held at St. Martin's Town Hall for the purpose of forming a Ruskin Union. The President, Mr. Frederic Harrison, supported the proposal to found such a union. Very few had really studied Ruskin's writings, and those who had entertained various ideas with regard to his work and character. A Union for the purpose of studying his works would, therefore, seem to be a most desirable thing. No single writer exceeded Ruskin in mere bulk of work, and perhaps no English writer even approached him in the encyclopædic character of his work. Mr. Mark Judge proposed "That a Ruskin Union be now formed." Meetings would be held for reading and discussion, and a journal of proceedings would be published. The subscription would be half-a-guinea annually, and the management would be vested in an elected council. The Rev. J. P. Fauntorpe, president of the Ruskin Society, and principal of Whiteland's College, seconded the motion, which was carried unanimously.

Some Light on Art in Austria.

IT is a common but an erroneous belief that Austria is a country in which the cultivation of art in its various forms receives special attention, and in which the artistic faculties of the people are far more highly developed than in most other countries, Great Britain in particular. The Austrian is often described as a man of essentially artistic tastes, who is born with a keen appreciation of things artistic which is quite foreign to the prosaic Englishman. There is, however (says the "Morning Post"), little justification for this estimate of the ordinary Austrian. Though Vienna has acquired considerable importance as an art centre, yet the diffusion of artistic culture in Austria is not greater than, if it is as great as, it is in England, while the Austrian Government is remarkably lax in encouraging the promotion of art and the spread of artistic education. It is stated, in fact, that Saxony is the only country in Europe where there is less State aid to the cultivation and diffusion of art than in Austria. There are only three art schools in the whole of Austria which are supported by the State. The most important of these is the Academie der Bildenden Künstler in Vienna, the headquarters of which are in the magnificent pile of buildings on the Schillerplatz. The Union of "Secessionist" Artists is an offspring of the Genossenschaft der Bildenden Künstler, which works on somewhat similar lines. The "Secessionists," or Impressionists, were dissatisfied with the prominence given to classics to the exclusion of modern art by the parent society, and they seceded to form their own organisation and open their own gallery. The Impressionists' Gallery, viewed simply as a specimen of architecture, is one of the sights of Vienna.

The Working Man and Art.

THE "Secessionists" have set an excellent example by arranging with trade unions and other labour organisations for the visit of working-men to their gallery on Sundays. The workmen are admitted in groups of twenty for the sum of twopence, and a guide is provided who explains to them in simple language the meaning of the paintings and works of art. Similar advantages are conferred by the "Secessionists" on students of all faculties from any Austrian university. But though the public enjoys every opportunity of studying the works of art exhibited in the various galleries of Vienna, comparatively little use is made of it. It is stated on good authority that 80 per cent. of the population of Vienna has never entered an art gallery, and it is certain that the majority of the visitors to

the Viennese art exhibitions are foreigners. Only a very small number of provincial towns possess art museums, and such as exist are badly maintained and poorly visited. The Emperor Francis Joseph is the greatest patron of art in Austria, if not in Europe, but, with the exception of Prince John II. of Liechtenstein, the Austrian nobility does little for the fostering of art. Considerable attention has been paid in Austria to the application of art to industry. The first step in this direction was taken by the architect Entenberger, who in 1867 founded the institution now known as the Austrian Museum of Art and Industry. The object of this institution is to train industrial manual workers, and to promote by exhibitions the appreciation of artistic handiwork among the general public. The British Consul-General in Vienna, Von Schoeller, has been foremost in promoting the excellent work done by the Museum of Art and Industry. From the foregoing it will be seen that the current impression of Austria as a great art country, and the Austrian as a zealous student of art, is entirely wrong. We, however, remember how critics, writing from Vienna, like to point out the great lack of appreciation of art exhibited by the Britisher, as if such a thing were unknown in his own country. The scriptural parable about the "mote" might well be taken to heart by the aforesaid critics.

A Doomed Church.

THE extension of the already great terminus of the London and South-Western Railway at Waterloo, recently decided upon, will clear away a portion of Charlotte Street, Lambeth,



ALL SAINT'S CHURCH, LAMBETH. DRAWN BY CHARLES G. HARPER.

a street more familiarly known as the "New Cut." With the houses and the by-streets to be demolished, the church and the entire parish of All Saints will disappear and pass out of existence. Never before has a whole parish been wiped out for railway purposes. The church is one that need not be regretted. It is only some fifty years old, built of common brick in a style fondly supposed to be Norman, and now in an exceedingly dilapidated and woe-begone condition. We give an illustration of it above.

Felu, the Armless Painter.

CHARLES FRANÇOIS FELU, who died last week, was a striking example of what a man may do even without arms. He was born in 1830 at Waarmaede, near Courtrai, North Flanders, and began to study painting at Antwerp when already twenty-five years old. By means of his feet he copied some hundreds of the best masterpieces to be found all over the world, especially in America. When painting, M. Felu leaned slightly backwards, to enable him to raise his foot to the level of the canvas. He opened the paint-box and mixed his colours without difficulty, and worked quite easily. Holding the palette by the left great toe, passed through the orifice

like a thumb, with the other foot he manipulated the brush with astonishing skill and confidence. At meals he used a knife and fork, and managed his own drinking glass. Until the last few years he always shaved himself, and never had an accident. His one grievance was that he could not gain mastery over a button-hole.

William Ridgway: Artist Engraver.

AT the Highgate Cemetery, N., last week the body of Mr. William Ridgway, once a well-known artist line engraver, was buried. Amongst the more famous works that he engraved were Holman Hunt's "Light of the World" (1854), now in Keble College, Oxford; "Christ Borne to the Tomb," by Gustave Doré; and "A Visit to Æsculapius," by the President of the Royal Academy, Sir E. J. Poynter. The last-named picture was bought for the Chantry Bequest, and the engraving made from it by William Ridgway was a splendid specimen of the fine work in which he excelled. The art of steel-engraving is fast dying out, chiefly owing to the long time it takes to execute a single picture—sometimes as much as two or three years. It is no wonder, then, that artists of the younger school, of whom Mr. Joseph Fratt, the engraver of Rosa Bonheur's pictures, is a conspicuous example, turn their attention to process work. It is more speedy, and—it pays. Mr. Ridgway was nearly eighty years of age, and for some years past, and up to a few months of his death, gained his living by engraving banknotes, cheques, &c., for a firm of city printers.

Contractors' Cranes.

THE necessity for greater care to be exercised in connection with the cranes that are used for hoisting building materials was emphasised just a week ago by the deplorable accident that occurred at Leeds. For several months past the Leeds Estate Company have been carrying on building operations in connection with a huge block of property facing Briggate and the new street on the north side of the Empire Palace. To assist in these operations a crane was placed near the hoarding which faces Briggate, and on Wednesday last it was in use for the purpose of lifting iron girders, which had been deposited in the roadway, on to the site of the new buildings. The crane, which weighs about five tons, was in the act of raising four girders, weighing together about fifteen hundredweight, when the cogs of the jib wheel broke, releasing the jib and causing the girders to fall with a crash on to the pavement. As is usual about this time of the day, many persons were passing by, and one, a lad of fourteen named Percy Clarke, was caught by the falling iron and instantly killed. A labourer and a little girl were also knocked down and severely injured. Several narrow escapes were reported, and it was surprising that much further mischief was not done, seeing that the girders were swung almost into the centre of the thoroughfare. Some time before the breakdown happened the crane had been employed in lifting granite pillars weighing considerably over three tons, and the strain upon the cogs must have been enormous. It is not right that cranes of this kind, which are used constantly throughout the day, should be allowed to overhang the road or pavement, and we hope that steps will be taken to prevent the occurrence of such accidents as that referred to above.

Manchester's New Statue.

THE statue of Her Majesty the Queen which Mr. Onslow Ford, the eminent sculptor, is at present executing for the Manchester Corporation will be double life-size and will represent our sovereign seated on her throne, with her head surmounted by a coronet, her sceptre in her right hand, and the orb in her left. She is wearing her garter robes, with the sash and star of the order on her breast. Under the coronet a handsome veil is draped; in order that these might be copied with scrupulous care, she lent it to the sculptor for a lengthy period. The statue, from its base to the top of the coronet,

is 9½ ft. in height. The height of the chair of state will be 19 ft., and the pedestal 5 ft. This will be reached by half-a-dozen 6 in. steps. The massive chair will be sculptured in marzani marble. In a division between the mouldings at the top of the back of the chair St. George and the Dragon will appear, and just above her Majesty's head the Royal Arms will be engraved. To avoid having a large blank space at the back, Mr. Ford has designed and executed a model of an allegorical figure of "Maternity." This comprises a partially draped female figure with a young naked baby in each arm. The figure will be sheltered in a niche behind the statue, and will give an added beauty to the completed work. Over its head the arms of the Manchester Corporation, with the shield supported by an heraldic antelope and lion guarding and the motto "Concilio et labore," appears. The monument will be seen at its best from the opposite side of the street. The figures of the Queen and Maternity, being in bronze, will be practically indestructible. The statue, according to present arrangements, will be unveiled in October next. As some idea of the time which some works of similar magnitude have taken to complete, it may be mentioned that Stephens' great monument of Wellington, which was placed in St. Paul's Cathedral, took the sculptor twenty-two years, and he died before the work was finished. The model of the statue of the Queen as it rests in the artist's studio in the west-end of London overlooks a finished white marble statue of the late Professor Huxley, which is intended for the Natural History Museum at South Kensington, and near it lies a white marble bust of Sir William Agnew, executed for a private client.

New Patents.

These patents are open to opposition until March 17th.

1898.—Refuse Destroyers.—21,688. J. A. BAKER and W. R. BAKER; both of London, E.C. In this destructor the draught of foul gases is diverted first before it arrives at the end of its path and is led upwards through the incandescent layer on the last of a series of grates before being allowed to pass out of the destructor. This has a tendency to lift up the fuel and prevent clogging. Another feature of the invention is a mechanical elevator arranged in an inclined passage, up which the air draught flows to the furnace; this passage is heated.

1899.—Automatic Delivery and Discharge of Sewage.—941. E. BROWN, Burgess Hill, Sussex. This apparatus is an adaptation of the principle which obtains in the ordinary ball cock. For operating the valves for admitting the sewage and those for discharging it, floats are provided connected with a beam on a horizontal rocking shaft that is connected to the sewage inlet and discharge valves, so as to close the one set while opening the other. Devices are arranged to prevent the floats acting until the liquid has reached a predetermined level.

Waste Pipes.—3,342. J. SMITH, Addingham. To prevent it becoming damaged, and to prevent the entrance of wind and foul gases, there is fitted on the end of the pipe a cast-iron barrel, having its outer end inclined and covered by a pivoted flap, which remains normally closed.

Gas Burners for Heating Apparatus.—3,552. B. J. B. MILLS, London, W.C. (*La Société Anonyme des Fontaines à Gaz, Fontaines-sur-Saône.*) The supply of air is obtained by the combustion of the gas burning on the surface of one or several wire-gauze tubes, arranged horizontally or vertically, the supply being obtained partly through the gauze and partly through exterior openings arranged around the jets supplying gas to the burners. The gauze is held at one end by movable sleeves, which enable it to be renewed easily.

Brick Machines.—3,653. J. C. EDWARDS, Ruabon. This is an improved machine for

moulding and pressing bricks of the "double panel" type, and it consists essentially of a cam motion for operating the pressing mechanism and actuating the device for lifting the pressed brick out of the mould.

Cutters for Dressing Slates, Tiles, &c.—5,177. T. ADAMSON, Southport. This invention consists of a cutter bed having two parallel sides and channelled cross-pieces in combination with a lever carrying or forming a knife or guillotine. The cut is said to be clean and easy.

Adjusting Cutting Irons.—5,307. A. T. SOUTHERN and C. F. SPILSBURY; both of Birmingham. This device consists of a square screw pivoted to the body of the tool, over which fits a slide connected with the cutting iron. A nut engages with this slide, and so enables the "cut" to be adjusted as desired.

Windows.—23,616. A. MCKINNON, Hartwood, N.B. To do away with counter-balance weights, the sashes are connected with a cord at each end and so balance one another; but to prevent the one being raised whilst the other was lowered, the sash line is connected to a slide controlled by a knob on the window stile. Means are also provided for reversing the sashes.

The following specifications were published on Saturday last, and are open to opposition until March 24th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—1,374, SHORLAND, spindles for door handles and means for attaching them. 1,375, COOK, guards or shields for circular saws. 1,497, RODNEY and LLEWELLYN, locks and catches for doors. 1,565, HURRY and SEAMAN, rotary furnaces. 1,618, BUCHANAN and THOMPSON, inclined stepped elevator or moving stairway. 1,735, LINDLEY, cover for disinfecting and preventing smells from drains and sewers. 1,737, CADETT and LYON, ventilating buildings. 2,255, BUCHANAN, staircases and inclined ways. 2,803, BLACKHURST, screw connections for brass vases and knobs. 3,209, BARKER, screws and turn-screws. 3,916, CLARK, syphon flushing cisterns. 4,383, BAER, means for holding smoke pipes and chimney pots in chimney openings. 4,736, BADIN, bricks or tiles for floors. 4,813, WHITE, manufacture of Portland cement. 5,143, AYNLEY and FELL, portable spray-producing appliances for use in decorating ceramic ware. 5,764, NURSE, apparatus for consuming smoke. 6,293, DRUMMOND, automatic regulating apparatus for heating and ventilating buildings. 6,526, HORST, folding armchairs for theatres, &c. 7,000, WALKER, window sashes. 7,690, BIEKBECK (*Simmons*), hones or whetstones. 7,836, REID, flushing apparatus for water closets. 8,642, SKENE, pavement lights. 8,775, LACHMAN, electric incandescent lamp fittings. 8,861, FIRTH, backs of domestic stoves and kitchen ranges. 17,014, DISMUKES, means for coupling rails and posts. 17,608, manufacture of cement. 19,468, FRANK, casting process and apparatus. 20,759, BARNARD, treatment of sewage. 22,357, HANEMANN, pumps. 22,651, WILLMORE, staircases. 22,817, SCHROEDER, ovens or kilns for ceramic ware. 22,852, ALLDAY and EAGER, pulley blocks and hoists. 22,904, OLMESDAHL, machine for bending and cutting lock springs. 22,907, GIBBONS, door locks. 23,131, BAUM, pump for domestic use. 23,468, SUCHIER, self-regulating stove. 23,562, ORMEROD, smoke consumers for furnaces. 23,590, KELLY and KELLY, self-closing mechanism for doors. 23,914, HUME, soldering machine. 24,181 CROCKER, implements for scraping paint or varnish from railway cars and furniture. 24,875, SEMMER, glass grinding and polishing machine. 24,997, PAETOW, taps for water pipes.

The Great Paris Gateway.—The principal entrance to the Paris Exhibition will be a gigantic gateway at the beginning of the Champs Elysées crowned by a statue by M. Moreau-Vauthier. It represents the city of Paris and is a female figure attired in present-day costume. It is expected that its erection will be the signal for much criticism.

THE NEW TUGELA BRIDGES.

SOME particulars have already been given of the new Colenso bridge, but further details are now forthcoming (in "Feilden's Magazine") of the two bridges that have been so rapidly made by the Patent Shaft and Axletree Company, Ltd., of Wednesbury.

The Colenso bridge will consist of five spans, and the Frere bridge of two spans, each span being 105 ft. The width is 16 ft., a similar distance separating the foot of the girders and the top of the arch bracing. Each span consists of two large lattice girders braced together with cross girders, a system of overhead bracing being also adopted. Each span will weigh some 105 tons exclusive of rivets, and 69,000 rivet holes have to be drilled. Siemens-Martin steel, manufactured at the company's works, is used throughout, and the whole painted over with Docker's special "Hermator" oxide paint. Each bridge will accommodate a single line of railway of 3 ft. 6 in. gauge, and a further space at each side of 4 ft. 6 in. to serve for pedestrian or vehicular traffic.

In a single span there are 53 tons of plates, 13 tons of bars, 26 tons of angles, and 13 tons of tees. The weight of the two bridges is 735 tons, and, in addition to drilling and rivetting, about 52,500 ft. of rough edges of plates, &c., have to be planed. When fixed up, each span has to bear a test load of 264 tons, and, having satisfied that requirement, is regarded as being equal to the carriage of ordinary traffic up to 130 tons. The steel is also subjected to a tensile test, and has to endure a strain of 27 to 32 tons to the square inch. The Athara bridge, which was supplied in six weeks, weighed 400 tons, and the accomplishment of such a heavy piece of work in that time was regarded as phenomenal. In the present instance the first span was completed in about a fortnight, with nothing but ingots in stock when the order was received, and it is anticipated that the remaining spans will be sent out at the rate of one each week. The work should, therefore, be completed in about eight weeks, or two weeks longer than the American "record." These bridges, however, weigh about 335 tons more than the Athara bridge, the edges of the plates of which were not planed or finished.

The directors of the Company have taken a special interest in the construction of the bridge, and all employees, from the manager downwards, have worked and are working at an exceptional pressure, the template staff working voluntarily right through the Christmas holidays. A visit was paid to the works on Saturday last by the Birmingham and District Clerks of Works and Builders' Formen's Association, together with some of the Corporation officials.

A New Technical Institute at Tunbridge Wells is proposed to be erected and plans have been prepared by the architect, Mr. Hare, who reports that a satisfactory building can be erected for £11,000, with an additional £1,000 for equipment and furniture. The plans are to be submitted to the Kent County Council, and, if approved by that body and the Tunbridge Wells Council, an application will as soon as possible be made to the Local Government Board for sanction to borrow £12,000. If there is no opposition, it is hoped to have the proposed new institute ready by the end of next year.

The Greyfriars Church Question.—The question of the extension of Marischal College came before the Aberdeen Corporation on February 6th, in connection with the subject of the erection of a new church for Greyfriars' congregation. It was resolved, by a majority of twenty-one to ten, to approve of the scheme of extension recommended by the University Court, and to buy properties in Queen Street for a site for the church at a cost of £10,065, provided (among other conditions) that the University Court defray the cost of the erection of the church and tower, so far as such cost may exceed £10,000, and undertake, in carrying out the building scheme, to proceed first with the block extending from the new church along Broad Street.

Professional Practice.

Birmingham.—At the request of the Social Science Sub-Committee of the Royal Commission for the Paris Exhibition, the Improvement Department of the Corporation are preparing for exhibition a model of the workmen's dwellings which they are erecting in Milk Street. The model, which is about 16in. in height and 2ft. 8in. long, is an exact copy of the buildings. It is constructed of wood, and shows a section of a terrace comprising six houses, three on the ground floor and three above. Everything is carried out to scale, and each portion of the building is reproduced in the model. The latter, therefore, affords an admirable illustration of what is being attempted in the way of cheap housing. The verandah,

out under the direction of Mr J. Tart. The work of erecting the houses in Milk Street is progressing favourably, and they will be ready for occupation towards the end of March. The dwellings are built in terraces, one behind another, at a distance of 30ft. The total cost of the buildings, together with the cost of making the street and laying the sewers, will be about £10,100.

Blyth.—The new Theatre Royal built for the Blyth Theatre Company, at a cost of £13,000, was opened last week. The theatre has been designed by Mr. William Hope and Mr. J. C. Maxwell, of Newcastle-on-Tyne. The house consists of pit, stalls, circle, and gallery. The stage dimensions are 40ft. by 56ft., the height to grid being 50ft. There are spacious and convenient dressing rooms, with hot and cold

to the Grafton Street house, which they immediately adjoin behind, they will form a complete series of warerooms 350ft. long and five storeys high, or the entire length of Duke Street, with two frontages, one in Grafton Street and the other in Dawson Street. The building work is being carried out by Messrs. S. H. Bolton and Sons.

London.—The recent appeal case of *Chambers v. Goldthorpe* raised a question as to the position of an architect under a contract between a building owner and builder, where the architect had to certify before payment was made, and whether the architect could be sued for negligence, or was in the position of an independent arbitrator. The plaintiff, an architect, sued for his fees. Defendant counter-claimed for negligent measurement, by



ALLIANCE ASSURANCE COMPANY'S BUILDING, KING STREET AND CROSS STREET, MANCHESTER. CHARLES HEATHCOTE, ARCHITECT.

running along the first storey, gives a distinctive and somewhat superior character to the houses, and enables each occupant to have a separate entrance door. It is this privacy and completeness which distinguishes the buildings from flats, and they are generally known and more accurately described as dual houses. Each house is self-contained and comprises a front room, a bedroom, a scullery, a small coal-house, and a water-closet; while each alternate dwelling has an additional bedroom, the occupant of the larger dwelling having to pay 4s. 6d. rent as compared with 3s. for the smaller house. An admirable feature in the construction of the dwellings is their arrangement, by which the whole place is under cover, and the buildings have been designed with a view to compactness, comfort, and convenience. The construction of the model has been a laborious task, and the work has been carried

water, and there is a large property room and scene dock. A lift is provided to convey artists' luggage to each floor. The builders were Messrs. J. and W. Simpson, of Blyth. The decorations have been carried out by Messrs. Dean and Co. The theatre is estimated to seat 2,000.

Dublin.—Under the direction of Sir Thomas Deane and Sons, architects, No. 56, Dawson Street is at present being rebuilt for Messrs. Millar and Beatty, Limited. The entire block of buildings has been removed, and after excavating, so as to give a basement storey, it will be all rebuilt on modern lines as a fully-equipped furniture warehouse. The new premises will have a frontage and a depth of 170ft., varying in width, when joined to the rear portion of No. 55, from 25ft. to 60ft. When the new premises in Dawson Street are added

reason of which he was obliged to pay more than he rightly should have paid, the damages, if recoverable, being assessed at £15. It was contended that while in some sense the architect might be a quasi-arbitrator, yet the building owner might bring an action against him for negligence, though the builder could not. Mr. Scott Fox (for the plaintiff) said it was against public policy that a person who was in the position of a quasi-arbitrator should have to perform his duties under fear of an action. If the defendant were dissatisfied with the plaintiff's measurements his proper course was to call in another architect. Mr. Justice Channell, in giving judgment, said that where a person was in the position of a quasi-arbitrator an action could not be brought against him for negligence in the exercise of his duties, and, wherever that doctrine applied, it was not ousted by the fact that the

arbitrator was under a contractual relationship with one of the parties, by whom his fees were paid. Therefore, the appeal must be allowed. Mr. Justice Bucknill concurred, and the appeal was allowed with costs.

Manchester.—The Alliance Assurance Company's new building in Manchester is built externally of stone, and the offices are entered from King Street. The entrance in the Cross Street front gives access to the upper floors only. The staircase is well lighted and has the walls lined throughout with faience. In the centre of the staircase well is a passenger lift. The architect was Mr. Charles Heathcote, of Manchester, and the builders were Messrs. Neill and Sons.

Norwich.—The total estimated cost of restoring and refitting Worstead Church is about £5,500, and the work is being done as funds permit, it having been wisely resolved that nothing shall be begun till the money is in hand to pay for it. The church belongs to the transitional period between Decorated and Perpendicular, and comprises nave, with aisles and clerestory, chancel, and south porch. Its fine embattled tower, containing six bells and a clock, rises 109ft. and is surmounted by four lofty pinnacles, which were erected in 1861 to replace four others put up in 1844. The outside stonework is chiefly of flint. The entrance porch under the door and the great west window above it are richly ornamented with mouldings and tracery. The chancel is separated from the nave by a beautiful rood screen, erected in 1512, the lower panels of which are adorned with paintings of apostles and saints. Mr. T. Leonard Jenkins (the present vicar) found that there were many things to be done if the structure was to be saved from certain ruin. A report of the late Sir Arthur Blomfield was obtained, according to which the first duty was the restoration of the nave roof, the remaining work being successively the repair of the tower, which is really unsafe and a portion of which has fallen, the repair of the north aisle roof and the porch, the heating and re-seating of the church, and the re-hanging of the bells. According to Sir Arthur Blomfield's designs, which cover the whole of the work in contemplation, the east end has been beautifully decorated, the funds being provided by the early communicants. Now the nave roof has been restored at a cost of £1,070, some £600 of it being subscribed by people living in the parish.

Preston.—The new Sessions House now being erected is in Harris Street, with a frontage to Lancaster Road. In the locality near the site great changes have recently been made. The Old Shambles, where the first post office the town ever boasted was conducted, has been replaced by a handsome arcade, and the Harris Free Library and Museum. That change brought about the abolition of over a dozen old-fashioned licensed houses. There is now a square, which has upon the north side the Town Hall, on the east side the Library and Museum, and on the west commercial houses, whilst the north is to be occupied by a new post office, the plans for which have recently been passed. The Sessions House is in the angle between the post office and the Museum. The design has been prepared by Mr. H. Littler, the county architect. The main entrance will be from Harris Street, and over the porch a tower will rise to a height of 165ft. The frontage of the block will be 180ft, whilst from front to back the distance will be 100ft. The exterior masonry will be of Longridge stone throughout, and the building is in the English Renaissance style, well relieved with columns and carving. It will be erected over a granite base, and will be three storeys high. Through the entrance porch vestibule is the assembly hall, which is to be lighted by means of a circular-headed window. From here the main staircase ascends to the courts. This staircase will be one of the chief features of the interior. It is to be of Hopton Wood stone to match the facings of the hall, and the steps will be of granite. The ceiling, which

is to be decorated, will be constructed of fibrous plaster. There are to be two sessions courts, the public entrance to which will be from Lancaster Road, and they are to be on the second level. The assembly hall, to which the main staircase leads, will be of stone from the Stancliffe quarries. Its size will be considerable, and it will be domed. The height from the floor to the top of the structure will be 38ft., and at the far end of the hall will be two large stone columns, to assist in supporting the weight of the upper floor. The hall is to be tiled, and the corridors will be floored in the same way. From this hall a corridor will run round the entire building. The courts are to be on each side of the hall, with entrances from the corridors. The dimensions of each will be 49ft. long, 39ft. broad, 32ft. high. The decoration will be carried out in a manner promoting easy ventilation. From the floor to a height of 8ft. the walls will be tiled. Over this is to be a dado of oak panelling to the height of 25ft. The ceiling will be studded with ceiling lights, and a glass roof will be placed on the exterior. Added to this will be the light derived from windows on the north side. The floor will be parquet. Each court will be exactly similar, and immediately in the rear will be the chairman's rooms and the private rooms of the clerk of the peace. On the side corridor is to be the magistrates' room, the grand jury room and ante-room, and on the right hand side of the assembly hall will be the barristers' library, robing room, consulting room, and other rooms. On the third floor are the living rooms, including a dining room 55ft. by 25ft., very lofty and well lighted. At the front of the building on the ground floor will be the record rooms and other offices, and in close proximity are quarters for the prison warders. The cells will be on the basement floor, with other prison accommodation. A special entrance at the rear is provided for the prison van. The building will be lighted throughout with electricity and heated by hot water at low pressure. The provision for the electric light plant and the heating apparatus is to be the only accommodation below the level of the street. The cost of the building will probably be about £75,000, and it is hoped that the edifice may be completed by 1902.

York.—A new wing is being erected at the Friends' Boys' School at Bootham, York, from designs by Mr. William H. Thorp, architect, of 61, Albion Street, Leeds. A new science block is being built at the south-east corner of the cricket field, comprising a laboratory, lecture room, science master's preparation room, &c. Two five-courts, one open and one closed, are to be formed in connection with this block. On the site of the buildings which were destroyed by fire last May a block is now being erected which will contain a larger gymnasium, two workshops, two natural history rooms, &c. It is understood that when these two blocks have been completed, and, in case sufficient funds are forthcoming, the committee propose to effect improvements in the existing school-room block to include a suite of good classrooms, a large assembly hall, to be called the John Bright Hall in memory of the great statesman who was formerly a scholar at the institution, and a library. A further scheme is suggested by which considerable improvements would be effected in the premises on their city side. The cost of these works is estimated at about £14,000.

Dewsbury Infectious Hospital.—From what transpired at a meeting last week of the Dewsbury Joint Hospital Board, it appears that the infectious hospital to be erected very shortly near Earlsheaton will cost £23,000.

More Fire Tests.—At the British Fire Prevention Committee's testing station on Wednesday last tests were made with two solid (three thicknesses) wood doors and a floor of fir joists with 5in. concrete filling. Details will be given when the official report is published. Unfortunately, during the floor test, Mr. E. R. Farrow was somewhat seriously burnt in the right eye.

New Companies.

British and North American Timber Co., Limited.

This company was registered on January 24th by Edmunds and Rutherford, 19, Great Winchester Street, E.C., with a capital of £20,000 in £1 shares, to carry on business as timber shippers, brokers, and importers, agents for the sale of or dealing with timber or wood goods. The directors are Hon. W. C. Pepys, H. W. Holland, W. P. Thompson, and S. de C. Thompson. Qualification, £200. Remuneration, £52 10s. each, to be increased according to profits.

Smith Brothers (Burnley), Limited.

This company was registered on January 25th by Proctor and Co., 3, Gresham Street, E.C., with a capital of £10,000 in £10 shares, to acquire as a going concern the business of builders and contractors as now carried on by Smith Brothers at East Rain Place, Burnley, Lancashire. The directors are E. S. and G. Smith. Qualification, 50 shares. Remuneration to be fixed by the company.

Thomas Wragg and Sons, Limited.

This company was registered on January 29th by Andrew Wood and Co., 8 and 9, Great James Street, Bedford Row, W.C., with a capital of £150,000 in £5 shares, to acquire the business carried on at Swadlincote, Derbyshire, under the style or firm of Thomas Wragg and Sons, and, generally, to carry on in all or any of their respective branches the businesses of manufacturers of and dealers in firebricks, fireclay, glazed bricks, blue bricks, building bricks, floor and roofing tiles, glazed stoneware and earthenware sanitary pipes and fittings, baths, sinks, lavatories, closets, porcelain, earthenware, and all other kinds of bricks, tiles, clay, and goods and appliances for plumbers, sanitary engineers, builders, contractors, and others; as quarry owners, sanitary engineers, sanitary sewage works, waterworks, road making, and general contractors; dealers in sand, lime, and cement; as cabinet-makers, carpenters, builders, timber merchants, engineers, and workers in any kind of wood and metal; &c. The first directors (of whom there shall be not less than three) are J. D. Wragg, E. B. Wragg and H. Wragg. Qualification, £1,000. Remuneration, £50 per annum each.

Eglinton Limestone Company, Limited.

This company has been registered in Scotland, with a capital of £12,000 in £1 shares, to carry on the business of miners, quarrymasters, lime burners, brick manufacturers, &c., at Glenarm, county Antrim, Ireland. Registered office: 212, West George Street, Glasgow.

C. Evans and Company, Limited.

This company was registered on January 30th by Gadsden and Co., 28, Bedford Row, W.C., with a capital of £10,000 in £1 shares, to adopt a certain agreement for the acquisition of the business of Charles Evans, and to carry on business of mechanical, electrical, and general engineers; brass and iron foundries, builders' merchants, and ironmongers, &c.

Newport Enamelled Slate Co., Limited.

This company was registered on February 5th by Warriner and Co., 188, Fleet Street, E.C., with 20 members, each liable for £1, to carry on the business of manufacturers of and dealers in enamelled and plain slate, granite, stone, marble and hardware goods; as ironmongers, metallurgists, engineers, &c. Registered office: Chepstow Road, Newport, Monmouth.

South Wales Sanitary Inspectors.—The annual meeting of the South Wales and Monmouthshire Sanitary Inspectors Association was held at Neath on Saturday. Dr. Williams, Cardiff, was re-elected president, and Dr. Walford and Dr. Herbert Jones vice-presidents.

THE GLASGOW EXHIBITION.

THE Glasgow International Exhibition of 1901 (it will be opened in May) promises to be a great success. The total area occupied by buildings, temporary and permanent, will be 13½ acres, of which the Industrial Hall and Grand Avenue will occupy 28,842 sq. yds.; the Machinery Hall, 19,277 sq. yds.; the Art Galleries, 8,667 sq. yds.; the Refreshment Department, 5,556 sq. yds.; and the Grand Hall, 2,178 sq. yds. To show the international character of the exhibition, it may be mentioned that France has taken up about 10,000 sq. ft., Canada and Queensland half as much, India rather less than Canada, and Japan 2,000 sq. ft. The Governments of the United States, Russia, Persia, and Morocco have intimated their intention of exhibiting.

From an artistic and decorative point of view one could not select a more promising group than India, Russia, Japan, Persia, and Morocco. Of the free space in the Industrial Hall and Grand Avenue, amounting in all to about 114,000 sq. ft., British exhibits will absorb 60,000 sq. ft., those of British possessions 9,500 sq. ft., while foreign exhibits will take up the balance of 44,500 sq. ft., or rather more than a third of the entire space. The provisional allocation of the machinery space is almost exactly in the proportion of 3ft. for British exhibits to every foot allotted abroad. Taking these two departments together, the estimated rental at 8s. per square foot is £29,000.

The Kelvingrove Art Gallery and Museum will occupy a central position. In style the building is Jacobean, freely treated, and the entire block measures 800ft. by 200ft. Two well-proportioned towers, rising to a height of 150ft., flank the top of the central hall, and combine with cupolas at the four corners of the building to form an effective sky-line. Here will be housed Glasgow's own art treasures, and an international loan exhibit illustrating the art of the nineteenth century. A large amount of space will also be given here to archaeology and Scottish history, and the Art Galleries will include an Educational Section. With regard to amusements, one of the projects under consideration is the erection of a revolving tower, 150ft. high, on the slopes of Gilmore Hill, which will afford a magnificent panoramic view by day and light the grounds by night.

The best of the fourteen competitive designs for the exhibition building was sent in by Mr. James Miller, I.A., Glasgow, and the first sod was cut on April 22nd, 1899. Looking at the exhibition from the slopes of Gilmore Hill, in the foreground there will be pavilions, kiosks, bandstands, fountains, and many restaurants, no refreshment rooms being contained in the main buildings, which are of light design. The Kelvin, spanned by two bridges, divides the picture. To the right a broad overhead bridge, crossing Dumbarton Road, connects Kelvingrove Park with Bunhouse grounds, where a lofty building is set apart for the machinery section.

The Nottingham Master Builders' Association held its annual dinner on Friday last, when the vice-president, Mr. H. Vickers, took the chair.

New Buildings in Nottingham.—The Nottinghamshire Miners' Association are about to build three houses, a suite of offices, and a miners' hall at New Basford, Nottingham. The architect is Mr. Henry Harper, of Regent Chambers, Market Place, Nottingham.

The Birmingham Municipal School of Art has opened at the rooms of the Birmingham Royal Society of Artists an exhibition of students' work, which will remain open till Saturday next. The exhibits of the department devoted to architecture and building construction show that this section is a strong one. There are now at the Central School about two hundred students engaged in architects' and builders' offices, who, under Mr. W. H. Bidlake, assisted by Mr. H. T. Buckland, are turning out work of a very superior character.

Keystones.

Aberdeen Art Gallery is to be transferred to the Corporation.

A New Board School at Machynlleth is to be built at a cost of about £3,500.

Chichester Cathedral.—Contributions are now being sought towards the cost of completing the north-west tower.

The new Church at Shaldon is to be completed forthwith at a cost of about £6,000. Mr. Edmund Sedding is the architect.

An Exhibition of Artistic Steel and Iron Work has been opened at the Burlington Fine Arts Club, 17, Savile Row, W.

A Winter Garden Scheme for Dundee, similar to that at Glasgow Green, is being considered. It is estimated to cost £5,000.

At St. Werburgh's Church, Derby, a new reredos has been erected at a cost of about £1,000. It was given by Mr. H. T. Alton, of Abbott's Hill, Derby.

New Schools at Manor Park, E.C., are about to be erected by the Little Ilford School Board at a cost of over £20,000. The architect is Mr. S. Jackson, of 65, Fenchurch Street, E.C.

A Pocket Directory of Edinburgh and Leith, including a time table and a map, has been sent us by Mr. W. Sinclair, of 12, Shandwick Place, Edinburgh. It only costs a penny, and is very handy.

Reparation or Vandalism?—The statues that decorate the west front of the Cathedral of Notre Dame in Paris have recently undergone restoration, and the sculptors employed in the work have just completed their task.

Italian Tribute to Ruskin.—The Venice Municipal Council has conveyed an expression of its condolence to the family of the late Mr. John Ruskin, and will affix a memorial tablet to the house in Venice in which the celebrated writer lived while in that city.

Matriculation Directory.—We have received a copy of this useful publication, containing articles on the special subjects for June, 1900, and January and June, 1901. It also comprises solutions to the examinations held last month, and the University Correspondence College Calendar.

Hull Central Square Scheme.—Notices to quit are to be given to the tenants occupying the blocks of buildings bounded by Carr Lane, Waterworks Street, Junction Street, and Little Chariot Street, Hull. These blocks the Corporation contemplate pulling down for the making of a great central square and other improvements.

The Thornton-Pickard Manufacturing Co., Ltd., of Altrincham, whose photographic shutter is so well-known, send us a copy of their 1900 catalogue. We notice particulars of a new competition (closing October 1st next) in which £105 are offered in prizes. A copy of the catalogue will be sent post-free on application.

Proposed Police Convalescent Home, Harrogate: Result of Competition.—The result of this competition has been as follows: First, Mr. H. S. Chorley (Messrs. Chorley, Conin and Co., 15, Park Row, Leeds); second, Mr. Edward C. Maidman, 13, South Charlotte Street, Edinburgh; and third, Messrs. Chorley, Conin and Co., 15, Park Road, Leeds. Mr. H. S. Chorley was appointed architect.

Enlargement of Wakefield Cathedral.—At a meeting of the Wakefield Cathedral Extension Committee tenders were considered for the works required in connection with the enlargement of the cathedral as a memorial to the late Rev. Dr. Walsham How, the first bishop of the diocese. Eleven tenders had been received, and ultimately it was resolved—"That the honorary secretaries be empowered to enter into a contract with Messrs. Armitage and Hodgson, of Leeds, to build the Cathedral extension, at a cost of £24,373, but that the contract be divided into two, so that the first portion of the work, including chapter house and two vestries, be entirely completed before the second portion of the work is proceeded with."

Enfield Isolation Hospital, which has been erected at Winchmore Hill, at a cost of £25,000, was opened on Saturday.

A new Nurses' Home at Gateshead has been built in Coatsworth Road from designs by Messrs. L. H. and A. L. Armour, of Gateshead.

New Church for Edzell, Brechin.—A new Free church is proposed to be built at Edzell from designs, selected in competition, by Mr. P. H. Thomas, of Dundee.

Widening Temple Row, Birmingham.—A long discussion took place at last week's meeting of the Birmingham City Council on the recommendation of the Public Works Committee to purchase a strip of land around St. Phillip's churchyard, containing 1,116 sq. yds., for £5,580, for the widening of Temple Row, Temple Row West, and Colmore Row. The total cost of carrying out the improvement is estimated at £9,250, and the Finance Committee were eventually authorised to borrow that sum. The proposed alteration will secure a uniform width to the thoroughfare of 50ft., throwing in an average of 10ft.; when the new scheme for tramways is considered, a wide through street like this in the centre of the city will be of the very greatest advantage.

CURRENT PRICES.

FORAGE.		2 s. d.	2 s. d.
Hay, best	per load	3 10 0	4 0 0
Sainfoin mixture	do.	3 15 0	4 5 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 6	1 7 9
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.		2 s. d.	2 s. d.
Castor Oil, French	per cwt.	1 7 3	1 9 2
Colza Oil, English	per cwt.	1 7 0	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 11 0	—
Linseed Oil	per cwt.	1 4 0	—
Petroleum, American	per gal.	0 0 7½	0 0 7½
Do., Russian	per gal.	0 0 6½	0 0 6½
Pitch	per barrel	0 8 6	—
Tallow, Town	per cwt.	1 6 9	1 9 6
Tar, Stockholm	per barrel	1 5 0	1 5 6
Turpentine	per cwt.	2 0 6	—
Lead, white, ground, carbonate per cwt.		1 3 0	1 4 0
Do. red	per cwt.	1 0 4½	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	3 4 0	—

METALS.		84 0 0	—
Copper, sheet, strong	per ton	84 0 0	—
Iron, bar, Stafs. in London	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	11 0 0	—
Lead, pig, Spanish	do.	16 10 0	—
Do. do. English common	do.	16 5 0	16 17 6
Do. sheet, English, 5lb. persq.ft. and upwards	do.	18 10 0	19 0 0
Do. pipe	do.	19 10 0	—
Nails, cut, 3in. to 6in.	do.	10 0 0	11 0 0
Do. floor brads	do.	9 15 0	10 15 0
Tin, Foreign	do.	134 15 0	135 5 0
Do. English ingots	do.	139 10 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne	do.	27 7 6	—
Do. Spelter	do.	22 7 6	23 15 0

TIMBER.		8 0 0	4 0 0
Soft Woods.		8 0 0	4 0 0
Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	8 12 0	8 15 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.		17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	13 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	17 0 0	—
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	10 15 0	11 0 0
Do. do. White	do.	9 15 0	11 5 0
Do. Swedish	per P. Std.	9 5 0	17 5 0
Do. White Sea	do.	17 10 0	18 0 0
Deals, Quebec Pine, 1st	do.	19 5 0	24 10 0
Do. do. 2nd	do.	10 5 0	12 0 0
Do. do. 3rd & 4th	do.	8 10 0	8 15 0
Do. Canadian Spruce, 1st per P. Std.		9 10 0	13 5 0
Do. do. 3rd & 2nd	do.	9 0 0	10 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	11 5 0
Flooring Boards, 1 in.		—	—
Do. prepared, 1st	per square	0 11 6	—
Do. 2nd	do.	0 9 3	0 10 9
Do. 3rd & 4th	do.	0 8 0	0 8 9

HARD WOODS.		8 17 6	4 10 0
Ash, Quebec	per load	8 17 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 0 4 1/8	—
Do. Tobasco	do.	0 0 5 5/8	—
Elm, Quebec	per load	12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 27/32	—
Do. African	do.	0 0 3 21/32	—
Do. St. Domingo	do.	0 0 34	—
Do. Tobasco	do.	0 0 5 27/32	—
Do. Cuba	do.	0 0 7 21/32	—
Oak, Dantzic and Memel	per load	8 0 0	8 3 0
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0	16 10 0
Wainscot, Riga (Bank)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 3 5

COMING EVENTS.

Wednesday, February 14.

SOCIETY OF ARTS.—Professor R. W. Wood on "The Diffraction Process of Colour Photography." 8 p.m.

SANITARY INSTITUTE.—(1) Mr. Wm. Nisbet Blair, M.I.C.E., on "The Insanitary Condition of the London Streets." 8 p.m. (2) Lectures and Demonstrations for Sanitary Officers.—Mr. J. F. J. Sykes, D.Sc., M.D., on "Objects and Methods of Inspection, Nuisances, &c." 8 p.m. Inspection and demonstration in the Parish of St. George's, Hanover-square, at 2 p.m.; conducted by Mr. Albert Taylor.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. Frank Caws, F.R.I.B.A., on "Concrete Floors." 7.30 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. Harold Tarbolton on "The Plaster Work of the Renaissance, and its Subsequent Phases." 8 p.m.

BIRMINGHAM AND DISTRICT CLERK OF WORKS AND BUILDERS' FOREMAN'S ASSOCIATION.—Mr. J. H. Pickard on "The Elan Valley." 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Mr. E. Durant Cecil on "The Geological Interest of a Sewer Cutting." 7 p.m.

Thursday, February 15.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers.)—Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, in the Parkes Museum, at 7 p.m., by Mr. Albert Taylor.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Lower Limb." 6.15 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

CARPENTERS' HALL.—Mr. H. C. Richards, M.P., Q.C., on "Old London." 8 p.m.

CITY AND GUILDS OF LONDON INSTITUTE.—Prize distribution at Clothworkers' Hall. 8 p.m.

Friday, February 16.

ARCHITECTURAL ASSOCIATION.—(Discussion Section.)—Mr. W. A. Forsyth on "Some Aspects of Modern Architecture." 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers).—Prof. A. Bostock Hill, M.D., D.P.H., F.I.C., on "Trade Nuisances." 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day, on "Ornamental Design."—VII. 11.30 a.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. George Walton on "Interior Decoration." 6.30 p.m.

Saturday, February 17.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Mr. C. E. Jones, A.M.I.C.E., on "The Nation's Water Supply and its Effective Control." 10 a.m.

Monday, February 19.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Monsieur Charles Lucas on "The Buildings of the French Exhibition of 1900." 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. T. M. Reade, F.R.I.B.A., F.S.A., on "Local Building Stones." 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers).—Mr. Philip Boobyer, M.B., on "Infectious Diseases." 8 p.m.

VICTORIA AND ALBERT MUSEUM (South Kensington).—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XV.—Medieval Christian Art." 6 p.m.

LONDON INSTITUTION.—Mr. Charles Welch, F.S.A., on "The Ancient Guilds of the City of London." 5 p.m.

Tuesday, February 20.

SOCIETY OF DESIGNERS.—Mr. W. G. Paulson Townsend on "Design for Embroidery." 8 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. W. R. Maguire, J.P., on "Artificial Heating." 8 p.m.

Wednesday, February 21.

SOCIETY OF ARTS.—Mr. Edwin Bale on "Artistic Copyright." 8 p.m.

SURVEYORS' INSTITUTION.—Annual Dinner at Holborn Restaurant. 6.30 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers).—Mr. Henry R. Kenwood, M.B., D.P.H., F.C.S., on "Methods of Disinfection." 8 p.m.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.—Ordinary Meeting at 8 p.m.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

Thursday, February 22.

CARPENTERS' HALL.—Prof. T. Roger Smith, F.R.I.B.A., on "English Halls and Mansions." 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Meeting at 8 p.m.

SOCIETY OF ARCHITECTS.—Meeting at 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

YORK ARCHITECTURAL SOCIETY.—Mr. A. J. Penty on "Building Traditions." 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Lower Limb." 6.15 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BIRMINGHAM.—For the erection of offices, stables, bottling store, &c., at the Aston Brewery, for Messrs. Ansell and Sons, Limited. Messrs. Inskipp and Mackenzie, architects, 5, Bedford-row, London, W.C. Quantities by Messrs. Curtis and Sons, 119, London Wall, E.C.:

Lee and Son...	£35,250	Harley and Son...	£33,400
G. Squires...	35,250	Bowen and Son...	33,222
W. and J. Webb...	34,403	Lowe and Sons...	32,635
J. E. Moorhouse...	34,115	Barnsley and Sons*	31,988

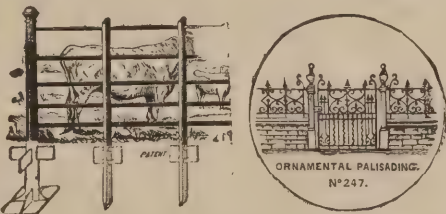
* Accepted.

BRADFORD.—For forming and sewerage three new streets, &c., Sticker-lane, Laisterdyke, for Mr. E. Hine. Mr. W. J. Beall, surveyor, 23, Bank-street, Bradford:—

Walter Burrand...	£3,200	Ross, Wilks, and Crabtree, Shipley*	£2,890
Naylor and Son...	2,985	Matthew Hall...	2,533

* Accepted.

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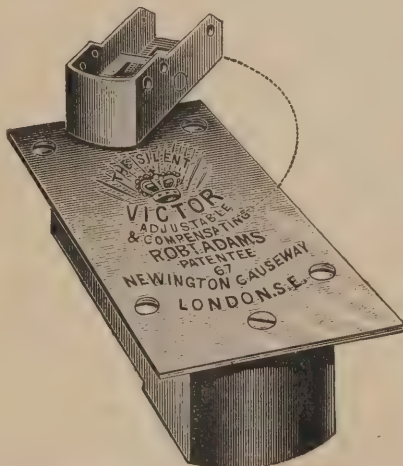


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BRIGHTLINGSEA.—For water-supply works, for the Urban District Council:—

Contract 4.—Building.

T. J. Ward	£1,599	H. V. Lord	£1,460
Dupont and Co.	1,549	Everitt and Son	1,445
W. Chambers	1,549	W. Manders, Leyton*	1,154

Contract 5.—Cast Iron Tank.

Mayon and Haley	£930	Stevenson and Son	£614
Ashton and Green	850	W. Maunders, Leyton*	608
Bird and Co.	794	Barrow Iron Works	575

Contract 6.—Special Main.

Warner and Co., Walton-on-Naze*	£1,472
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*Accepted.

BRIGHTON.—For the construction of an underground convenience, Queen's-road, for the Corporation. Mr. F. J. C. May, C.E., Town Hall, Brighton:—

Finch and Co.	£1,827	Field and Co., 20, Preston-st., Brighton	1,800
H. J. Penfold	1,800	Satin and Evershed	1,790

*Accepted.

CRICKHOWELL.—Accepted for structural alterations and new hot water system, &c., at the workhouse, Crickhowell. Messrs. Down and Richards, architects, Crickhowell and Cardiff:—

Alterations.

Messrs. Thos. Jones and Sons, Crickhowell	£255 10
---	---------

Hot Water System.

Messrs. John Williams and Sons, Cardiff	£548 10
---	---------

GARLIDGE (Kent).—For the execution of sewerage works for the Isle of Thanet Rural District Council. Mr. Albert Latham, C.E., Municipal Buildings, Margate:—

Cooke and Co.	£3,880	Tuff and Miskin, Rochester*	£2,388
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*Accepted.

KING'S LYNN.—For the erection of new seed storing silos at Baker-lane, King's Lynn, for Messrs. Henry Leake and Son, Ltd. Messrs. William Jarvis and Son, architects, King-street, Lynn:—

Coulson and Loft	£3,760	W. A. Brown*, King's Lynn	£3,390
J. W. Rowe	3,390		

*Accepted.

LONDON.—For enlargement, &c., of Oxford-gardens School, for the London School Board. Mr. T. J. Bailey, architect:—

B. E. Nightingale	£14,525 0 0	Martin, Wells, and Co.	£12,205 0 0
Stimpson and Co., Ltd.	14,283 10 11	Edwards and Medway*	11,778 0 0
Johnson and Co., Ltd.	12,739 0 0		

*Accepted.

LONDON.—For erection of domestic economy school; manual training centre, &c., at Plassey Road, for the London School Board. Mr. T. J. Bailey, architect:—

Kirk and Randall	£6,895	A. White and Co.	£5,710
J. Longley and Co.	6,731	J. and M. Patrick	5,702
H. Wall and Co.	6,659	Holliday and Greenwood	5,696
F. and H. F. Higgs	6,643	W. J. Mitchell & Sons	5,493
W. Downs	6,670	J. and C. Bowyer	5,485
B. E. Nightingale	6,459	J. Marsland	5,424
E. Lawrence and Sons	5,991	E. Triggs	5,400
E. P. Bulled and Co.	5,947	Edwards and Medway*	5,400
W. Johnson and Co., Limited	5,807		

*Accepted.

LONDON.—For alterations and additions to "The Duke of Cambridge," South Tottenham, N. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. Quantities supplied:—

P. Hart	£3,445	A. Porter	£3,327
Antill and Co.	3,385	Knight and Son	3,315
Courtney & Fairbairn	3,343	Sheffield Bros.*	3,149

*Accepted.

LONDON.—For the erection of public baths and wash-houses, facing Prince of Wales-road, Kentish Town, N.W., for the St. Pancras Vestry. Messrs. T. W. Aldwinckle and Son, architects, 1, Victoria-street, S.W. Quantities by Mr. W. T. Farthing, 46, Strand, W.C.:—

C. Gray Hill	£80,495	Shillitoe and Son	£73,000
Leslie and Co.	76,522	B. E. Nightingale	71,173
Patman and Fotheringham	76,511	Spencer, Santo, and Co.	69,900
F. and H. F. Higgs	74,900	H. Wall and Co.	69,500
Foster and Dicksee	73,880	C. Wall, Chelsea, S.W.*	68,943
Balaam Bros.	73,150		

*Accepted.

LONDON.—For removing three iron buildings and appurtenances from the Acon-street site and re-erecting them on the Magdalen-road site, for the London School Board. Mr. T. J. Bailey, architect:—

T. Cruwys	£1,450	Mitson and Co.	£1,139
J. and W. T. Hunter	1,285	Hawkins and Co.	1,130
Humphreys, Ltd.	1,193	W. Harbrow*	1,087

*Accepted.

LONDON.—For the execution of foundations, roadways, and main drainage at new infirmary, Acton-lane, for the Willesden Guardians. Mr. A. Saxon Snell, architect, 22, Southampton-buildings, Chancery-lane, E.C. Quantities by Messrs. Northcroft, Son, and Neighbour:—

Clift Ford	£6,867 0 0	Wilkinson Bros.	6,860 0 0
J. Macklin	£10,372 2 10	Spencer Santo & Co.	6,850 0 0
J. and T. Binnis	8,595 4 3	Patman and Fotheringham	6,661 0 0
Pedrette & Co.	8,400 0 0	Boyer and Sons	6,498 0 0
Nowell and Co.	8,170 0 0	Cowley & Drake	6,100 0 0
Neave and Son	7,995 0 0	Green*	6,100 0 0
W. Ballard, Ltd.	7,676 0 0		
W. Walker	7,175 0 0		
Wall and Co.	6,620 0 0		

*Accepted.

LONDON.—For additions to the First Avenue Hotel, Holborn, W.C., for the Gordon Hotels, Limited. Mr. Lewis H. Isaacs and Mr. Henry L. Florence, architects, 8, Verulam-buildings, Gray's Inn. Quantities by Mr. James Francis Bull, 30, Bedford-row, W.C.:—

Staines and Sons	£28,340	Colls and Sons	£26,823
Ashby and Horner	28,111	Cubitt and Co.	26,763
Langdale, Hallett and Co.	27,620		

LUTON.—For the erection of warehouse, Peel-street, for Mr. Bartlett. Mr. A. Wilkinson, architect:—

Saunders and Son	£1,625	G. Batson	£1,300
G. Kingham	1,596	G. Angel*	1,170
D. Parkins	1,511		

*Accepted.

HUNSTANTON.—For the erection of new shop and show-rooms, for Mr. H. Winlove. Messrs. William Jarvis and Son, King-street, Lynn, architects:—

Giddings and Parren	£313	Chambers and Son, Derby-singham	£300
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*Accepted.

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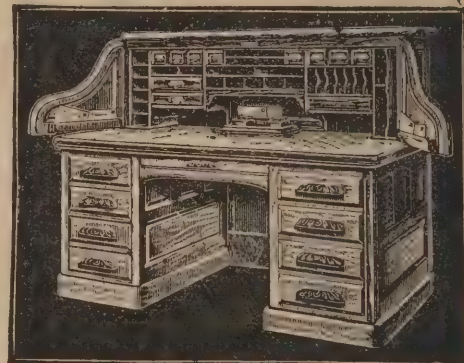
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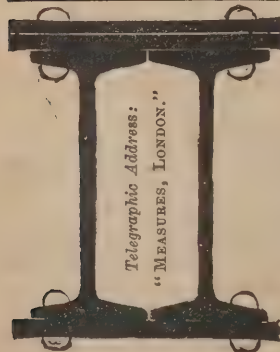
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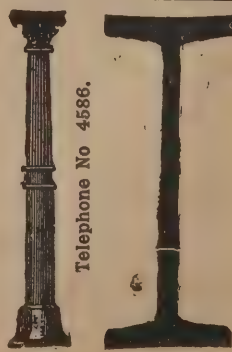
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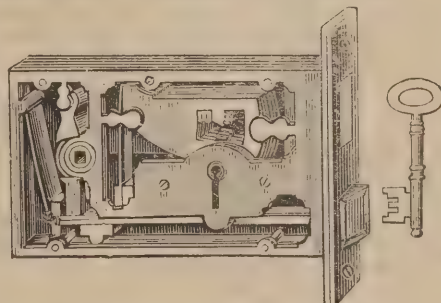
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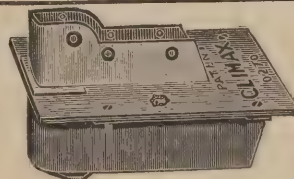
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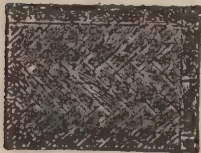
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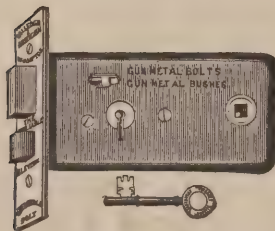
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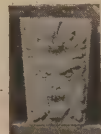
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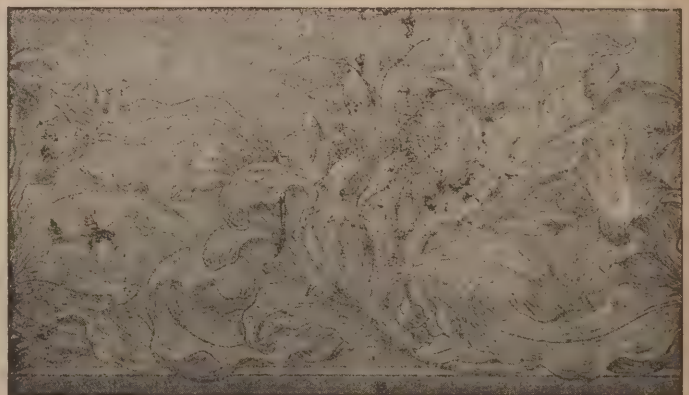
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BUILDERS' LIFTING APPLIANCES.*

By DAVID SKINNER.

AT the outset it may be stated that in this case the word "builder" means any tradesman in a building where lifting appliances are required; and this may apply to new buildings or to old buildings undergoing repairs, alterations, such as slapping, shoring, and underpinning for shop fronts, &c.

This paper is written mainly to consider the mechanical advantages that may be gained by the use of levers, crabs, cranes, lifting jacks, pulley blocks and other contrivances.

A knowledge of the mechanism of these appliances is of equal importance to the craftsman as that of his ordinary tools. Too much is taken for granted in what is known of these machines. A plate is fixed on the body of a crane, indicating the safe load that may be lifted by the crane, but we do not know under what conditions the result was ascertained. A crane with the jib inclined at, say, 60deg. to the ground will

$P \times AF = W \times BF$, or $P : W :: BF : AF$, also $\frac{P}{W} = \frac{BF}{AF}$. In other words, if AF is twice BF , then to have equilibrium the power will be half the weight. Fig. 2 represents a lever of the second order, where W is between P and F . The moments of P and W must be equal in order that the lever may be in equilibrium.

This statement will be more easily understood if we consider this lever as a beam resting on both ends A and F , when it will be clear that both reactions are acting upwards and the amount of each is:—at A , $\frac{BF}{AF}$ and

at F , $\frac{AB}{AF}$ or $P = \frac{BF}{AF} W$. Fig. 3 represents a lever of the third order, P being between W and F ; therefore the power necessary to balance the weight will be greater than the weight, and is found by taking the length of the arm of P and multiplying by its distance from F , and the arm of W by its distance from F and by the amount of W ; these two should be equal; $\therefore P \times AF = W \times BF$.

The following is another way of considering the equilibrium of a lever:—Suppose AB (Fig. 4) to be a lever without weight acted upon by weights P and W . If the lever be moved through a small space so as to be in the position shown by the dotted lines, then P will have moved through the space CD , and W through the space EG ; therefore the work of P will be $P \times CD$, and that of W will be $W \times EG$; but these will be equal, as shown thus:— $P \times AF = W \times BF \therefore \frac{P}{W} = \frac{BF}{AF} = \frac{EG}{CD}$. $\therefore P \times CD = W \times EG$. The principle of the equality of work at the points of application of P and W is of the greatest use in the solving of mechanical problems and applies in all cases.

The Wheel and Axle.

There is an objection to the use of arrangements of ordinary levers in cases where the weight has to be raised through a considerable distance. To overcome this the wheel and axle may be used; it is really a form of lever by which W may be raised through any desired space. Fig. 5, shows a front and side elevation of a wheel (C) and axle (D). The principle is precisely the same if the wheel is replaced by a handle secured to the shaft, as in an ordinary crane; in this case the machine is called a windlass. The weight W hangs by a cord or chain which is secured to and wound round the axle. The wheel and axle revolve upon a shaft (of which F is the centre), supported by suitable bearings, as shown. On reference to the side elevation it will be seen that the arrangement is equivalent to a lever AFB of which the fulcrum is at F , the power being applied at A and the weight at B ; the condition of equilibrium is therefore the same as that of a simple lever, namely,

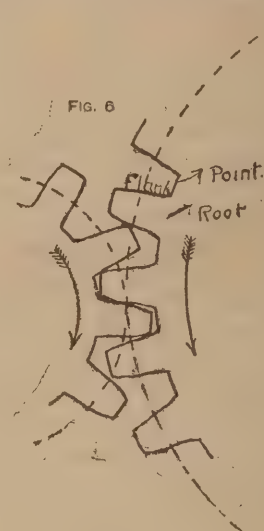
$$P \times AF = W \times BF \therefore \frac{P}{W} = \frac{BF}{AF} = \text{radius of axle}$$

radius of wheel; but as the circumferences of circles are in the proportion of their radii, $\frac{P}{W} = \frac{\text{circumference of axle}}{\text{circumference of wheel}}$. Example: Radius of wheel, 16in.; diameter of axle, 6in.; W , 2cwts. Find W . $P \times 16 = \frac{1}{2}$ of 6in. $\times W$ or 2cwts. = 16 $P = 3 \times 2$ cwts. $\therefore 3 \times 2 \times 7 = P$, or 42lbs. In the case of an ordinary lever where the arms are

given we have simply to deal with them, but in wheel and axle problems, and, it may be stated here, in all problems where a rope or chain is wound round a barrel or drum, the diameter or thickness of the rope or chain should be taken into account. We must also take the diameters of each part of the machine, or the radii or the circumferences; we cannot take the diameter of one part and the radius of another, and so on.

It is evident that a practical limit of size for wheel and axle machines would soon be reached, by which the limit to the gain in power which can be obtained is reached also. This difficulty can be overcome by introducing one or more pairs of wheels. Such an arrangement is called a crab; if there is one pair of wheels it is called a single-purchase crab, if two pairs a double-purchase crab, if three pairs a treble-purchase crab, and so on. Before we consider any of these purchase crabs, it will be necessary, in a general way, to take up wheel work in gear.

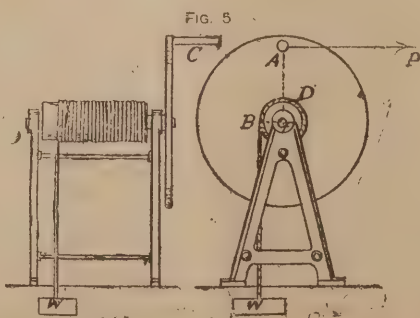
In calculating the diameters of toothed wheels in gear with one another, we measure the diameter of the pitch circle. The pitch circle of a wheel is the circle in which represents the motion of the wheel when in gear with other wheels, in which case the pitch circles would be continually in contact with each other during their rotation; and the point of contact of two wheels is called the pitch point. The pitch of the teeth in wheels is



the distance, measured on the pitch line, occupied by a tooth and a space together. Fig. 6 shows a wheel and pinion in gear, with their pitch circles shown dotted. These teeth should be uniform, for, if not fitting properly, the driving may be obtained by a series of blows on the teeth, instead of a continuous uniform pressure, the result being a loud noise and an irregular and injurious wearing on the teeth.

Figs. 7 and 8 illustrate a single-purchase crab. There are two cast-iron standards St , with suitable bearings for shafts, secured together by three stays S . The upper shaft C has square ends on which the handle H (to which the power is applied) is placed, and on this shaft there is also a pinion A gearing with a wheel B , which is keyed to the second shaft along with the barrel F . A ratchet wheel and detent are shown at D , their function being to prevent the weight running down on the removal of the power.

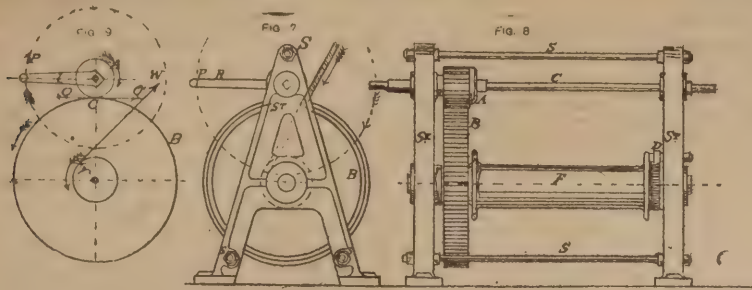
Determination of the proportion between P and W : (1) By principle of work; (2) by the lever principle. First, Fig. 9. Let the length of the handle be denoted by l , the diameter or number of teeth in pinion by A , the diameter or number of teeth in wheel by B , radius of barrel, drum or axle by r , and Π circumference in terms of diameter (Π in all cases in this paper is taken as 3.1416). Then the motion of W for one revolution of the barrel $2\Pi r$ and the work of W in the same time = $W \times 2\Pi r$; motion of P in the same time will be $2\Pi \times \frac{B}{A} \times \frac{r}{A}$ (being the number of revolutions that A makes for one of B , and,



have a different stress to resist when the jib is inclined at 45deg. Again, one man may or may not be able to lift a certain load according to the means he employs. The question of the materials composing these machines, their strength and suitability, will not be considered, as it would take up too much time and is rather outside the scope of this paper. Friction also will not be considered, as the amount of such friction, or, to use a technical term, the efficiency of a machine, can only be determined by experiment; and if an experiment were tried on two machines of the same mechanism the result would possibly show a difference, as much depends on the good condition in which these appliances are kept. An example will be given with each case considered, and a simple formula stated to calculate the mechanical advantage.

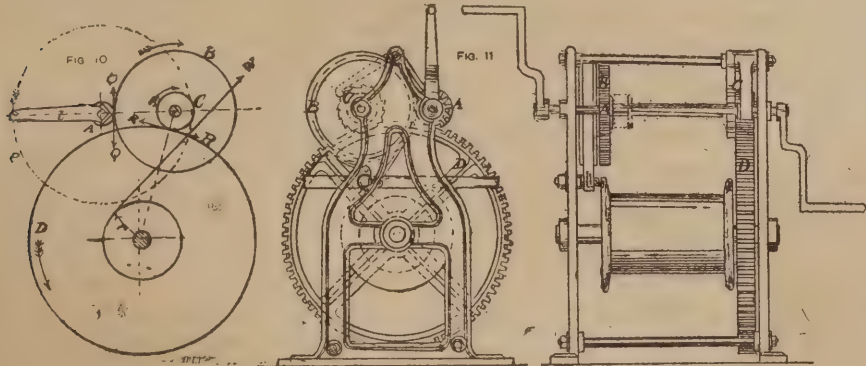
In considering levers, we find there are three kinds. Fig. 1 represents a lever of the first order, where P is a force acting downwards at A , keeping the lever in equilibrium under the action of the weight at B . The power is to the weight in the inverse proportion of their respective arms; thus

* A paper read before the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society on January 26th, 1900.



therefore, for one of the barrel); and the work of P will be $P \times 2\pi \times \frac{B}{A}$; but these are equal, the arrangement being in equilibrium, $\therefore P \times 2\pi \times \frac{B}{A} = W \times 2\pi r$; dividing both sides of the equation by 2π we have $\frac{Pl \times B}{A} =$
 $Wr \therefore \frac{P}{W} = \frac{rA}{lB}$ or $P = \frac{WrA}{lB}$ and $W = \frac{PlB}{rA}$.
Or P is to W as radius of axle multiplied by the diameter or number of teeth in pinion is to the length of handle multiplied by the diameter or number of teeth in the wheel.
Second. On referring to Fig. 9 it will be seen that P acts in the circle in which the handle moves. If we denote the length of the handle by l , radius of pitch circle of pinion by A, radius of pitch circle of wheel by B, and radius of barrel by r , then the pressure P will produce a pressure Q from pinion A to wheel B, the handle and the radius of the pinion to point C acting as a bent lever. There will also be the reaction of wheel B upon pinion A acting along CQ; further, the moment of Q about the centre of wheel B must be the same as that of W about the same point, Q and W being forces acting on the arms of a second bent lever. We have, therefore, $Pl = QA$, and $QB = Wr$. But $Q = \frac{Pl}{A} \therefore QB = \frac{PlB}{A} \therefore \frac{PlB}{A} = Wr \therefore \frac{P}{W} = \frac{rA}{lB}$, as previously obtained. It is desirable to notice that the equation for W is $P \times \frac{l}{A} \times \frac{B}{r} = W$. A consideration of this will enable us to adopt a simple method of solving crab problems. It

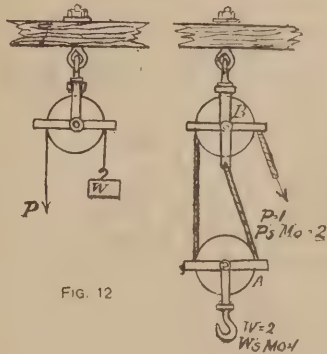
double-purchase crab are here considered separate for the sake of clearness. The proportion between P and W is obtained in the same way as in the single-purchase crab, and we need hardly go over the statements again, but merely add the two extra pairs of wheels represented by C and D.
 $\therefore P \times \frac{l}{A} \times \frac{B}{C} \times \frac{D}{r} = W$, or $P : W :: r \times A \times C : l \times B \times D$.
Next we come to the determining of the proportion between P and W by principle of lever. Let length of handle be denoted by l , radius of pitch circles of pinions A and C by A and C, radius of pitch circles of wheels B and D by B and D, and radius of barrel by r . Q and R represent the forces acting between A and B and C and D respectively; then in first lever, $P \times l = A \times Q$, $\therefore Q = \frac{P \times l}{A}$; in the second lever, $Q \times B = R \times C \therefore \frac{P \times l}{A} \times B = R \times C \therefore R = \frac{P \times l \times B}{A \times C}$; in the third lever, $R \times D = W \times r \therefore \frac{P \times l \times B}{A \times C} \times D = W \times r \therefore P : W :: r \times A \times C : l \times B \times D$, the same as before. By using this last method we can determine the pressures on the wheel teeth. It will be observed that the pressures on the wheels increase as we approach W. It is for this reason that in a double-purchase crab the teeth of the barrel wheel and its pinion are made of a stronger pitch than the handle shaft pinion and wheel gearing with it. Example: A double - purchase



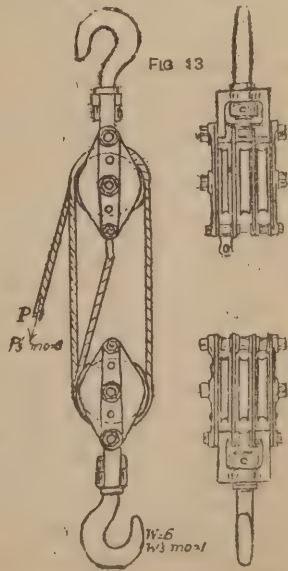
will be seen that the first factor is P, the second is $\frac{l}{A}$, and the third is $\frac{B}{r}$, these being the terms in the precise order that they are in the crab. Example: Single-purchase crab, handle, 16in. long; barrel, 8in. in diameter; pinion and wheel, 12 and 80 teeth respectively; weight, one ton; find power required. $P \times \frac{16}{12} \times \frac{80}{4} = 2,240\text{lbs.} \therefore 80P = 3 \times 2,240 = 6,720\text{lbs.} \therefore P = \frac{6,720}{80} = 84\text{lbs.}$
In a double-purchase crab, shown diagrammatically at Fig. 10 and in elevation at Fig. 11, we have an additional pair of wheels. The double-purchase crab may be used single purchase by putting it out of gear of the second pair of wheels. This is done by sliding the right-hand shaft endwise and putting the handle on the left-hand shaft. In crane work this arrangement is different, though the result is the same. The single- and

crab has wheels with 72 and 64 teeth, and pinions with 12 and 16 teeth respectively. The handle is 16in. long, and the barrel is of 6in. diameter. W is three tons. Find P. $\frac{P}{1} \times \frac{16}{12} \times \frac{72}{16} \times \frac{64}{3} = 3 \times 2,240\text{lbs.} = 52\frac{1}{2}\text{lbs.}$ Although not stated so, it will be understood that the pinions are the drivers and the wheels the followers. If the reverse were the case, then power would be lost instead of being gained, which is contrary to usual practice in the use of cranes, P generally being limited. Also, if the diameter of the rope is given, then half of its diameter must be added to the radius of the barrel.
Rope and Pulley Block Tackle.
It has already been shown that the principle of the wheel and axle is the same as that of a simple lever. If the wheel and axle are made of the same diameter, then the arms of P and W would be the same, and whatever was the motion of P, that of W would be similar. If

P and W are arranged to act in the same plane, then P may be applied to a rope or chain passing round a pulley, and W will be secured to the rope at a point on the opposite side of the pulley. The leverage of each will be the same, and P and W will be equal; therefore there is no gain in power. To go further, and add another pulley hung by a cord fixed to the under side of the first pulley; we then have two ropes supporting the weight and the pull or tension on the rope is equal throughout. Thus the tension on the two ropes supporting W (Fig. 12) is each equal to P, and the motion of P equals half the motion of W; therefore $W = 2P$, and $P = \frac{W}{2}$, or the mechanical advantage is 2, and the pull on the beam is $P + W$, or 3 P. Such an arrangement is called a pulley block, which may have two or three sheaves side by side, separated from each other by thin metal plates. The sheaves in each block are threaded on the same



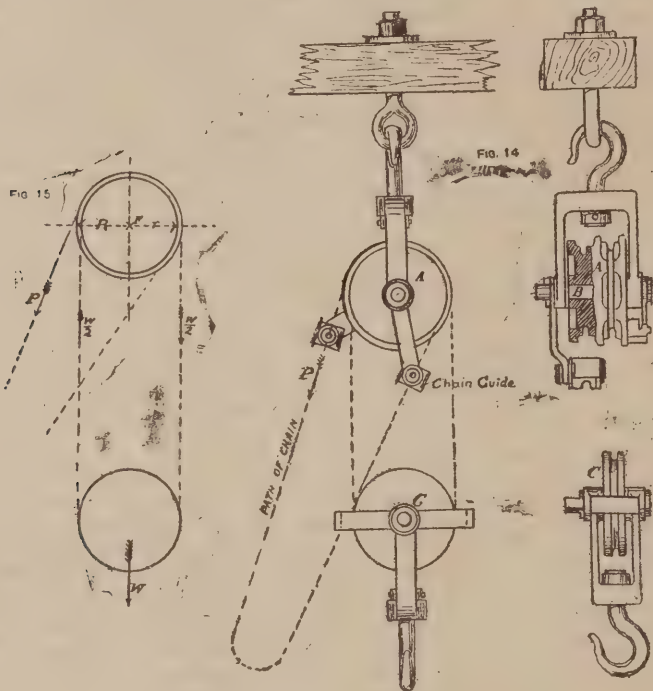
spindle and can rotate independently of each other. In every case where the number of sheaves in the upper block is the same as in the lower block, the cord will be secured to the upper block, and the cords will be of an even number; whereas, when the number of sheaves in the lower block is one less than in the upper block, the cord will be secured to the lower block and the ropes will be of an odd number.
Take the case of a pulley block tackle with three sheaves in the top and in the lower block (see Fig. 13). The cord is secured to the upper block, then passes under one of the sheaves of the lower block, then upwards over a sheave of the upper block, then downwards under a second sheave of the lower block, and so on, P being applied to the free end of the cord, which is spoken of as the fall. It will be seen that there are six cords supporting the weight W, and as the tension on each of the cords = P, $W = 6P$, $P = \frac{W}{6}$ and P's motion = 6 W's motion.
Weston's Differential Pulley Block.—In the rope and pulley block the mechanical advantage is limited to the number of ropes support-



ing the weight, and the amount of rope required to lift a load is N times the distance the weight moves through, N denoting the number of ropes. To obviate this we can use Weston's differential pulley block, by which a much greater mechanical advantage is obtained, besides which an endless chain is used and the length of the loose loop can be suited to any heights through which W has to be raised. In this arrangement (see Figs. 14 and 15) a compound pulley of two different diameters rotates on a spindle. The rim is recessed to suit the links of the chain, so that any movement of the chain causes a rotation of the pulley. The chain is an endless one passing over each part of the pulley, and one of the loops thus formed passes under a single movable pulley, while the other hangs loose; on the side of this loop which hangs from the larger part of the pulley, P is applied.

Let R equal the larger radius and r the

weight moves through 1ft., and then measure the number of feet the chain has moved through. The result will be the velocity ratio of P to W . Next, having a known weight W fixed in the hook of the block, apply a power fixed on the chain, say a spring balance, until it is just sufficient to move the weight. Then $W \times \text{1ft.} = \text{the work done on } W$ while moving through 1ft., and the work done by $P = \text{the weight shown by spring balance} \times \text{velocity ratio}$. Then the work done in overcoming friction for every foot of lift = work done by P minus the work done on W , which will be found to be very much greater than that done on W , showing that more than half the power is lost by, or in overcoming, friction. The weight of the lower block must be added to the known weight hanging from it. I have not had an opportunity to test this data. Example to show mechanical advantage: Diameters of parts of compound sheave 6in.



smaller radius. The tension on each part of the chain supporting the lower block is $\frac{W}{2}$. Suppose the compound pulley to make one revolution, the motion of P will be $2\pi R$, and its work will be $P \times 2\pi R$, and the motion of W in the same time will be $\frac{2\pi R - 2\pi r}{2}$;

because when the pull is applied the cord is wound on the larger diameter and unwound from the smaller one, and as W is supported by two cords, the distance that it is raised in a given time is equal to half the difference between the length coiled on the one and that uncoiled from the other. W 's work will be $W\pi(R-r)$; but P 's work and W 's work are equal, as there is equilibrium $\therefore P \times 2\pi R = W\pi(R-r)$, or $P \times 2R = W(R-r)$

$\therefore P = \frac{W}{2R}(R-r)$ and $W = \frac{2PR}{R-r}$, or the mechanical advantage = $\frac{2R}{R-r}$.

From the equation for the mechanical advantage it will be seen that there is no limit theoretically to the W that can be supported by a given P , as the difference between the diameters of the parts of a compound pulley can be made as small as we please.

Now, it is well known that in this pulley block the weight remains suspended after the pull has been removed, and the question naturally arises, how is this? The reason is that more than half of the power exerted is lost by friction, or in other words, the efficiency of the apparatus is less than $\frac{1}{2}$.

The actual efficiency could be determined by experiment. First, by finding the velocity ratio. To do this, mark on a rod or stick the position of P and W . Pull the chain until the

and $\frac{1}{2}$ in. Find what W would be supported by a P of 30lbs. $W = \frac{2PR}{R-r} = \frac{30 \times 3 \times 2}{3 - 2\frac{1}{2}} = \frac{180}{\frac{1}{2}} = 360$ or $W = 720$ lbs. Practically, this would be less than 360lbs.

It will be understood also that, to lower the weight, that part of the loop which comes from the small diameter must be pulled.

The foregoing mechanical arrangements are all for the purpose of raising loads any considerable distance, and are limited only by the length of the rope or chain available. None of these, however, would be suitable for shoring, under-pinning of walls, or anything that is required to be held in position until it is made good by masonry, brickwork, or otherwise. This will be considered in the next article.

(To be concluded.)

London County Council.—At last week's meeting the Housing of the Working Classes Committee reported the approaching completion of the last of the twenty-three blocks of dwellings which have been erected upon the Boundary Street estate, at an outlay of £633,000, and stated that the Prince of Wales had consented to perform the opening ceremony on March 3rd. The chairman of the General Purposes Committee was asked whether he would consider the desirability of sending a proposal to the Technical Education Board that they should vote a sum of money by which skilled London artisans might be sent to the Paris Exhibition, as had been done by the City Corporation in the case of the last Paris Exhibition. Mr. Strong said that the matter should be brought before the committee.

Builders' Notes.

A Case about Internal Soil Pipes.—In the case of *Mair v. the Local Authority of the District of the Lower Ward of Lancashire*, heard recently at Glasgow, the respondent contested the power of the local authority to enforce a regulation requiring written explanations to be lodged in cases where internal soil and waste pipes were necessary in buildings proposed to be erected. On August 7th, 1899, the district committee confirmed a recommendation of a sub-committee requiring written explanations, with plans, to be lodged with them where it was not practicable to carry the waste and soil pipes outside. Respondent refused to comply with this regulation, and proceeded on August 28th to build. Action was then taken against him. Sheriff Boyd was of opinion that the course adopted by the respondent was not his proper remedy in raising the question as to the local authority's right to impose their new regulation, and that he thus laid himself open to the attack made upon him. In finding respondent technically guilty, the Sheriff stated that he thought it was clear that this error on the part of the respondent was provoked by the mistake of the local authority. He imposed a penalty of one shilling for building without approval, and one shilling for continuing to build, and one shilling for building without notice, allowing expenses to neither party.

Omissions in Estimates.—In the Scottish Court of Sessions recently, Robert Mitchell, an Aberdeen builder, appealed against a decision by the Sheriff of Aberdeen in an action in which he (Mitchell) was sued by the Senton Brick and Tile Company for payment of £226. The plaintiffs were erecting a brickworks, and the defendant offered to execute the carpenter work for £859, which offer was accepted. It appeared that in pricing the schedule of estimates, the defendant's son innocently and erroneously omitted to charge for 1,154 yds. super. of galvanised corrugated iron, valued at £110 11s. 10d., and that he also omitted to transfer to his notebook certain summations amounting to £215 13s. 6d. In consequence of these omissions the defendant thought he was justified in refusing to implement the contract, and the plaintiffs had to enter into a contract with another contractor for the execution of the work. Sheriff Crawford held that the error was not a clerical error; that the offer and acceptance constituted a valid and binding contract for the execution of the work for a lump sum, and had no reference to the schedule of prices to be prepared by the defendant; and that the error did not entitle the defendant to be relieved from the obligations of the contract. The Sheriff therefore decreed in terms of the conclusions of the summons. The Court of Session adhered to this decision, but thought £40 was ample to cover the loss sustained by the plaintiffs, who were also awarded expenses.

Tipping Rubbish on Land: an Interesting Case.—On Wednesday last, in the Chancery Division of the High Court of Justice, the case of the *West Ham Central Charity Board v. the East London Waterworks Company and Base* (an under-tenant) was heard. The plaintiffs wanted an injunction to stop the defendants putting rubbish, earth or material on certain land. This land had been demised in 1830 to the waterworks company for forming a reservoir; but the company never did this, and, in 1896, let the land to one Base, who used it as a rubbish shoot, and deposited on it vegetable and other refuse. The plaintiffs alleged that this user of the land was a damage to the reversion. On the other hand evidence was adduced to show that the value of the land was materially increased. Mr. Justice Buckley said that it was clear that the authority given by the waterworks company to the defendant Base was to level up the land, but that authority did not extend to allowing him to bring offensive material on the land. It was contended that the vegetable refuse would disappear in about three years. But if it did not the plaintiffs

might find themselves at the termination of the lease precluded by section 25 of the Public Health Acts Amendment Act, 1890, from building upon the land. It was admitted by both sides that the land would, in the future, be used for the erection of factories and not of houses. The defendant Base had raised the land 10ft. above its original level. If this were left it would be necessary, in building factories or other heavy buildings, to dig through this 10ft. down to the original land before a good foundation could be obtained. The question was whether this constituted an alteration of the property demised. The defendants contended that it was not, and that, although it would be necessary to dig down through the 10ft., yet the extra cost incurred in so doing would be more than recouped by the additional value attaching to the raised land. His Lordship did not agree. In his opinion the raising of the land constituted waste. The reversioners might wish to let the property for a rubbish shoot, but by the alteration of the level the inheritance would lose the benefit of doing so. Why should they not have the property restored to them in its original state? In his Lordship's opinion, there had been such an alteration of the level of the property as to constitute waste, and the plaintiffs were entitled against both the defendants to the injunction they asked.

Crystal Palace Stables Case.—On February 7th, in the Queen's Bench Division of the High Court of Justice, the appeal case stated from Justices of London of the *Crystal Palace Company v. London County Council* was heard. The company was charged with erecting at the grounds of the Crystal Palace certain buildings to which Part 7 of the London Building Act, 1894, applied—to wit, a 22-stall stable, a loose-box, stabling, and harness-room, a forage store, and office, and a shoeing forge—without having obtained the approval of the Council. The stables and other buildings in respect of which the information was preferred were erected in May and June, 1899, for use in connection with land laid out by the appellants as a polo-ground. The buildings were situated about a quarter of a mile from the main building. By section 21 of the Crystal Palace Act, 1881, it was provided that "the main building, conservatories, and waterworks of the company, and the conveniences and other works immediately connected therewith, shall be exempted from the operation of Part 1 of the Metropolitan Building Act, 1855, and of any other Act amending the same, but this exemption shall not extend to any dwelling-house or building as aforesaid upon any part of the property of the company." The Metropolitan Building Act, 1855, was repealed by the London Building Act, 1894, but by section 218 it is provided that where in any Act or document the provisions of the Act of 1855 are referred to, such Act or document shall, with the necessary modification, be read as if the corresponding provisions of the Act of 1894 were therein mentioned, instead of the provisions of the repealed Act. The Justices convicted the appellants.—Mr. Freeman, Q.C., contended that the stables were exempted from the provisions of the London Building Act by virtue of section 21 of the Crystal Palace Act, because they were "immediately connected" with the objects for which the Crystal Palace was re-erected and the grounds laid out, which included the amusement and elevation of the people.—The Court dismissed the appeal. Mr. Justice Channell said that "works immediately connected therewith" meant works connected with the main building—that was to say, the physical structure, not the objects of the appellant company. The polo-pony stables being a quarter of a mile away from the main building were not connected with it in the sense intended in the Crystal Palace Act, and were, accordingly, not exempted from the provisions of the London Building Act. Mr. Justice Bucknill concurred.

For Electrical Extensions at Blackburn the Town Council has resolved to borrow £220,000.

Engineering Notes.

Manchester City Gas Engineer.—Mr. J. G. Newbigging has been appointed engineer to the Gas Committee of the Corporation of Manchester.

Automatic Gas Meters.—During the past twelve months 75,258,000 pennies, weighing 647 tons, were dropped into the automatic penny-in-the-slot gas meters supplied by the Gas Light and Coke Company to 114,668 consumers.

Electric Light at Sheffield.—Tasker's Engineering Company, Sheffield, have secured a large contract for extensions of the plant at the Sheffield electric light station. The contract is for supplying and fixing a 1,500 horsepower condenser and large steam and water mains.

Municipal Socialism.—The Electricity Committee of the Halifax Town Council has decided, subject to the approval of the Council, to grant a bonus to members of the staff employed at the electricity works on the total works and management costs when these are brought below 1.5 pence per unit.

The New Bradford Tramways.—The Tramways Committee of the Bradford City Council recommended the Council to accept the tender of Macartney, McElroy and Co., Limited, for the complete electrical overhead equipment of the Lister Hills, Stanningley, Whetley Hill, and Thornton tramway sections for £12,064. 15s. 2d.

Water Mains and Electrolysis.—At last week's meeting of the Manchester City Council a long discussion took place with regard to the allegation that the water mains were being damaged by electrolysis; it was eventually decided to have an expert report presented to the Council on the matter.

Acetylene.—After the expiration of forty days from February 6th last it is proposed to submit to her Majesty in Council the draft of an Order in Council providing that acetylene, when in admixture with atmospheric air, or with oxygen, shall be deemed to be an explosive within the meaning of the Explosive Act, 1875, and that it shall not be manufactured, imported, kept, conveyed, or sold. Notice is also given that, in accordance with the Rules Publication Act, 1893, copies of the proposed draft Order in Council may be obtained by any public body, within the period of forty days, at the Privy Council Office, Whitehall.

Proposed Pier at Dawlish.—The pier which it is proposed to erect at Dawlish will be built on cast-iron piles, braced with wrought-iron tie-rods, the deck being of timber. The landing stage at the end will be carried on green-heart piles, driven into the sea bed and braced with timber, with provision for high-water landing and low-water steps for small boats. Seats will be provided at intervals along the deck of the pier, which will be lighted by gas. Steamers from Torquay will be able to land passengers at all states of the tide, except during exceptionally low spring tides, which occur about twice a month. The cost of construction is estimated at nearly £5,000.

New Bridge at Tranmere.—The old bridge of the Joint Railway line running over the Green Lane Railway at Tranmere has recently been taken away and a new bridge substituted. The new steel girder bridge is of 60ft. span, with a width of 30ft., the entire weight being about 80 tons. This had been constructed on the west side of the line on rollers, and was moved into its place and fixed in a very brief period, the supporting walls having been previously erected to the required height. Messrs. Gabbatt, contractors, Liverpool, carried out the practical portion of the work, the structure being furnished by the Dalham Forge Company, of Warrington.

The Floor System of Girder Bridges was dealt with by Mr. C. F. Findlay, M.A., M.I.C.E., at a meeting of the Institution of Civil Engineers held last week. He considered that the advantages claimed for simple triangulated types of construction, in respect of the more definite determination of stress

which they permit, had been much exaggerated, and that there were many cases in which the lattice-girder was the most suitable type to use, having regard to economy, practical convenience, and appearance. When lattice-girders were used a comparatively close spacing of cross-girders often became imperative.

Masters and Men.

The Bristol Master Builders' Association held their annual dinner last Wednesday.

The Operative Plumbers of Hull have been granted an increase of a halfpenny per hour by the masters, to date from April 13th next.

The Kirkcaldy Operative Masons have agreed to accept the master builders' terms, namely a reduction of a halfpenny per hour which will make the wage 8½d. per hour. This agreement is to hold good between masters and men until May 31st, 1901.

Dundee Joiners' Dispute Settled.—At a meeting of the Dundee Joiners' Conciliation Board held last Wednesday, the various points in dispute in connection with the drawing up of the working bye-laws for the year were amicably settled. The employers desired to be allowed to revert to the old arrangement whereby they would be called upon to pay the standard rate of wages only to "competent" men. Several years ago the men held out against the continuance of this system, and after negotiation gained their point. They refused to sign the rules this year if the word "competent" were again introduced, and last week the masters agreed not to press the point, and to pay the standard rate to all men.

Newport (Mon.) Building Trade Dispute, after enduring for nearly seven months, was settled last Saturday week. An agreement was signed embodying a code of working rules to last for five years, the question of the rise or fall of wages being subject to six months' notice given on November 1st in any year. The men return to work at 8½d. per hour, or an advance of a halfpenny; but this rise the masters—it is alleged on their behalf—were willing to give when the men came out in July last. The members of the Newport branches of the Associated Society of Carpenters and Joiners signed the code of rules and agreement as to wages on the Monday. The masters have also decided to accept the new terms, and it is stated that the dispute with the labourers is in a fair way of being settled, the men having withdrawn the demand for a farthing which is in dispute, and have asked for a written guarantee that the question be reconsidered when an increase is conceded to labourers in Cardiff and Bristol. The plasterers are still holding out upon the question of their right to refuse to work with non-unionists, which, they state, was conceded by the Federation in the settlement of the national dispute.

Halifax Borough Engineer and Surveyorship.—For the post of borough engineer and surveyor under the Halifax Corporation, for which a salary of £500 a year was offered, there have been fifty seven candidates. Mr. James Lord, deputy borough and waterworks engineer, Blackburn, has been appointed.

Sanitation at Gainsborough.—A special committee of the Gainsborough Urban Council has considered and reported upon Dr. Darra Mair's inquiry into the sanitary condition of the town. They point out that they are taking steps to close certain condemned slum property; to concrete the foundations of all new houses, as required by the by-laws; and to establish a more regular inspection of new buildings with a view to preventing "jerry" building. The question of sewage disposal has also been tackled, and the old obnoxious vault system done away with. The surveyor was also engaged in preparing plans of the sewers and outfalls into the Trent.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
Feb. 16	Luton—Buildings	School Board	J. E. Brown and Son, Castle-street, Luton.
" 16	Alfreton—Alterations	Industrial Society, Limited	Thurman, Cattle, and Nelson, Solicitors, Alfreton.
" 16	Barnoldswick—Bakery	Trustees	G. Bower, 16, Market-street, Colne.
" 16	Hingham, Norfolk—Chapel	School Board	R. S. Willetts, Rockland St. Peter, near Attleborough.
" 17	Rotherham—Alterations	School Board	J. Platts, Architect, Old Bank-bldgs., High-st., Rotherham.
" 19	Egham—Additions to Schools	School Board	J. A. Engall, Clarence-street, Staines.
" 19	London, E.—Pulling Down	Limehouse Works Committee	S. E. Ratcliff, Board Offices, White Horse-st., Commercial-road East, E.
" 19	Churwell, Yorks.—Houses	Industrial Co-operative Society	W. Cheesebrough, Post Office, Churwell.
" 19	Kidderminster—Church	Primitive Methodists	D. G. Baxter, 104, Lea-road, Kidderminster.
" 19	Larbert, Scotland—Church	Cemetery Committee	J. P. Goodsir, Newmarket-street, Falkirk.
" 19	Warrington—Alterations	Lancashire and Yorkshire Railway Co.	T. Longdin, Engineer, Town Hall, Warrington.
" 20	North Kelsey, Lincs.—Warehouse	Joint Hospital Board	Atkinson and Son, North Kelsey Station, Lincoln.
" 20	Burnley—Stables	Corporation	The Engineer, Hunt's Bank, Manchester.
" 21	Lancaster—Alterations	Hugh Barr	J. E. Parker, Post Office chambers, Newcastle.
" 22	Leeds—Police Buildings	School Board	Engineer, Municipal-buildings, Leeds.
" 22	Londonderry—Alterations	Consett Iron Company, Ltd.	J. P. McGrath, 28, Carlisle-road, Londonderry.
" 22	St. Thomas, near Exeter—School	Rev. P. Kelly	I. Champion, Council Offices, Cowark-street, St. Thomas.
" 23	Blackhill, Durham—Cottages	London County Council	C. E. Oliver, Architect, Blackhill, co. Durham.
" 24	Ardara, Ireland—Church	Rural District Council	E. J. Toye, Architect, Strand, Londonderry.
" 27	Westminster—Artizan's Dwellings	Market Committee	The Architect, 17, Pall Mall East, S.W.
" 28	Balcombe, Sussex—Pump House	Metropolitan Asylums Board	J. Mansergh, 5, Victoria-street, Westminster, S.W.
March 1	Ballystrang, Donegal—School		J. C. Cannov, Glenswilly, Letterkenny.
" 14	Wolverhampton—Markets		J. W. Bradley, Engineer, Town Hall, Wolverhampton.
" 25	Dartford—Hospital		A. and G. Harston, 15, Leadenhall-street, E.C.
" 25	Thorndon, Suffolk—Shed		F. C. Foster, Thorndon.
ENGINEERING—			
Feb. 16	Cwm Broomil, Wales—Reservoir	E. Knox	J. Taylor, Sons and S. Crimp, 27, Great George-street, S.W.
" 16	Lydford—Water Supply Works	Rural District Council	G. D. Bellamy, 6, Courtenay-street, Plymouth.
" 17	Bootle, Lancs.—Cables	Corporation	W. R. Wright, Electricity Works, Pine Grove, Bootle.
" 17	Glasgow—Motor Car Trucks	Corporation	J. Young, 88, Renfield-street, Glasgow.
" 17	Carlisle—Waterworks	Rural District Council	G. Armstrong, 24, Bank-street, Carlisle.
" 19	Hull—Cars	Corporation	A. E. White, Town Hall, Hull.
" 19	Loughborough, Leics.—Reservoirs	Corporation	G. V. and F. W. Hodgson, Engineers, Loughborough.
" 19	Pollington, Yorks.—Well	Goole Urban District Council	J. C. Mellis, 23, Grasham House, Old Broad-street, E.C.
" 19	Beckenham—Bore Holes	Urban District Council	J. A. Angell, Council Offices, Beckenham.
" 20	London, S.E.—Boilers	Vestry St. Mary, Newington	Kincaid, Waller & Manville, 29, Gt. George-st., Westminster.
Feb. 22	Ludlow—Converting	Union Gas Co.	W. H. Whitehouse, Manager, Union Gas Co., Ludlow.
" 22	Ludlow—Furnishers, &c.	Union Gas Co.	W. H. Whitehouse, Manager, Union Gas Co., Ludlow.
" 24	Roscommon—Pumping Station	Rural District Council	T. O'Keefe, District Council Office, Roscommon.
" 27	Walthamstow—Warming Schools	School Board	W. A. Longmore, 7, Great Alie-street, E.
" 28	Rochdale—Electricity Meters	Corporation	Lacey, Clirehugh & Sillar, 2, Queen Anne's-gate, Westminster.
" 28	Balcombe, Sussex—Pumps	Rural District Council	J. Mansergh, 5, Victoria-street, Westminster.
" 28	Downerry, Cornwall—Waterworks		Jenkin and Son, Engineers, Liskeard.
IRON AND STEEL—			
Feb. 19	Christania—Piping	Gasworks	Commercial Department, Foreign Office.
" 19	London, N.—Fencing	Finchley Urban District Council	F. Smythe, Council Offices, Finchley.
" 19	Warrington—Iron Gullies	Sewerage Committee	T. Longdin, Borough Surveyor, Warrington.
" 20	Lancaster—Pipes	Water Committee	J. Cook, Town Hall, Lancaster.
PAINTING AND PLUMBING—			
Feb. 20	Ossett, Yorks.—Painting		J. Whitehead, Dale-street, Ossett.
ROADS AND CARTAGE—			
Feb. 16	Chelmsford—Granite	Town Council	G. H. Gasse, 16, London-road, Chelmsford.
" 16	Southwold, Suffolk—Forming	Corporation	The Surveyor, Corporation Offices, Southwold.
" 16	Spilby—Granite and Slag	Rural District Council	T. A. Busbridge, Surveyor, Spilby.
" 17	Birmingham—Materials	Public Works Committee	City Surveyor, Council House, Birmingham.
" 17	Bridgend, Glamorgan—Materials	County Council	T. L. Edwards, Surveyor, Town Hall, Bridgend.
" 17	Croydon—Materials	Town Council	Road Surveyor, Town Hall, Croydon.
" 17	Hertfordshire—Materials	County Council	U. A. Smith, 41, Parliament-street, Westminster.
" 17	Sleaford, Lincs.—Granite and Slag	Rural District Council	E. Clements, 74, Southgate, Sleaford.
" 17	Surbiton—Materials	Urban District Council	J. Bell, Council Offices, Ewell-road, Surbiton.
" 19	Newington—Materials	Vestry	L. J. Dunham, Vestry Hall, Walworth, S.E.
" 19	London, N.W.—Materials	St. Pancras Vestry	W. N. Blair, Surveyor, Vestry Hall, Pancras-road, N.W.
" 20	Middlesborough—Materials	Rural District Council	W. H. Dixon, Surveyor, Kirby, Carlton, North Ulerton.
" 20	Carshalton—Limestone Tar Paving	Urban District Council	M. W. Gale, Council Offices, High-street, Carshalton.
" 20	Leigh, Lancashire—Materials	Corporation	T. Hunter, Surveyor, Bank-chambers, Leigh.
" 20	London, N.—Making-up	Tottenham Urban District Council	P. E. Murphy, 712, High-road, Tottenham.
" 20	Salisbury—Stones and Gravel	Rural District Council	D. W. Morrice, Surveyor, Homington.
" 20	Stony Stratford—Materials	Rural District Council	W. H. P. Pritchard, Wicken, Stony Stratford.
" 21	Sutton, Surrey—Works	Urban District Council	C. C. Smith, Surveyor, Public Hall, Sutton.
" 21	Stokesley—Materials	Rural District Council	W. H. Dixon, Surveyor, Kirby Carlton, North Ulerton.
" 21	Maidstone—Materials	Rural District Council	J. S. Killick, Surveyor, Barming, Maidstone.
" 21	Felixstowe	Urban District Council	The Surveyor, Town Hall, Felixstowe.
" 22	Lowestoft—Materials	Rural District Council	A. J. Firby, Ivy Cottage, Carlton Colville, Lowestoft.
" 22	Boston, Lincs.—Materials	County Council	H. C. Johnson, Sessions House, Boston.
" 22	Horncastle, Lincs.—Granite	Rural District Council	J. Chatterton, Council Offices, Horncastle.
" 22	Wigston Magna, Leicester—Granite	Urban District Council	The Surveyor, 32, Bell-street, Wigston Magna.
" 23	London, N.—Making-up	Wood Green Urban District Council	C. J. Gynony, Surveyor, Town Hall, Wood Green.
" 24	Belper—Materials	Rural District Council	B. C. Cordon, Surveyor, Duffield, near Derby.
" 24	Lewes—Materials	County Council	F. J. Wood, Surveyor, County Hall, Lewes.
" 27	West Ham—Road-making	County Council	J. G. Morley, Town Hall, West Ham.
" 27	Bridgewater—Materials	Corporation	Surveyor, Municipal Offices, High-street, Bridgewater.
" 28	Hailsham, Sussex—Material	Rural District Council	E. Catt, Church-street, Willington.
SANITARY—			
Feb. 16	Tavistock—Sewers	Rural District Council	C. D. Bellamy, 6A, Courtenay-street, Plymouth.
" 19	Bridlington—Scavenging	Town Council	F. Reed, 13, Hilderthorpe-terrace, Bridlington.
" 20	Ashington—Sewer	Urban District Council	A. Wood, Council Offices, Market Place, Ashington.
" 22	Portland—Drainage Works	Urban District Council	E. J. Elford, Engineer, New-road, Portland.
" 26	Wigston Magna, Leicester—Scavenging	Urban District Council	W. G. J. Clark, 32, Bell-street, Wigston Magna.
" 26	Guilford—Sewerage Works	Rural District Council	N. Lailay, 16, Great George-street, Westminster.
" 28	Nans—Sewers	Council	F. Bergin, Engineer, Kildare.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Feb. 22	Luton—Homes	£21	W. Austin, Clerk, Union Offices, Luton.
" 28	Sunderland—Tramways Depot ... ..	... ..	F. M. Rowley, Clerk, Town Hall, Sunderland.
" 28	Findochty, Scotland—Harbour Improvements ... ..	... ..	Clerk of Commissioners, Findochty, Scotland.
" 28	Doncaster—Isolation Hospital ... ..	... ..	F. E. Nicholson, Solicitor, Union Offices, Doncaster.
March 12	Belfast—Assembly Hall	£100, £50, £25	W. D. Eakin, 12, May-street, Belfast.
" 30	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
April 23	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's walk, Leicester.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.

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Sales by Auction for the Year 1900.—Messrs.

DEBENHAM, TEWSON, FARMER, and BRIDGEWATER beg to announce that their SALES for 1900 of ESTATES, Investments, Town, Suburban, and Country Houses, Business Premises, Building Land, Ground-rents, Advowsons, Reversions, Stocks, Shares, and other Properties will be held at the Auction Mart, Tokenhouse-yard, near the Bank of England, in the City of London, as follows:—

Tuesday, February 20th
Tuesday, February 27th
Tuesday, March 6th
Tuesday, March 13th
Tuesday, March 20th
Tuesday, March 27th
Tuesday, April 3rd
Tuesday, April 10th
Tuesday, April 24th
Tuesday, May 1st
Tuesday, May 8th
Tuesday, May 15th
Tuesday, May 22nd
Tuesday, May 29th
Tuesday, June 12th
Tuesday, June 19th
Thursday, June 21st
Tuesday, June 26th

Thursday, June 28th
Tuesday, July 3rd
Thursday, July 5th
Tuesday, July 10th
Thursday, July 12th
Tuesday, July 17th
Thursday, July 19th
Tuesday, July 24th
Thursday, July 26th
Tuesday, July 31st
Tuesday, August 14th
Tuesday, October 9th
Tuesday, October 23rd
Tuesday, October 30th
Tuesday, November 13th
Tuesday, November 20th
Tuesday, December 4th

By arrangement, Auctions can also be held on other days in town or country. Messrs. Debenham, Tewson, Farmer, and Bridgewater undertake Sales and Valuations for Probate and other purposes of Furniture, Pictures, Farming Stock, Timber, &c.

Detailed Lists of Investments, Estates, Sporting Quarters, Residences, Shops, and Business Premises to be Let or Sold by private contract are published on the 1st of each month, and can be obtained of Messrs. DEBENHAM, TEWSON, FARMER, and BRIDGEWATER, Estate Agents, Surveyors, and Valuers, 83, Cheapside, London, E.C. Telephone No. 503, Bank.

SALE DAYS for the Year 1900.

Messrs.

FAREBROTHER, ELLIS, EGERTON, BREACH, GALSORTHY, and CO. beg to announce that the undermentioned dates have been fixed for their AUCTIONS of FREEHOLD, Copyhold, and Leasehold ESTATES, Reversions, Shares, Life Interests, &c., at the AUCTION MART, Tokenhouse-yard, E.C.

Other appointments for intermediate Sales will also be arranged.

Thursday, February 22nd
Thursday, March 8th
Thursday, March 22nd
Thursday, April 5th
Thursday, April 26th
Thursday, May 10th
Thursday, May 24th
Thursday, June 7th
Thursday, June 21st
Thursday, June 28th
Thursday, July 5th
Thursday, July 12th

Thursday, July 19th
Thursday, July 26th
Thursday, August 2nd
Thursday, August 9th
Thursday, September 27th
Thursday, October 11th
Thursday, October 25th
Thursday, November 8th
Thursday, November 22nd
Thursday, December 6th
Thursday, December 13th

Messrs. FAREBROTHER, ELLIS, and CO. publish in the advertisement columns of "The Times," "Standard," and "Morning Post," every Saturday a list of their forthcoming Sales by Auction. They also issue on the first of every month a schedule of properties to be let or sold, comprising landed and residential estates, farms, freehold and leasehold houses, City offices and warehouses, ground-rents, and investments generally, which will be forwarded free of charge on application.—No. 29, Fleet-street, Temple Bar, and 18, Old Broad-street, E.C.

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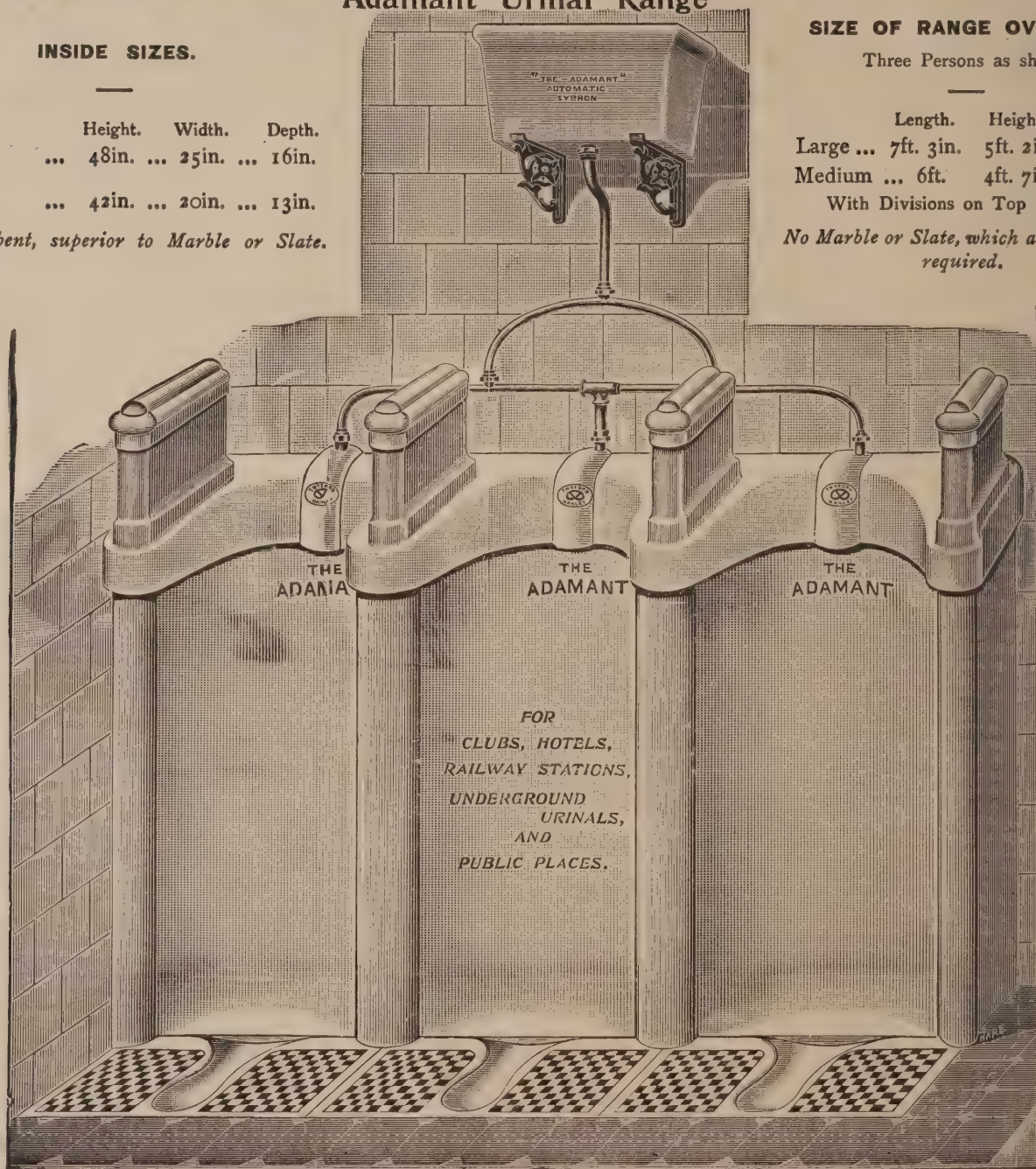
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FEBRUARY 21, 1900.
No. CCLXIII.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

THE BUILDERS' JOURNAL SHILLING FUND (see page 35) has been started to assist in the erection of Homes for Discharged Soldiers at Bisley. This is the Building Trades' Gift to the Nation, and every patriotic reader of the **BUILDERS' JOURNAL** should share in it.

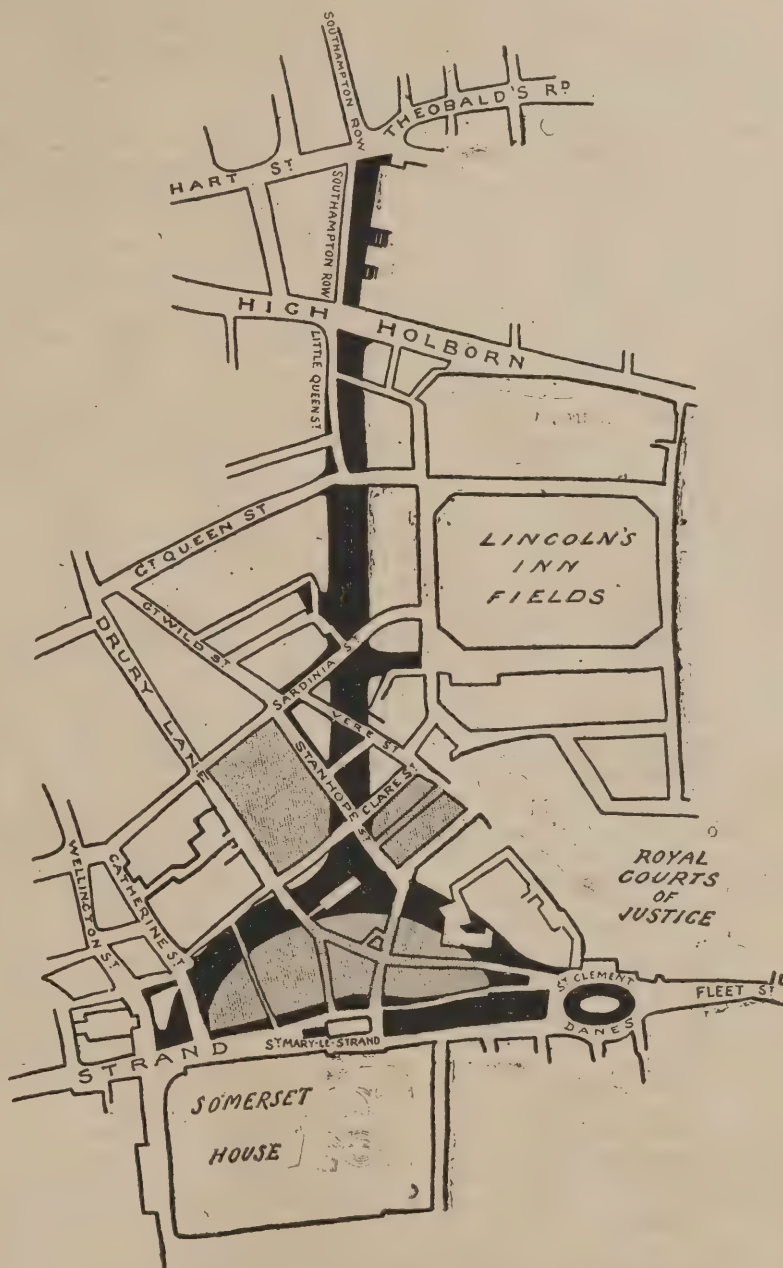
An Architectural Causerie.

The New Street. THREATENED houses, equally with threatened men, live long. It is nine years since the project for a new thoroughfare from Holborn to the Strand first began to take shape, and not yet has a single house along the line of this great metropolitan improvement been demolished. Now, however, after many false reports, we really seem to be on the eve of a beginning, and the hundred times threatened Holywell Street may count its last days without much effort. For here will the first step be taken, somewhat in advance of the works along the line mapped out north and south. This is in deference to the urgency of the demand for a widening of the Strand at this point, which the demolition of the houses on the north side of the Strand and the south side of Holywell Street will at once give. The property is already in the Council's hands, and it is not likely to be many weeks before the houses are cleared of their tenants and on the road to destruction. Unhonoured, if not altogether unsung, this thoroughfare of a thoroughly reputable nomenclature and an utterly disreputable savour, will thus disappear from the map of London. Not altogether wanting in elements of the picturesque, Holywell Street derives its real name from a "holy well" which is said to have existed here; and its pseudonym of "Booksellers' Row" from the vendors of literature of all sorts, new and second-hand, who crowd together in this narrow way. Wych Street, and with it both the Globe and the Opera Comique Theatres, will closely follow upon the disappearance of Holywell Street. Here also some Elizabethan houses of many and overhanging storeys, picturesquely grimy and hump-backed, will be lost to the artist and will cease to afford a text for the sanitarian. Among them is a double-gabled building of timber and plaster, which was "restored" in a small way two years ago, and is traditionally said to have been the home of the carpenter to whom that bright spirit of his times, the redoubtable Jack Sheppard, was apprenticed. It was at the back of this house, and in the yard of a house in Holywell Street, that, according to the late George Augustus Sala, the ancient "holy well" was re-discovered, about fifty years ago. Inappropriately enough, it was on the premises of what was then a public-house. Sala was present at the exploration of the dried-up well-shaft, and he says that expectations of archaeological finds were great. Those hopes, however, were doomed to dis-

appointment, for old boots, oyster shells, broken crockery, and two battered coins were the sole treasures that rewarded the explorers. One coin, which proved to be a halfpenny of George the Fourth's reign, sufficiently proved, if the other "finds" did not, that they had not lighted upon mediæval relics.

We have dwelt rather upon this corner of the forthcoming improvements because it happens that this is the oldest district to be cleared, and the most interesting. This portion will cost £162,000. The sketch map printed herewith will clearly show the property to be acquired and demolished along

hope, Vere, and Sardinia Streets, through which the new thoroughfare will cut, bear honoured names, smirched—long years since by the degradation into which the purlieus of Drury Lane and Clare Market have fallen, so that it is difficult to realise that this was once a fashionable centre, and that "pretty Mistress Gwynne" did not disdain residence hereabouts. It is here that the County Council has an additional improvement on hand which has nothing to do with the new street scheme, but will result in clearing away once for all the slums of Clare Market, Holles Street, Clare Street, and the great



THE NEW HOLBORN TO STRAND THOROUGHFARE: PLAN SHOWING PROPERTY TO BE DEMOLISHED.

The thick black line marks line of street and property to be acquired for it. Dotted spaces indicate areas to be cleared under powers acquired and to be re-built.

the whole course of the improvement. Four theatres will disappear—the Olympic, Gaiety, Opera Comique, and Globe—but they will doubtless be rebuilt on other sites and in greatly improved form; nor in the destruction of any one of the present buildings need there be anything to regret, for even the Gaiety, built though it was only some twenty-five years ago, scarcely realizes the modern idea of a thoroughly efficient theatre, while the others are utterly indefensible from whatever point of view they may be regarded—whether of safety or convenience. Stan-

insanitary area bounded by Kemble Street, Drury Lane, Blackmoor Street, and Stanhope Street. These areas have been cleared under the provisions of the Housing of the Working Classes Act of 1890, at a cost, as estimated, of £216,000. Past them and across dingy Sardinia Street, the course of the new thoroughfare butts up against the works of the Electric Light Corporation, which will have to be removed and rebuilt on another site. Thence the way lies through a dense mass of alleys and factories, and larger or smaller business premises, to

Great Queen Street, which will be crossed, and the line of Little Queen Street, followed to High Holborn and Southampton Row. Little Queen Street will be widened on its east side and slightly at the south end of the west side also. The Southampton Row widening, already undertaken as far as it is intended to go—that is to say, to a junction with Theobald's Road—costs £162,000. The total cost of these huge works will entirely throw into the shade anything hitherto done in the way of metropolitan street improvements. The Metropolitan Board of Works in the thirty-three years of its existence spent £11,500,000, or £348,000 per annum; but this scheme alone will give a total cost for land acquired of £4,442,400. Recoupment, it is estimated will bring back the whole of this sum with the exception of £354,100. Additional expenditure for providing accommodation for the rehousing of the working class will amount to £300,000, bringing the final cost to £774,100.

C. G. H.

Art for All.* THE cheapness with which books may be illustrated no longer excites surprise. The process block, like the bicycle, is a thing which has come to stay, and a block as we know is simply so much type; it forms an integral part of the page, and sheets may be filled with reproductions of Rembrandt's works as cheaply as they could be with what may be written about them. Mr. Knackfuss, the author, is probably pleased to see his monograph done into English, and advised not to expect very much as his share. There remains the translator—what is earned by a lady-help in an indigent family compares favourably with his reward. The book which suggests these remarks is only one of some hundreds which have appeared in the course of the last few years having this characteristic in common—neither author nor artist is paid. It may be thought that I am complaining, but that is far indeed from my purpose, for there is no other way of extending to all the advantages of education in art, and it should be generally known how such really good things are produced. The translation of M. Michel's great work in two volumes which appeared some years ago was only for those who could afford it, and what we have here is a volume which contains in compact form, leaving little to be desired, an account of the man's life and work as able as any so far as I know, and in some respects more complete. Not elsewhere, I believe (not in English at least), will be found the author's rescript of the "inventory of the master's movable property," taken in 1656 by the officers of the Bankruptcy Court with a view to a public auction; a melancholy document this is indeed, and I should be sorry to have to quote it at length, but interesting to us as it proves that Rembrandt was by no means so blind to beauty as one might be led to suppose by the creatures who figure in his representations of sacred and classical subjects. In fact, the eclectic spirit of the collector was his in a large degree, and Amsterdam, the chief port of the world, was exactly the place for him. In the multi-coloured robes of the Jews he delighted, and in the queerest Japanese gawds, things quite the reverse of beautiful, but marvels of art notwithstanding. As his collection of prints included examples of all the Italian schools, he had many examples of beauty before him, and clearly it was of set purpose that he painted always according to Nature—Dutch nature. That beauty is one of the Devil's snares is not denied even now, and the artists of Rembrandt's age had not only this to avoid, but the idolatry, as they would have called it, of that form of religion which the Inquisition had made so hateful. E. R.

* "Rembrandt." By H. Knackfuss; translated by Campbell Dodgson. London: H. Grevel and Co. 4s.

On Reflection.

Ruskin and the Royal Gold Medal.

THE last number of the "Journal of the Royal Institute of British Architects" contains three very interesting letters from John Ruskin, which, although written in 1874, have not hitherto been published. In that year the gold medal given annually by the Queen was adjudged by the Institute to Ruskin. The Institute honoured itself in its choice, and we can well believe that neither before nor since has the distinction been more worthily bestowed. The Institute, however, reckoned without Ruskin—always an unsafe thing to do; and we can imagine the consternation with which the secretary received one fine morning in May, Ruskin's reply to the letter, advising him of the honour it was proposed to confer on him. The reply was a courteous but firm refusal to accept the medal, and an explanation of the reasons which led him to take such an attitude. The reasons were briefly that architecture had fallen on evil days, acts of Vandalism were perpetrated on every hand (the letter quoted four typical examples), under the name of restoration the most celebrated works were being destroyed for the sake of emolument, and for all this the Institute was responsible. "Under these circumstances," the letter continued, "I cannot but feel that it is no time for us to play at adjudging medals to each other, and must, for my own poor part, very solemnly decline concurrence in such complimentary formalities, whether as they regard others or myself. For we have none of us, it seems to me, any right remaining either to bestow or to receive honours, and least of all those which proceed from the grace and involve the dignity of the British throne." This letter, although obviously written for communication to the Institute as a whole, was suppressed by the Council of that day, for what reasons we are left to conjecture. Possibly they felt that the knowledge that they had received such a rebuff would lessen the sense of veneration in which junior members of the profession ought to hold those "potent, grave, and reverend seigneurs," the Council of the R.I.B.A.; or, possibly they were conscious that the "Master" had expressed with his accustomed directness and force certain home truths which they would have preferred should remain unspoken. However this may be, the action they took in the matter seems to have been to commission the president, Sir Gilbert Scott, to remonstrate with Ruskin and seek to alter his decision.

Plain Speaking to the R.I.B.A.

THE effect of the President's communication was to call forth a second letter, in which Ruskin expressed with even greater vehemence his poor opinion of architects in general and the R.I.B.A. in particular. "I very solemnly deny," he wrote, . . . "that either the Architects' Institute or any other dominant association of artists in England, France, or Italy, is, or can be in the present day, an association for the improvement of architecture, or of any other art by such dominant associations professed. The primary object of all such associations is to exalt the power of their own profession over the mind of the public, power being in the present century synonymous with wealth. And the root of all the evil and ruin which this century has seen . . . is summed up in four words, 'Commission on the cost.' And from any body of architects, however small, who will bind themselves henceforward to accept a given salary (whatever amount according to their standard they may choose to name)

for their daily work, and to work with their men (or, at least, with their own hands, on the sculpture of the building) while they take such salary—from such a body I will take a medal to-morrow." He goes on to speak of the scornful opposition he has met in every effort he ever made which came into collision with the pecuniary interests of modern builders, and quoting a remark of Sir Gilbert Scott's that "the public as a body scarcely know the difference between good architecture and bad," he asks "as a body does the Institute? If it does, why has it not taught the public? If it does not, shall I take the medal, implying the recognition of its authority?" The third letter is unimportant—or should we say it is most important of all as showing the kindly feeling that with all his prophetic ire Ruskin ever entertained towards his friends, even when they disagreed with him? It is simply a private note explaining to Sir Gilbert Scott that the letter he enclosed was written under unusual irritation caused by witnessing the destruction of one of the loveliest scenes in Italy. "I hope" he writes "I have said nothing more than is right (at least in my view) in consequence of this irritation. But I can only say that if I wrote, or could write, as I feel, any day of my life, you would pity me not be angry with me."

Covent Garden "Piazza."

ALTHOUGH the word Piazza only means a place, and is currently

applied in Italy to almost every open space surrounded by houses, it has in London been given a limited and special meaning, that of a square with covered arcaded pavements, whilst popular custom has of late years still further narrowed it to the north side of a single square. Covent Garden was originally designed by Inigo Jones and was intended strictly to follow the lines of the arcaded squares of Leghorn or Livorno where the architect had long resided. He was the first to deliberately introduce the complete Italian Renaissance into England, not the details only as in the Elizabethan buildings but the entire system. "Covent" or Convent Garden, originally the property of the abbey of Westminster, was intended to be fully surrounded with arcades; this, however, was never done; only the north and north-eastern pavements were covered over, and of these but one remains entire. It is in four storeys, the lowest being arcaded; the whole is beautifully proportioned. A spectator with his back to the market, and looking up York Street towards Long Acre, cannot fail to notice the delicacy of outline of the eastern block, which is Inigo's work, and, unfortunately, all that remains of it. In the rebuilding of the western one his scale and proportions have been completely disregarded; the height is greater and alterations have been made in other parts of the square. Covent Garden is now scarcely to be recognised. Covered walks of this kind were again used long afterwards by Nash in Pall Mall East and one or two other places; the former has been removed in building the new Carlton Hotel. Another, of a different design, was pulled down in Regent Street in 1848, and in each case there has been a distinct loss of picturesque effect to London. If it be contended that such structures are dark, the answer is ready that with our improved illuminants they could easily be made light, and in any case would be of the greatest use to the public in wet weather. Covent Garden is always a favourite place with Londoners on account of its charming little avenue filled with flowers and fruit which runs through the market buildings; it is not many of them, however, that notice its roof and method of lighting, which curiously resemble those of a simple basilica.

"BUILDERS' JOURNAL" SHILLING FUND.

AN OFFER TO COLLECTORS.

A SPECIALLY gratifying feature in connection with our Shilling Fund has been the way in which many of our readers have made use of the collecting forms we issued to obtain subscriptions from their friends or fellow workers. We feel convinced that a great deal more might be done in this way, as there must be many thousands in builders' workshops and architects' offices throughout the country who would willingly give a small donation to such a worthy cause if a personal request were made to them, though possibly they would not take the trouble to send off a contribution on their own account. In order to encourage those who have begun to collect and to enlist the services of many fresh collectors, we have decided to present a copy of the latest issue of "Specification" to every contributor or collector of twenty shillings and upwards. "Specification" is becoming more and more widely known as an invaluable book of reference for architects and builders; it is published at 5s. nett, and contains a vast amount of conveniently arranged and thoroughly reliable information on an immense variety of subjects relating to architectural and building practice. This offer applies equally to those who have already sent in their contributions; if they wish for a copy of "Specification" to be sent to them, will they kindly send us word to that effect? Donors of smaller sums than twenty shillings may, of course, make themselves eligible for this gift by sending in the amount of the difference.

We hold over until next week the list of contributions received for our Shilling Fund since we went to press last week, and publish this week a full list of the contributions in kind which had been received up to Saturday last at the Offices of the Executive of the Building Trades' Gift.

FOR THE WHOLE OF THE BUILDINGS:

Messrs. Acton and Borman.—The whole of the Glass Paper.
Messrs. D. Anderson and Son, and J. C. Broadbent and Co. (jointly).—The whole of the Slag Wool.
Messrs. Robert Boyle and Son.—The entire natural Ventilation Appliances for the whole of the buildings.
Messrs. Carter and Aynesley.—The entire Locks.
Messrs. S. and E. Collier (Reading).—The entire Ridge Tiles.
Messrs. Diespeker and Co.—The entire Mosaic Flooring for Lobbies, Halls, Lavatories, &c.
Messrs. T. and W. Farmiloe.—The entire Whitelead, Colour, Oils, Turps, Varnish, Brushes, and Paint Pots.
Messrs. Hobbs, Hart and Co.—The entire Locks.
Messrs. G. B. Kent and Sons.—Paint, Toilet, and various Brushes.
Messrs. Nicholls and Clarke.—The whole of the Glazing.
Messrs. T. Rider and Sons.—The Dressers for the whole of the Homes.
Messrs. John Roberts and Son (Leeds).—The whole of the Nails for the Roof.
Messrs. Roberts, Adlard and Co.—The laying of the entire Slatting (exclusive of slates).
The Velocog Slate and Marble Quarries.—The entire Damp Course Slates, Slate Shelves, Slabs, &c.
Messrs. Webb's Engineering Co. (Birmingham).—The entire Door Fittings and Window Furniture, and the General Ironmongery and Taps.
Messrs. G. A. Williams and Son.—The whole of the Interior Blinds.
Messrs. Doulton and Co.—2,000ft. of Drain Pipes, and Yard Gullies for the Six Homes.
Mr. James Brown.—Moulded Bricks and Ornamental Panels of the whole of the buildings.
Messrs. G. Tucker and Son (Loughborough).—Chimney Pots for all six Homes.
Messrs. Eastwood and Co., Limited.—750,000 Stock Bricks for the whole of the buildings.
Messrs. Pilkington and Co.—Asphalte Paving under floors throughout.
Messrs. Craven, Dunnill, and Co. (Jackfield, Shropshire).—Mosaic flooring for halls in all six homes.

FOR SPECIAL SECTIONS OF THE WORK.

The Asbestos and Asbestic Co.—Asbestic Plaster.
Messrs. G. Aston and Sons.—50cwt. of Ironwork and some Large Girders.
The B. and S. Folding Gate Co.—Indiarubber Flooring for two Bathrooms.
Messrs. Benham and Sons.—Two large Kitchen Ranges.
The Birmingham Blind Co.—A set of Outside Blinds for one Home.
Messrs. John Burton and Co.—10,000ft. run of 4in. by 2in. Batten and Ceiling Joists.
Mr. Jas. Carmichael.—Six Front Doors and Frames.
Messrs. Colls and Sons.—The complete set of forty Doors for one Home.
The Columbian Fire-Proofing Co.—The Construction of the First Floor of One Home.
The Conduit Insulation Co.—Electric Conduits.
Mr. J. F. Ebner.—Pitch Pine Flooring for the Ground Floor of Three Homes.

Messrs. J. C. Edwards (Ruabon).—9,000 Red Pressed 6in. by 6in. Flooring Quarries.
The Expanded Metal Co.—Metal Lathing for exterior walls, floors, and partitions of the Recreation House.
Mr. E. Marshal Fox (for the British and London Non-Flammable Wood Companies).—Non-Flammable Wood Joinery and Interior Timber Work for the Recreation House.
Messrs. Alfred Goslett and Co.—Three large Kitchen Ranges with high-pressure boilers.
Messrs. Thos. Gregory and Co.—Wood-block Flooring for the Recreation Hall.
Messrs. Hilton, Anderson, Brooks and Co.—50 tons of Portland Cement.
Messrs. Hollis Bros. (Leicester).—The Architraves for one Home.
Messrs. Humphreys.—A 30ft. Iron Building for Workshops.
Messrs. Kirk and Randall.—75 squares of Lin. Roof Boarding.
Messrs. Lander and Co.—The Warm Air Grates for the Recreation House.
Messrs. Thos. Lawrence and Sons (Bracknell, Berks.).—25,000 Red facing bricks, and 500ft. of molded bricks.
Messrs. Wm. Lee; Son and Co.—25 tons of Portland Cement and 50 yards of Lime.
Messrs. Lindsay, Neal and Co.—The Heavy Girders for a Pair of Homes.
Mr. E. Lucas.—A Service Lift.
Messrs. Macevoy and Holt (North Fleet).—50 tons Cement.
Messrs. McNeil and Co.—The Slag Wool and Roof Felting for one Home.
The Mural Decoration Syndicate.—50yds. of Partitions.
Messrs. John Newton and Co.—The Roof Felting and the "Plasterers' Hair" for three Homes.
Lord Penrhyn (Penrhyn Quarries).—10,000 Slates.
Mr. Ashteton Smith (Dinorwic Quarries).—10,000 Slates.
Messrs. Strode and Co.—The Electric Fittings for one Home.
The Towny Company, Ltd. (Birmingham).—Twenty-five Enamel Slate Mantelpieces.
Messrs. Geo. Trollope and Sons.—Doors, Casements, and Linings for one Home.
Messrs. Twyford.—The Sanitary Fittings for one Home.
Messrs. B. Ward and Co.—An Artificial Stone Staircase for one Home.
Mr. John P. White (Leicester).—Mantelpieces, designed by the late G. H. Morris, and Garden Seats.
Messrs. Geo. Wooliscroft and Son (Hanley).—The Roofing Tiles for one Home.
Messrs. Maw and Co. (Shropshire).—250 yards super. Tiling for paving.
Mr. George Jennings (preliminary).—Sanitary Fittings for one Home.
Moorgate Engineering Co.—Iron Staircase for Recreation House.
Mr. Jabez Thompson (Northwich, Cheshire).—1,000 Patent Brickwoods.
Mr. William Wiffen (Holsworthy, Devon).—Oak Lintels for one Home.
Darbishers' Granite Quarries (Penmaenmawr).—Some Granite for Macadam.
Messrs. Towers and Williamson (Grantham).—Clinkers for Workshops and Stable floors.
The British Uralite Co.—18,000 square feet of Uralite Slabs.
Messrs. W. H. Lorden and Son (Upper Tooting).—twelve Window Sashes and Frames.
Messrs. E. and C. Braby.—1,000 feet super. of Opal Tiling.
Messrs. Dent and Hellyer.—Sanitary Fittings for one Home.
Messrs. Stephens, Bastow and Co. (Bristol).—forty Doors.
The Sub-Wealdon Gypsum Company (Robertsbridge, Sussex).—25 tons S. rapite Plaster.
Messrs. Fredk. Braby and Co.—1,600 square feet of zinc roofing.
The Poole Steam Joinery Works (Poole).—The architrave mouldings for one Home.
Messrs. J. and F. Gridley (Woking).—The Slate battens for three Homes.
Mr. B. E. Nightingale and Workmen.—Staircase for one Home.
The Lift and Hoist Company.—A service Lift.
Messrs. Durrants' Gully Company.—Twelve Patent Road Gullies.
Messrs. J. W. Falkner and Son.—Forty Doors for one Home.
Messrs. Cartland and Sons (Birmingham).—Four sets swing centres.
Messrs. W. W. Howard Bros. and Co.—£25 worth of wood materials.
Messrs. McTeart and Co. (Belfast).—Roofing felt for three Homes.
The Festiniog District Slate Quarry Proprietors Association (Merioneth) (Per Mr. John George Ashmore).—10,000 Portmadoc Slates.
Kensington Blind Works.—Outside Blinds for one Home.
Messrs. Malcolm, Macleod and Co.—1,000ft. of granite paving.
Messrs. Burt and Potts.—Metal Casement Windows for ground floor of Recreation House.
Mr. Thomas Faldo.—Vertical Damp Course for three Service Blocks.
Messrs. Burke and Co.—Tiling for varandahs and connection corridors.
Mr. John Marsland.—Six Dwarf Cupboards.
The Patent Victoria Stone Company.—100 feet cube Victoria Stone for entry steps.
Messrs. J. W. Furse and Co. (Nottingham).—Lightning conductors for three homes.
Messrs. Burney and Co.—A cistern and a cylinder.
Mr. J. T. Brooker (Dorking).—An entrance gate.
Easily Cleaned Window Co. (Shrewsbury).—per Mr. Thos. Gregory.—Twenty sets E.C.W. patent fittings.
Messrs. Treasure and Son (Shrewsbury).—per Mr. Thos. Gregory.—Twenty windows for upper floors.
Mr. Thos. G. Lichfield.—Two chimney pieces.
Messrs. William Newman and Sons (Birmingham).—Door springs for entrances.

Messrs. J. and H. Patterson (Manchester).—Marble Tablets.
Messrs. Thomas Turner and Son.—Steps for one of the homes.
Messrs. G. H. Renton and Co.—Flooring for one home.
Messrs. Young and Marten (Stratford).—Six grates.

FOR THE ELECTRIC LIGHT INSTALLATION (per. Mr. Max Byng).

The General Electric Company.—The switchboards, cutouts, ceiling roses and switches for the whole of the buildings.
Mr. G. Braulik.—Electric light fittings and switches.
The Newton Electrical Engineering Company (Taunton).—One 12½ K.W. Dynamo.
Messrs. Rashleigh, Phipps and Co.—Labour for wiring one Home.
Messrs. T. Clark and Co.—Labour for wiring two Homes.

VARIOUS GIFTS FOR THE EQUIPMENT OF THE HOMES

Mr. B. T. Batsford.—50 Books for Library.
Messrs. Busset.—Two Armchairs.
Messrs. Mansford and Son.—Typewriting Accoutrements and Stationery.
Messrs. A. S. Wilson and Co.—Drawing Materials.
Messrs. Sprague and Co.—Lithography.
Messrs. Rich and Co.—Electrography.
Mr. B. Nienhaus.—Furniture for two rooms.
Messrs. W. Summerscales and Sons (Keighley).—Two Wringing Machines.
Messrs. William Fisher and Son (West Bromwich, Staffs.).—Seating for fifty persons.
Messrs. H. Addison and Co. (Wellington, Salop).—Seats to the value of £10.
The Ratner Safe Company.—A Safe.

In addition to the above the following contributions in money have been received:—

	£	s.	d.
The Worshipful Company of Tylers and Bricklayers	105	0	0
Mr. Robert Neil (Messrs. Robt. Neil and Son, Manchester)	100	0	0
Mr. George Parker	100	0	0
The Burham Brick and Cement Co. (Burham), per Mr. William Porter	100	0	0
Messrs. John Aird and Co., per Mr. H. B. Tarry	52	10	0
Messrs. John Aird and Sons, per Mr. H. B. Tarry	52	10	0
Messrs. G. H. and A. Bywaters	50	0	0
Mr. Martin Van Straaten	30	0	0
Messrs. George Farmiloe and Sons, Ltd.	26	5	0
Messrs. McLaughlin and Harvey, Ltd. (Belfast), per Lord Mayor of Belfast	26	5	0
Messrs. George Farmiloe and Sons Ltd.	26	5	0
Messrs. Dove Bros.	21	0	0
Mr. W. T. Stead (Review of Reviews)	21	0	0
Messrs. Hall, Beddall & Co.	15	15	0
Messrs. Maides and Harper	10	10	0
Messrs. Woodward and Co.	10	10	0
Messrs. Joseph Chater and Son	10	10	0
Messrs. Charles and Co. (Hackney)	10	10	0
Messrs. Holliday and Greenwood	10	10	0
Messrs. T. and J. H. Stirling	10	10	0
Army and Navy Auxiliary Co-operative Supply, Ltd.	10	0	0
Messrs. J. H. Sankey and Son	10	0	0
Mr. Henry Summers' Workmen	6	0	6
Mr. W. H. George	5	5	0
Messrs. William Sapcote and Son (Birmingham)	5	5	0
The Upper Warden, Worshipful Company of Tylers and Bricklayers	5	5	0
Messrs. E. L. Berry Harrison and Co., per Mr. Max Byng	5	5	0
Mr. Alfred Saxon Snell	5	5	0
Mr. William Grellier	5	5	0
Mrs. Marigold	5	0	0
Mr. A. B. Smith	5	0	0
Mr. J. B. Tomblason (Barton-on-Humber)	5	0	0
Mr. William Brass's Workmen, per Mr. J. Reynolds, Foreman	3	4	0
Mr. Walter Bird	3	3	0
Mr. A. Bedale	2	2	0
Messrs. Brown and Sweetland	2	2	0
Messrs. W. Margrie and Son	1	1	0
Messrs. Hubbard and Moore	1	1	0
Mr. Henry Summers	1	1	0
Mr. A. Chippendale (Leeds)	1	1	0
Various minor sums	0	17	6

It may be well again to explain, for the benefit of any who may not have seen our previous announcements, that the purpose of the gift is to meet as far as possible the needs, which all the patriotic funds hitherto established have to a great extent overlooked, of the permanently disabled soldier discharged from the army with a pension inadequate to supply even the barest necessities of life. It is proposed to erect and equip six cottage homes at Bisley containing in all 100 beds, and in selecting inmates preference will be given to soldiers who have at some time been connected with the building trades.

The Executive of the Building Trades Gift, whose address is 1, Waterloo Place, Pall Mall, S.W., invite offers of gifts in kind. Contributions in money, of any amount from a shilling upwards, may be sent to

SOLDIERS' HOME FUND,

BUILDERS' JOURNAL,

Effingham House,

Arundel Street,
London, W.C.

HERALDRY.—IV.

By GUY CADOGAN ROTHERY.

(Continued from page 8, No. CCLXI.)

Animals: Natural and Fabulous.

IN the early days of heraldry, when each knight could decorate his shield with the emblems that pleased him best, many ornamented their shields with those animals most renowned for bravery. Therefore the lion, the leopard, the eagle, the wild boar, and, at a much later date, dragons and griffins were eagerly adopted as distinguishing badges. But the kings and other rulers of states in nearly every case chose one of the warrior beasts, and thus, gradually, each knight had to alter the posture, or change the colour, of his charges, that there might be no confusion between the arms of the sovereign and those of his subjects.

The lion, chosen at an early date by the kings of England, was, perhaps, the animal the most highly esteemed by heraldic authorities; it is, therefore, hardly astonishing, considering the frequent use of this charge, that the lion has a great many different postures, and has undergone many curious alterations. The lion is borne in fifteen postures:—

(1) *Rampant*, erect on its hind legs, going from sinister side to dexter, its head being in profile, and its tail erect and nearly touching its back. (2) *Rampant-gardant*, erect on its hind legs, and full-faced. (3) *Rampant-regardant*, erect on its hind legs, its head in profile looking backwards. (4) *Passant*, walking past in profile, its right front paw held up, and its tail reflexed over the back. (5) *Passant-gardant*, walking past full-face, right front leg lifted, and tail reflexed over back. (6) *Passant-regardant*, in the same position as the last two, only with its head in profile looking backwards. (7) *Stantant*, with all four paws on the ground; it is generally emblazoned full-faced. (8) *Saliant*, or in the act of springing forward; there is really but very little difference between *saliant* and *passant*, but the former has its two front legs in the air. (9) *Sejeant*, seated on its haunches, its head in profile, and front paws on the ground. (10) *Sejeant-affronté*, sitting upright, full-faced, with its front legs held straight out on either side. (11) *Couchant*, lying down, its head erect, and tail beneath it. (12) *Dormant*, with its head resting on its front paws. (13) *Coward* or *coulé*, the same posture as *stantant*, its head held rather lower, and its tail between its legs. (14) *Rampant-combatant*, two lions rampant-passant placed face to face. (15) *Rampant-addossé*, two lions rampant-passant placed back to back.

Leopard was the term formally applied to the lion passant; the term, and the animal, is now but seldom used, although sometimes

leopards' heads are borne. If the head is borne in profile with a portion of the neck it is termed a *leopard's head*, but if borne full-faced with no portion of the neck visible it is termed a *leopard's face*. Besides being borne in the above fifteen positions the lion is represented as *dismembered* when all its limbs, its head, and tail are cut off from the body; as *debruised*, a term applied to any animal which is emblazoned with an ordinary placed across its body; and *defamed*, when the poor brute is deprived of its tail. Then, again, we have two-headed lions, doubled-bodied lions, dual-tailed lions—this last is the famous Bohemian cognizance—lions with fishes' and dragons' tails, and winged lions. But the most strange form it has been made to assume is that device termed *jessant-de-lis*, in which a fleur-de-lis is made to pass through the head of a lion or leopard, the flowery part coming at the back of the head and the tails out of the mouth.

The wild-boar was one of those charges early adopted as a symbol of bravery, and was given to, or adopted by, great warriors. A young wild boar is termed a *grice*. The pig also makes its appearance on shields, but especially in continental heraldry. The old Spanish heralds made constant use of the unsightly pig in order to show their hatred for the Jews and Moors, who abhorred the unclean animal.

The horse, as might be expected, is a valued charge. It is sometimes borne completely



DRAGON.

GRIFFIN.

UNICORN.

HARPY.

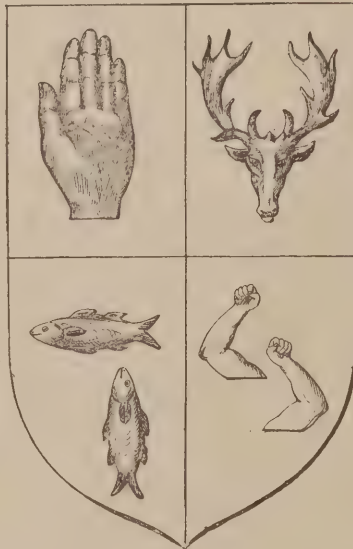
eating its food is termed *vorant*; *vulned* is a term applied to an animal, or part of an animal, dripping with blood; an animal *courant* is running; *saliant*, it is about to spring forward; *incensed*, it is borne with flames issuing from its mouth and nostrils; *respecting* is applied to other animals, except lions and other beasts of prey, when they are placed face to face. A tortoise walking is said to be *gradient*. An animal is often represented as having a crown, or a wreath of flowers, or leaves, round its neck, and is then said to be *gorged*. A lion, or other animal, with its teeth, claws, and tongue of a different colour to the animal itself is said to be *armed* and *langued* of that particular tincture; the term *unguled* is used for animals with hoofs of a different colour. An animal's head cut off smoothly with the neck is said to be *couped*, but if cut off with a jagged edge, *erased*.

The eagle is the animal next in order of importance after the lion. It is either emblazoned, *displayed*, with its wings spread out; as *close*, with its wings shut; or *volant*, flying. The eagle is not unfrequently displayed with two heads.

In the early days of chivalry hawking was one of the principal pastimes of the nobility, and therefore both the hawks and the objects used in hawking were often chosen by those who had special rights of hunting over large extents of forest. Hawks often appear as *belled*, *jessed*, and *varvelled*. The *bell*, which is constantly used as a separate charge, is round, with a long slit in it; a piece of metal at the top is pierced by a hole, through which the *jess*, or leather thong, is passed, and so fastened to the leg of the hawk. *Varvels* are rings attached to the leather thongs. Hawking has contributed two other names to heraldry, the hawks *lure*, or two wings joined with a thong, to which is tied a ring; and *nowed*, a term used when the thongs are knotted.

Corbie is the heraldic name for a raven; the martin is called a *martlet*. This last has gradually been deprived of its beak and legs.

After the eagle and hawk the birds most commonly used in heraldry are the pelican, the peacock, and the cock. The *pelican* is generally borne with its wings open and placed back to back, or as if in her nest feeding her young with her own blood, flowing from a self-inflicted wound, when she is said to be *in her piety*. The *cock*, when its comb, gills, claws, and beak are of a different tincture from itself, is said to be *crested*, *jelloped*, and *armed*. Birds possessing no talons are said to be *beaked* and *membered* when their beaks and legs are of a different tincture. The *peacock* is generally borne *in its pride*, that is to say, full-faced and with its tail outspread. A bird when raising its wings preparatory to flying is said to be *rising*, if flying *volant*, and when a bird of prey is represented as devouring its food it is said to be *preying*. Sometimes a



OPEN HAND (BADGE OF ULSTER).

STAG'S HEAD—CABOCHED.

LUCIE NAIANT.

NAKED ARM—COUNTER-EMBOWED.

LUCIE HAURIANT.

NAKED ARM—EMBOWED.

furnished for war, when it is called *caprisoned*; or else rearing on its hind legs, when it is termed either *effaré* or *forcené*. A spancelled horse has two of its legs fettered by a log of wood.

The rabbit is termed a *conie*; the badger a *gray*; the hedgehog an *herison*; then there are goats and goats' heads, asses and asses' heads. But nearly every animal known may be found on escutcheons.

The stag is said to be at *gaze* when it is standing still, *trippant* when passing; when its antlers are of a different tincture to that of the animal it is said to be *attired*, just the same as the lion, or other savage beast, is said to be *armed* when its claws, teeth, or beak are of a different tincture. A young stag is termed a *girl*.

Caboched is a term applied to the head of any animal when it is represented either full-faced or without a neck. Any beast of prey lying down with its head held up is said to be *couchant*, but a stag or other beast of chase in this position is said to be *lodged*; a wild beast



LION RAMPANT-REGARDANT.

LION RAMPANT.

LION PASSANT-GARDANT.

LION'S HEAD—ERASED.

feather has its quill of a different tincture to itself, in which case it is emblazoned as *quilled* of such a tincture.

A *Cornish chough* is a name given to a black bird with red beak and legs.

Fishes are emblazoned in three principal positions: as *hauriant*, in a perpendicular position; *naïant*, or swimming horizontally; and as *embowed*, or bent. The *dolphin*, a very favourite device, is always borne *embowed*.

Man also appears on shields. He may be nude (a *wild man*, with shaggy beard, and a wreath of leaves round his loins; a *Moor* or *negro*; American Indians, &c.), or clothed, or in armour. Various parts of the human body are also shown. We have the open red hand (the badge of baronets of Ireland and of the United Kingdom), arms naked or *embraced* (clothed in armour). Arms are generally bent, *embowed* and *counter-embowed*. Legs appear bent, both naked and armoured. A singular type is afforded by the three naked legs of Sicily and the three armoured legs of the Isle of Man; these are bent at the knee and joined at the hip, so that they radiate like the spokes of a wheel. The heart often appears, in its purely conventional shape. Parts of the skeleton are common, such as and thigh bones.

The fabulous animals of heraldry are:—The *dragon*, a winged monster covered with scales, its tail and tongue being forked. The *griffin*, or *gryphon*, has the beak and claws of an eagle, the body of a lion, and is further furnished with dragons' wings and large pointed ears. These ears are of great importance in distinguishing the griffin, for it is said to have been one of the fiercest, most active, and quickest of animals. Gerard Leigh, a herald of the time of Queen Elizabeth, speaking of griffins, in a manner clearly showing he believed that they had a real existence, says, "I think they are of great hugeness, for I have a claw of one of their paws which should show them to be as big as two lions." Lady Mary W. Montague in one of her chatty letters, dated from Ratisbon (in 1716), mentions having been shown in a Roman Catholic Church a huge claw set in gold, which was said to be a griffin's claw. "I could not," says Lady Mary, "forbear asking the reverend priest that showed it, whether the griffin was a saint? The question almost put him besides his gravity, but he answered they only kept it as a curiosity." A *wyvern* is a dragon without hind legs, but with a serpent's tail, covered with scales and forked. The *cockatrice* is merely a wyvern with the head of a cock. The *pegasus* is a wild horse with wings. The *sea horse* is an animal possessing the fore quarters of the horse and a huge fish's tail. Many animals besides the horse are represented with fishes' tails, when they are said to be *marined*. The *mermaid* is a woman with a fish's tail. The mermaid is generally represented with a great abundance of coarse hair, and holding in one hand a mirror, and in the other a double-toothed comb. *Mermen* are also used in heraldry, the only difference being that the upper portion of the body is that of a man, and instead of holding the mirror and comb, they generally carry a barbed trident and a huge conch shell. The *unicorn* is a horse with a large pointed horn protruding from its forehead. The *harpy* is a bird with the head and breast of a woman. The heraldic *antelope* ought, perhaps, to be classed as a fabulous animal, for it is certain that no such animals as those seen on shields are known. It has the head of a stag, but with a tusk growing out from the tip of its nose, and it has rows of tufts down the back of its neck, on its chest, thighs, and on its tail.

*Centaur*s are sometimes used as a badge or as a charge.

(To be concluded.)

PRESENT-DAY WATER METERS.*

By WILLIAM SCHÖNHEYDER.

ALTHOUGH merely elementary knowledge, it is necessary to state at the outset that meters are divided into the following classes:—(1) Low-pressure meters; (2) inferential meters; (3) volume or capacity meters, without device for rendering them tight; (4) those of the Venturi class, which have a special function; (5) waste-detection meters, of the Deacon class; (6) positive meters, or meters which provide a space to be filled with and emptied of water, and which have some contrivance for rendering them tight at varying pressures and under diverse conditions of service. Before treating with each of these classes, it may be observed generally that they all have a useful purpose which they are capable of answering with more or less advantage according to their individual merits. The mistake most commonly made, in the author's opinion, is that they are indiscriminately used and frequently selected on account of first cost, without due consideration of the duty they have to perform.

The following table illustrates the large flows of water represented by leakages through comparatively small holes, when under a pressure of 100ft. head:—

Size of Hole.	Gallons.		Number of persons that can be supplied at 15 gal. cons. per head per day.
	Per Hour.	Per 24 Hours.	
$\frac{1}{16}$ in.	381	9,144	610
$\frac{3}{16}$ in.	214	5,136	342
$\frac{1}{8}$ in.	95	2,280	152
$\frac{1}{4}$ in.	24	576	38
$\frac{3}{8}$ in.	6	144	10

But a wider and more important question arises when the needs of our increasing population and the necessity of larger supplies come forward for consideration. Ten gallons per head per day of the London water supply admittedly represents waste. This quantity, based on a population of 5 millions, is 50 million gallons per day, or sufficient to supply 25 gallons per head per day to an increased population of 2 millions, or in other words, is more than sufficient for the needs of the city of Berlin. To put the matter (if possible), still more plainly, if this waste is permitted to continue £8,000,000 of capital, or one-fourth of the total approximate cost of the proposed Welsh scheme of water-supply (of 200,000,000 gallons per day) to London will be spent in order to make up the deficiency caused by preventable waste. Here is a great problem, and, as the author believes, the solution of it lies in the sale of water either by meter only (at very low prices it may be) or by meter with a fixed charge for a minimum supply at present rates in order to ensure health and cleanliness.

(1) *Low-Pressure Meters*.—These are more especially applicable to measuring small flows, such as dribbling supplies to flushing cisterns, but they can also be used for such services as supplies to private houses in which cisterns are used; the great objection to them is, as their name implies, that the whole of the pressure from the main is lost in passing through them, and therefore they require to be placed at the highest elevation at or from which a supply is to be taken, and this again involves—in the case of house supplies—the frequent entry of the meter-inspector and assistant to the top of the house for the purpose of reading the index and examining, repairing, or exchanging the meter. The oldest and probably the best known meter of this type is the "Parkinson," which much resembles a gas meter; it has only one moving part, namely, the drum, though it also requires at least one ball-valve for regulating the supply of water to it. It is very accurate

down to the smallest dribble and will work a long time without requiring repairs. The quantity delivered by the smaller sizes is, however, rather limited, for a $\frac{1}{16}$ in. meter is only rated to pass a maximum of 100 gallons per hour, a $\frac{1}{8}$ in. 200 gallons, and a $\frac{1}{4}$ in. 400 gallons per hour, or about one-third as much as meters of other kinds.

The "Bascule" is another meter of the low-pressure type, which also has only one moving part in the form of a double bucket, mounted on pivots, and so arranged that when one of the buckets is taking its supply from the main the other is being emptied, and *vice versa*; each bucket when full overbalances the other. In this meter also a ball-valve is required for limiting the supply.

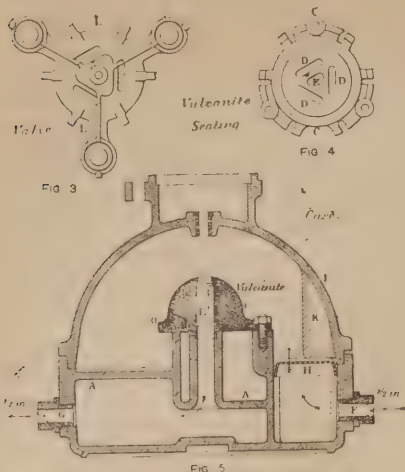
(2) *Inferential Meters*.—As the name implies, the water is not actually measured in this type of meter, but the quantity passed through it is "inferred" from the number of revolutions made by the fan or turbine, which is the only moving part. These meters are exceedingly convenient and useful, as they are comparatively small, light and cheap, and they are fairly accurate when the water passes through at a good speed, as when used for filling water-carts, in filling large tanks (without ball-valves), or for similar purposes. When, however, the flow of water through them is frequently slow, their registration is very unsatisfactory, as the fan or turbine then

lags behind or stops entirely, while the water passes through freely. Probably the oldest and certainly the best known of this type was invented by the late Sir William Siemens in or about 1850. Two distinct kinds of this type are made, namely, the "Turbine" and the "Fan" meters. In the first the water enters through the top of a vertically placed wheel with turbine-shaped buckets, and being discharged from these in a diagonal direction the reaction of the water turns the wheel, which actuates the clockwork of the dial. Retarding vanes on the wheel prevent it from running too quickly at the higher speeds. The "Fan" meter has an upright spindle, but the wheel is driven by jets of water impinging on vanes secured to the spindle. In this country the turbine type is chiefly used, and abroad that of the fan type. The "Tylor Inferential" is another well-known meter. There is probably no very great difference in the value of the various types of inferential meters; vulcanite should count favourably in their construction, but they all fail to register small flows, yet in spite of this acknowledged defect they are habitually employed for measuring house services (and other dribbling supplies), with the result that the registered consumption, even in a water-closet town, is quoted at only five gallons per head per day and less; whereas, in reality, this should be nearer fifteen, or even twenty-five gallons per head per day.

(3) *Volume or Capacity Meters*.—These meters are almost exclusively made in the United States of America, and their use is chiefly confined to that country, though some are also used here. In construction they are, broadly speaking, all the same, as they consist of a casing of either gun-metal or vulcanite in which works a vulcanite block, serving both as piston and valve. They very seldom possess any provision for taking up wear, and the parts are, therefore, difficult and expensive to repair. Hence (though they profess to measure the volume passing through them), as they are not tight even when new, they cannot measure small flows, and their leaky condition is necessarily augmented by wear.

* A paper read before the Institution of Mechanical Engineers on January 26th, 1900.

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Their merits appear to be simplicity, small size, lightness and cheapness, and for large flows they are said to be very accurate. The "Hersey," the "Crown," the "Bee" or "Thomson," the Kent "Uniform," the "Nash," and some others belong to this class.

(4) *The Venturi*.—The possibility of constructing the Ven'uri meter is due to the practical absence of loss of head in the main, which is contracted and again expanded by means of properly formed cones. The difference between the pressure where the water is passing through the main pipe before arriving at the meter, and where it is passing through the neck of the tube, forms the index for gauging the flow. These facts were discovered over 100 years ago by the Italian philosopher Venturi, and the meter has been perfected by Mr. Clemens Hershel, of America. It has no moving parts, except the registering gear, driven by clockwork; it is cheap considering the large volume of water it deals with, and for ordinary rates of flow in water-mains it is said to be very accurate; it is certainly most convenient and useful, but it must, of course, not be used below its rated capacity.

(5) *Waste-detection Meters*.—A very simple and effective meter of this class has been invented by Mr. G. F. Deacon, of Liverpool, and it is in very extended use. The water enters the upper (and smaller) end of a conoidal tube (though in some of the meters it passes upwards from below) in which is mounted on a rod a circular disc, so as to be able to move freely up and down. As the flow increases the disc will fall, and will rise when it decreases; its motion is communicated to a pencil outside the meter by a thin metallic cord passing through a gland, and suitably counterweighted. The movements of the pencil are traced on a sheet of moving paper with divisions representing hours (generally twenty-four). A diagram is thus traced which indicates to the initiated the varying flow through the main, and the exact rate in gallons per hour can be measured for any time of the day or night, and by these means waste is readily detected.

(6) *Positive Meters*.—The aim of all positive meters is to accurately (positively) measure and record the water passing through them, hence they have each one or more cylinders (with their pistons and valves), which are alternately filled and emptied; and, of course, they have suitable counters. The "Kennedy" meter still retains its high reputation. Nearly all the other types of positive meters have two measuring cylinders with their pistons and valves, and are of the "Duplex" class, in which the piston of one actuates the valve of the other. Some have their cylinders horizontal, and others have them vertical. The best known are: The "Frost," the "Tylor Positive," the "Worthington," the "Fraser," the "Schreiber," the Kent "Absolute," the "Goodwin," and the "Schmid." Next in importance to accuracy, durability, simplicity and general efficiency must be considered the quantity of water delivered under a given effective head. Judged from this standpoint the "Kennedy" is far ahead

of all others; the "Parkinson Low-Pressure," the Siemens "Inferential," and the "Tylor Positive" are much below the average in this respect.

Early in 1884 the author's attention was directed by one of the largest London Water Companies to the great want of a good water meter, which should be free from the defects of those already in use, and which should, above all, be simple, and should be able to register the smallest dribbles for long periods without liability to derangement. After considerable study and many experiments he has produced the type called the "Imperial," shown in the accompanying illustrations.

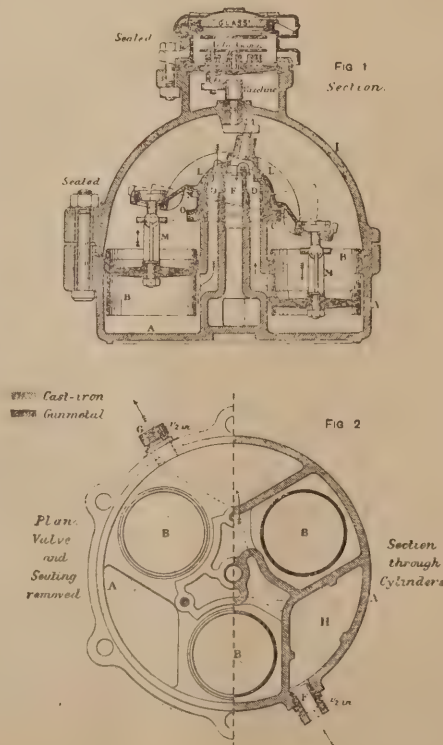
The meter consists, as will be seen, of the following parts:—The lower portion or body A, containing the three cylinders B, and the valve-seating C, with its three ports and passages D, communicating with the bottom of the cylinders; and there is a discharge port and passage E. Inlet and outlet connections F and G and strainer H (Fig. 5) are also attached to the body portion. I is the cover with the rib K for holding down the strainer, and it has a prolongation at the top for receiving the counter gear. The unequal division of the bolt-holes prevents the cover from being wrongly fixed to the body. Though the counter gear contains a few novelties, such as the entire absence of brackets, screws, springs and small pins, and has a conveniently hinged glass cover, still essentially it does not differ very much from the counters of other meters. L (Fig. 3) is the valve with its three arms, in the ends of which are cup-shaped bushes for receiving the spherically-shaped heads of the piston-rods M (Fig. 1); and to these are secured the pistons, composed of upper and lower piston-plates, nuts, and flexible piston packings. The water enters the meter, as shown by the arrows, passes up through the strainer into the upper portion of the casing and presses equally downwards on all the three pistons, and also on the valve. According to the position of this valve, the lower end of each cylinder in succession is communicating with the outlet passage, and its piston is therefore forced down by the superior pressure above, and thus discharges the contents of the cylinder. At the same time one or both of the other cylinders is having its piston raised, by which water is drawn in through the passages and the lower part is filled. Thus each lower end of the three cylinders B is in due course filled and emptied, one or two pistons always supplying the active force, so that there is no dead-point. The length of the stroke is regulated by the flanged projection

N, Fig. 1, on the valve L coming into rolling contact with a similar flange O on the valve-seating C; a slight skew of the ports causing the pistons to endeavour to take a longer stroke than they should, and the roller-paths restricting this tendency. The teeth in the valve and the notches in the valve-seating prevent the valve from turning round on its own axis (see Figs. 3 and 4). A pin in the upper part of the valve engages the crank of the crank-spindle P, Fig. 1, which communicates motion to the clockwork in the usual manner. The pins through the upper ends of the piston-rods prevent the pistons from falling out of the cylinders should the meter be turned upside down.

It will be seen from the above description that the meter is positive in its action, that the lengths of stroke are definite, that the speed of water through it is practically uniform (as in a three-throw pump), so that there is no concussion or water-hammer, that there is no backlash between any of the working parts, and that the meter can therefore be run at any convenient speed without noise. It has few working parts, not a stuffing-box nor a spring among its details, and is self-lubricating. It contains no small parts, neither pins nor screws; the three studs and nuts (permanently securing the valve-seating), the cover-bolts, and piston nuts are the only appliances of the sort used. As soon as the cover has been removed, the whole of the working parts can be taken out, examined, cleaned, new piston-cups fitted, and other ordinary repairs effected, if necessary, even without removal from its position in the pipe line. The only joint which has to be made is that between the body and the cover, and any leakage here is at once detected, as it is outwards.

AN INTERESTING CORNISH CHURCH.

THE Collegiate Church of St. Crantock (Newquay, Cornwall) consists of a nave with south porch, chancel, north and south transepts, and chancel aisles. There is also a western tower, no part of which is at present visible from within the fabric. No traditions exist as to there having been a church in Saxon times, the earliest evidences of building being seen in the north transepts, where the corner blocks, with their double buttresses, are of Norman workmanship. In the thirteenth century the lower part of the west tower was erected. The chancel seems to have been slightly lengthened. The south chancel aisle, if not added in the thirteenth century, underwent considerable repair. The east window relieving arch is of fourteenth century character, but this has been rudely cut away to make room for a seventeenth century arch, which is now filled with a window. The fine chancel arch was built in the thirteenth century. In the following century the chancel arcades were reconstructed. There are no remains of any tracery of this date, although some may be discovered hidden under the moulds on the north side of the church. Early in the fifteenth century the west tower fell above the nave roof, destroying the font; and the tower was then rebuilt, but so badly that several cracks give a dangerous appearance to this landmark. One of the most interesting features in the church is the existence of fragments of the old fourteenth century parclose screens. These are quite unique in Cornwall, and there is enough in existence to make them of great interest after careful repair. Portions of the original chancel screen of an unusual type exist at the entrance to the rood loft, having been formed by burrowing through the north respond, which is of great thickness, owing to the existence of the twelfth century tower. The nave roof is entirely hidden from view by plaster; this will be taken off, and the old timbers, after conservative treatment, exposed to view. Beautifully carved fragments of fifteenth century bench ends have been discovered under the floor of the pews. The chancel roof was plastered up eighty years ago—even the moulded principals and purlins



were treated in the same way. The chancel aisle roofs are of deal, having been erected about a century ago, and on removing the plaster a generation of owls' nests was found. Serious leakages have been neglected for many years, as may be seen by the gentle cascades that trickle down the transept responds and north transept walls, so that they are quite green and are never dry. The very uncomfortable pews contain seats only 10in. wide, and are quite unsuitable. The upper part of the tower is in a miserable condition, and it is only owing to the mere weight of masonry that it has not collapsed. The work of careful restoration of the church is to be taken in hand at once. Mr. Edmund Sedding estimates it to cost about £3,000.

CONCRETE FLOORS.*

By FRANK CAWS, F.R.I.B.A.

TIME was when all London houses were built of wood. Then came the Great Fire, after which brick walls were insisted upon. This was one important step in the right direction, but up to the present, in the case of dwellings, this step has not been very much advanced upon. It is true that in buildings of a costly character, such as banks, picture galleries, theatres, museums, and so on, very considerable advance has been made in the direction of fireproof construction, but not in respect of buildings in which the risk of fire concerns human life, rather than valuable property. It would seem from this that Englishmen place a higher value upon property than upon life. I do not myself believe for one moment that such is the case, for we are not living to-day under the laws which permitted the hanging of a man for stealing a sheep. The question of fireproof dwellings is one of ways and means. It must be obvious that, if by making buildings fireproof we make them so much more expensive that people in general cannot afford them, it is better to have a non-fireproof dwelling than no dwelling at all. But I am convinced that it is quite easy to construct fireproof dwellings at such a slight additional cost to non-fireproof dwellings that there is no proper excuse now remaining for those who continue to favour the latter. The question of the best method of fireproof construction is a very debatable one, and relates more particularly to floors and roofs.

I have been engaged on many concrete floors, in all of which I have adopted the slab principle successfully, varying the mode of construction in sundry details with the special requirements of each case, and as further experience suggested. I have always been particular to obtain rigid strong centering, and I cannot too emphatically caution my fellow architects as to the importance of this item. Any attempt to save money by scamping the centering is likely to lead to trouble, and to prove very false economy. The greatest difficulty in dealing with cement-concrete floors is due to the natural expansion which the material undergoes in process of setting. This expansion is much greater when the cement is new and hot than when it is old and cool. It is not, however, the expansion itself which causes the trouble so much as the smaller degree of contraction which follows expansion in the process of setting. This contraction causes cracks, which generally occur over the supporting girders, where the concrete is generally thinnest. These cracks have really no appreciable effect upon the strength of the concrete, but all the same they are apt to cause uneasiness and want of confidence in the minds of those who do not understand what causes them. By using carefully selected cool cement, and by taking certain precautions as regards the size of the slab and its mode of casting, the shrinkage can be so minimised as to almost entirely avoid such cracks. I would like to point out at this stage that I consider sand a most improper material to mix with cement in concrete floors. In fact,

I regard it as poison to the cement, and have never allowed its use since the discovery I made at the early stage of my experience as to its bad effects. The fact is, if a very fine sand be used, instead of helping the cohesion of the concrete it tends to disintegrate it, so that when sand is employed to give the necessary smoothness to the finishing of the upper surface of the cement-concrete floor the surface when subjected to the traffic is likely to scrape off and to give off sandy dust, and eventually present a very shabby appearance; therefore, in finishing the surface I have found it best to employ fine crushed granite instead of sand.

In making fireproof floors for cottages I consider, if proper care were taken in the centering, it would be better to do without plaster ceilings altogether, and be content with the natural impression of the wood upon the cement, whitewashed. By such means, and also by avoiding needlessly thick slabs, the expense of such floors can be brought within such limits as to render the fireproof dwellings of a working man cheap enough to be a good commercial investment. During all the years I have been interested in fireproof construction I have been increasingly impressed with the fact that the greatest field open for the ingenuity and skill of the architect and builder is to be found in the direction of providing fireproof dwellings for the people at small cost, in lieu of those match-boxes which are now multiplied by the thousand in our large cities in apparent defiance of all desire of improvement. Although a fireproof dwelling must cost more than a non-fireproof one, it will pay best in the end, because it does not decay or fall into disrepair, but, where ordinary care is used, is practically everlasting. Moreover it is vermin proof, and cleaner and more sanitary than buildings containing many hidden chambers and cells of decaying timber.

The limitations as to the size of cement-concrete floor slabs are largely determined by the quantity which a gang of men can cast in one day. In designing a large expanse of flooring it is necessary to sub-divide the area into squares of reasonable extent, and I may say that in my own practice I consider a square about 150 superficial feet, a reasonable size to arrange for, although in some cases I have found it necessary to make them much larger. The steel girders, which form the divisions between the slabs, should be made strong enough to carry the weight of the slabs themselves and of their greatest proposed loads; but it must not be supposed that when the slabs are set hard these steel girders will necessarily be called upon to sustain these weights. I say necessarily, for much depends upon the manner in which the girders are placed. We, as architects, should be extremely careful about our work, to allow a large excess of strength; but we should be likewise able to distinguish between a mere excess of strength and an excess of cost at the expense rather than the gain of strength. Some people think that cement floors are too cold, and accordingly cover them with wood, which, of course, is a very great addition to the cost, having nothing but the sense of comfort to recommend it. For my own part I think that a cement floor covered with a good cork carpet is very much preferable and quite comfortable. However well seasoned wood flooring may be, the boards will shrink and, when the floor is washed, the moisture between the chinks cannot get away or be evaporated without in time tending to produce an undesirable state of mildew or decay. Seeing that the stress of slabs under uniformly distributed loads is proportional to the cube of their span, it will be obvious that great reduction of stress is obtainable by forming the slabs with coved edges. Suppose, for example, we are dealing with slabs about 12ft. square, similar to those I have recently had cast at Messrs. Swan and Hunter's new offices at Wallsend, and we reduce the flat part to 10ft. square by means of our cove, the greatest stress is reduced accordingly as from the cube of 12 to the cube of 10, that is, about 24 per cent., and at the same time these coves serve to enclose the steel supporting girders, thus protecting them

from fire. If time permitted there is much more I might have said on the subject, not only on concrete floors, but also on concrete roofs, which, from a fireproof point of view, are certainly not less important.

Thus far my remarks have been so discursive that I feel it necessary in closing this lecture to focus, in the form of general rules, some of the conclusions to which twenty years of special experience have led me in regard to the construction of concrete slab floors:—

- (1) Take pains to obtain old cement.
- (2) Use good broken brick aggregate, and not sand, in the proportion of four of brick to one cement, for the body of the slab, and finely crushed granite without sand for the surface coating, having about three of granite to one of cement.
- (3) Adopt, as precautionary provision, sheep wire netting as the base, and steel angle or tee bars weighing more than 1½lbs. per lineal foot, spaced about 3ft. apart on the netting.
- (4) Consider a slab 10ft. square by 4in. thick as capable of sustaining a load of 9cwt. per foot, including its own weight, and reckon that every slab will bear, per square foot, more or less than 9cwts. directly in proportion to the square of their thickness, and inversely in proportion to the cube of their span. When the slab is rectangular the minimum span has to be considered the span.
- (5) Avoid casting slabs in frosty weather.
- (6) Insist upon organising the gangs of workmen so as to cast as large an area of slabs as possible in one heat, and never allow a slab to be left overnight with its area only partially cast.
- (7) Insist upon strong centering, and keep it all standing not less than five weeks after the last slab of the series of one flat is cast, and to absolutely forbid the sudden and careless removal of the centering. In conclusion, you must understand that in making no reference to many other methods of concrete flooring, which are more or less successfully practised, I have no desire to cast any reflections upon them, but have thought it best to confine my remarks to my own experience, and to speak the things which I know rather than those of which I have heard. Thirty years ago Messrs. Pedder and Brannon, architects, erected near the gas works at Hendon, Sunderland, two concrete cottages, which, after completion, they filled with straw and other combustibles and, in the presence of a company of well-known Sunderland townfolk, set fire to. No visible damage resulted at that time, and the cottages have been occupied by tenants, I believe, ever since. A few weeks ago the present proprietor took me down to inspect them. I found them in excellent condition—in fact, as good as ever they were. The working people occupying them are paying good rents, and the proprietor is about to build four similar fireproof cottages adjoining, plans for which have been recently approved by the Sunderland Corporation. The test of a fierce fire, and of thirty years subsequent wear and use, permit no other conclusion than that fireproof cottages for the people can be built cheaply, substantially and sanitarily. And in this case the proprietor finds little or no structural repairs needed after thirty years rough use. I think we shall do well to lay these facts to heart, and each do what we can to provide fireproof houses for the common people.

Mr. George Furness, of Willesden, contractor for the Thames Embankment from Westminster Bridge to Somerset House, and other large schemes, who died on January 9th, aged 79, left property of the value of £303,826 11s. 7d., with net personalty of £180,680 7s. 7d.

Barnsley's new Smallpox Hospital, which has been built at Lund Lane, Monk Bretton, at a cost of £7,500, comprises an administrative block for ten nurses and eight servants, all the necessary offices, disinfecting apparatus, &c., for a large hospital, and the hospital proper, with accommodation for fourteen beds. The hospital, which will serve a population of 100,000, is so planned that the accommodation can be quadrupled, if needful, without any additions to the administrative or other blocks.

* A paper read before the Northern Architectural Association on February 14th, 1900.

R.I.B.A.

THE PALACES OF THE PARIS EXHIBITION, 1900.

By CHARLES LUCAS.

A MEETING of the Royal Institute of British Architects was held last Monday evening, Mr. William Emerson in the chair. The minutes of the previous meeting having been confirmed, the president introduced Monsieur Charles Lucas, who, he said, had been one of their most energetic honorary corresponding members since 1881. M. Lucas then read, in French, his paper, entitled, "Notes on the Palaces of the Paris Exhibition, 1900," which was illustrated with 137 photographs and drawings, which are on view at No. 9, Conduit Street, for a few days. The following is a summary of the paper:—

The Exhibition occupies an area of about 112 hectares (1,120,000 square metres) apportioned thus: Champ de Mars, 50; Trocadéro, 16; Esplanade des Invalides, 12; Champs Elysées, 15; Quays on the left bank of the Seine, 9.50; Quays on the right bank, 9.50. In addition, in the Bois de Vincennes, 110 hectares (1,100,000 square metres) have been provisionally taken for special exhibitions, various sports, houses for the working classes, &c. The superficial area covered in will not be less than 450,000 sq. metres—the French section occupying 250,000, the foreign section 170,000 and the Bois de Vincennes 32,000. The private buildings of the foreign sections along the left bank of the Seine cover a superficial area of about 50,000 sq. metres. Besides the buildings above indicated there are 100 French pavilions, numerous restaurants, kiosques, cafés and drinking bars, as well as seventy-five pavilions or foreign edifices, beyond the official pavilions of the nations represented at the exhibition, numbering thirty-six.

It is calculated that the total weight of iron and steel employed in the French official palaces alone amounts to 50,000 tons; and for the motive power and the electric lighting there has been provided a total force of 20,000 horse-power, which in case of need can be brought up to 40,000. The power of the cranes used is 425 tons. Some 5,000 workmen are daily employed on the works.

The selection of architects for the principal palaces was determined by public competitions. The twenty-three workyards, under the general supervision of the architectural department, have at their head twenty-three architects, all premiated in the two competitions for the erection of the two permanent palaces in the Champs Elysées. These architects, among them seven former students of the Academy of France at Rome, are surrounded by colleagues chosen by themselves among old fellow-workers in offices, the École des Beaux-Arts or the *loges*, that is to say, among old pupils of the same masters, who have shared in the same artistic struggles. Thus the buildings are a resultant, if not of the tendencies of the French School of Architecture, at least of the methods of study of its students. Of all the buildings two only will remain permanently, the two palaces in the Champs Elysées, which are intended for Fine Art Exhibitions. The others will be demolished immediately after the close of the exhibition in November.

M. Lucas then went on to describe the following buildings more or less in detail:—

1. *The Monumental Gateway on the Place de la Concorde* (M. Binet, architect).

2. *The Small Palace on the Champs Elysées* (M. C. Girault, architect).—This building, slightly modified since first designed, retains all the charm which captivated the jury and the public at the time of the competition, and won for its author the appointment of chief architect of the two palaces of the Champs Elysées. In course of its erection M. Girault and the architects of the Great Palace agreed upon certain modifications for the sake of

harmony between the Great and Small Palaces, which are intended to make a monumental whole, ornamenting the new Avenue des Palais, and forming together, with the Pont Alexandre III., the architectural legacy of the exhibition of 1900.

3. *The Great Palace*—in three sections: (1) The anterior section on the Avenue des Palais, M. Deglane, architect; (2) the central section, M. Louvet, architect; (3) the posterior section, M. Albert Thomas, architect. This is the most important of the permanent structures. Each section, especially the front and rear, combines in itself a complete edifice. The three architects, each making a sacrifice of some of his artistic idea, have contrived a completely harmonious whole, in which stand out portions of great beauty and personal feeling. The central section has two fronts, of which the northern, fronting the Avenue des Champs Elysées, is raised upon a podium. One of the most remarkable motives, not only of the Great Palace, but of the whole of the Exhibition buildings, is the grand staircase—a real staircase of honour for the most stately ceremonials—leading from the ground floor to the Concert Hall and galleries on the first storey. The conscientious study in metal, and particularly of the iron gutter, is strikingly noteworthy from the point of view both of construction and decoration, combining as it does boldness and elegance. The rear section of the Great Palace forms a complete and fascinating whole, with its great central hall, crowned by an elliptic dome, with its straight staircase, its galleries, and its saloons. Behind the Ionic order which decorates the main front runs a high enamelled frieze, the work of the national manufactory of Sèvres, the varied tones of which will be lit up by the setting sun.

The Pont Alexandre III. (MM. Cassien-Bernard and G. Cousin, architects).—In the course of his remarks on this bridge, M. Lucas said that it would always remain an irrefutable witness of the necessity of the alliance between architects and engineers in works of public utility. Referring to the rich Ionic order and the sculpture which decorated the two palaces and the bridge, the only artistic monuments which would survive the exhibition, the author said that they recalled the luxury displayed by Louis XIV. in his royal residences, and occurring as they did under a Republican Government in such an eminently popular manifestation as a universal Exhibition they were significant to show that Art was an essential need of France whatever the institutions in force at the time.

Coming to the temporary buildings, the author went over the various plans and original working drawings illustrating each building, and gave a brief commentary upon each. These temporary structures are as follows:—

The Pavilion of the Town of Paris (M. U. Gragny, architect).

The Palace of Horticulture (M. C. A. Gautier, architect).

The Palace of Social Economics and Congresses (M. Mewès, architect).—In this palace rooms are specially arranged for the International Congresses, two of which, the Congress of Architects (July 29th to August 4th), and the Congress of Public Art (August 6th to August 11th), the author said seemed to invite the presence of English architects.

The Théâtre des Bonshommes Guillaume and the Aquarium (MM. Henri and Albert Guillaume, architects).

Old Paris (restoration by M. Robida).—This is a complete mediæval town, covering a spacious area, built on piles, and containing gates and commune house, turrets, *bretèches*, and famous houses, old markets and theatre, grand hall of the palace and chapels, well, and pillory, stalls, shops, taverns, &c.

Pavilion of the Egyptian Section (MM. P. F. Boulad and M. Dourgnon).—This is composed of three blocks—(1) A Temple of Ancient Egypt; (2) an Arabian Bazaar; (3) a Theatre with façade of Ancient Egyptian style.

Palace of the Algerian Section (M. Albert Ballu, architect).—This reproduces the minaret of the Mosque of the Sultan Bashaw at Oran,

the cupola of the Mosque of La Pêcherie at Algiers, the Moorish court of the Old Museum of Algiers, &c.

Palaces of Navigation, Commerce, Woods and Forests (MM. Tronchet and Rey, architects).

Palace of Education, Teaching, Instruments; and General Processes of Letters, Science, and Arts (M. Sordais, architect).

Palace of Civil Engineering and Means of Transport (M. Jacques Hermant, architect).

The Château d'Eau and Palace of Materials and General Processes of Mechanical and Chemical Industries, &c. (M. Paulin, architect).

—This, crowned by the crest of the Palace of Electricity, promises to be, in combination with the latter, one of the great attractions of the Exhibition. In the evening strings of electric lights will illuminate the main architectural lines and the cartouche, and the various water effects, cascades, and jets, will be rendered luminous and coloured with every hue.

Palace of Electricity (M. Eug. Hénard, architect).—In this palace, surrounded on all sides and partly masked by the Château d'Eau, the architect has concentrated his whole decorative effort in the upper part of the central hall, which is in the form of a trilobate vault containing the great niche of the Château d'Eau. The building is surmounted with a broad open-work crest, which during the day will give the impression of metal lacework standing out against the sky, and during the night the appearance of lacework of flame.

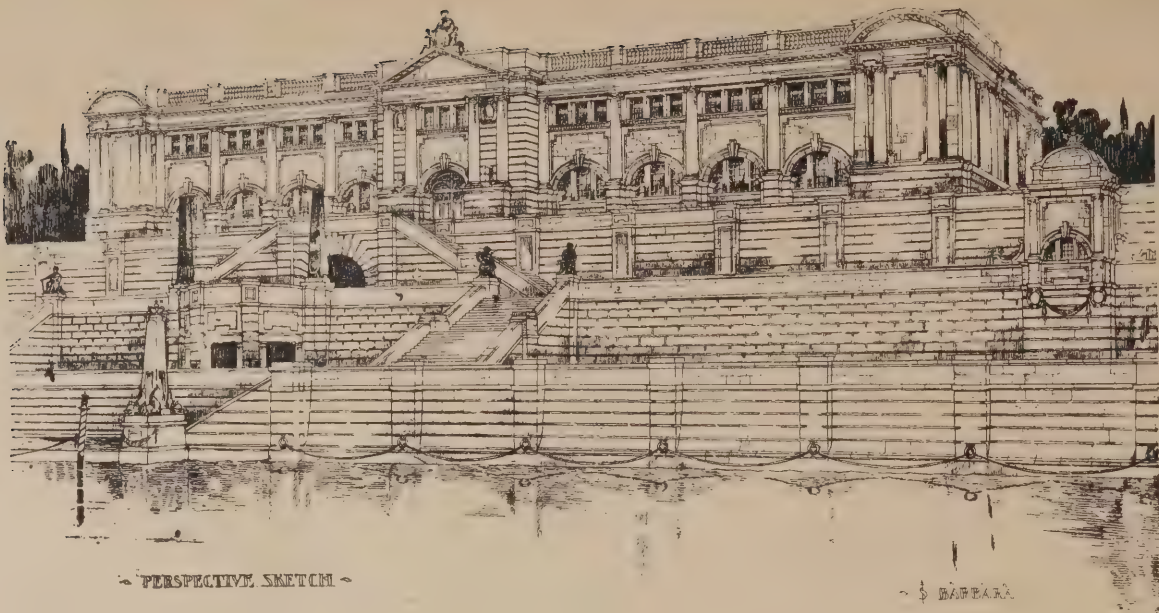
Other palaces described were the *Salle des Fêtes* (M. Raulin, architect), adapted from the Machinery Gallery of the Exhibition of 1889, and to remain permanently as a hall for the award of prizes; *Palace of Woven Fabrics* (M. V. Blavette, architect); *Palace of Mines and Metallurgy* (M. Varcollier, architect); *Palace of Belgium* (MM. Acker and Maukels); *Palaces of National Manufactures* (MM. Toudoire and Pradelle); *Palace of Decoration and Furniture* (M. Esquié, architect); *Palace of Various Industries* (MM. Larche and Nachon, architects); *Palace of Ceramics, Crystals and Glasswork* (M. Tropey-Bailly, architect).

In his closing observations M. Lucas said that throughout all the conscientious work, in the heart of which is paramount the influence of the school in which the architects and their collaborators had been trained, there is observable, especially in the richness of the decoration and the exuberance of the sculpture, a certain exoticism, a reflection as it were of architectural styles that have come ready-moulded from the furthest East, giving rise to thoughts of Colonial France and its art.

Touching the remuneration received by the architects of the Exhibition, M. Lucas quoted from a report of the Minister of Commerce to the President of the Republic: The remuneration was fixed and comparatively small. The chiefs of offices, men of tried skill and assured reputations would easily find higher remuneration in private work. The more meritorious is the zeal with which they devoted themselves to the service of the State.

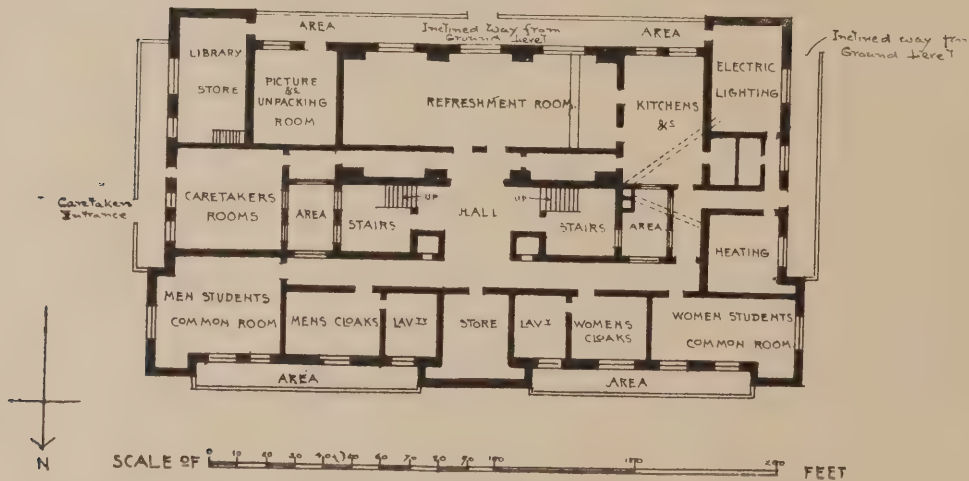
A vote of thanks to M. Lucas was then proposed by Mr. F. C. Penrose and seconded by Mr. H. H. Statham. Mr. Locke, secretary to the Institute, announced that the drawings and photographs had been given to the Institute by the authors of the designs for their permanent property. Mr. Emerson put the vote of thanks, which was heartily agreed to, and on his motion a vote was also passed to Monsieur J. Bourard, the director of the architectural works of the Exhibition, and to those architects who had joined in presenting the collection of drawings to the Institute. He then announced that a special meeting would be held on March 5th to propose a suitable recipient for the Royal Gold Medal, after which a business meeting would be held to consider a series of recommendations of the Council with respect to the composition and election of the Council under by-laws 25, 29, and 30. The Congress of British Architects would be held in their rooms from March 18th to March 23rd on similar lines to those of other professions. The meeting then terminated.

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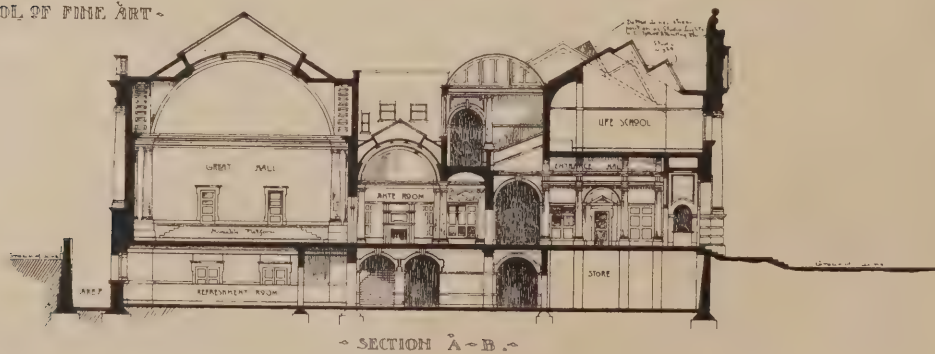


~ PERSPECTIVE SKETCH ~

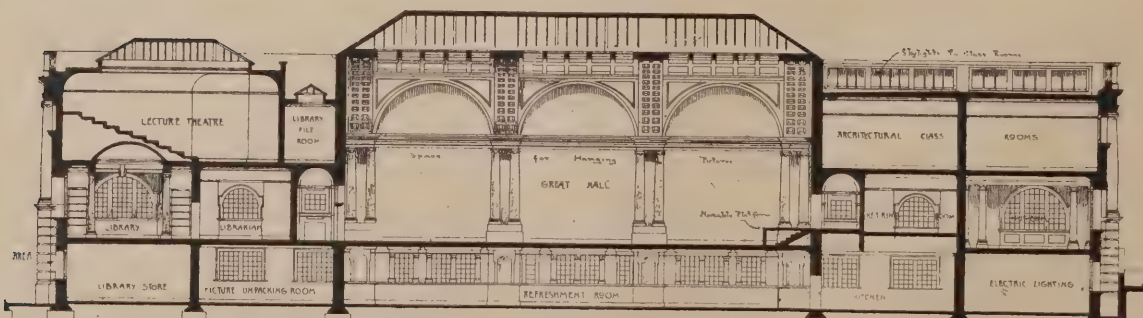
SMALL SCALE PLAN OF GENERAL ARRANGEMENT
~ OF BASEMENT, ~



~ A SCHOOL OF FINE ART ~



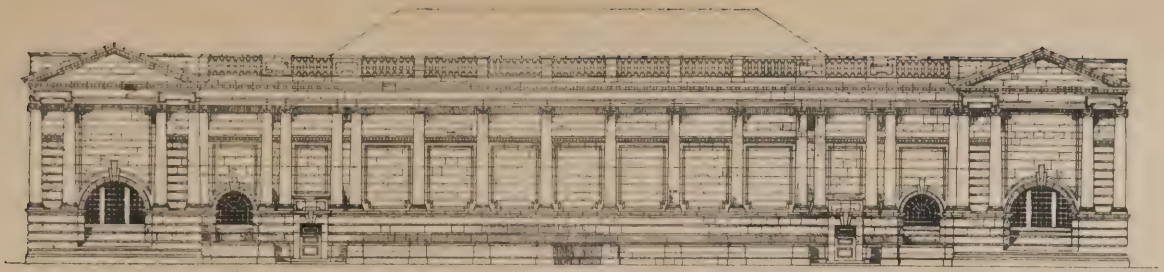
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SCALE OF FEET

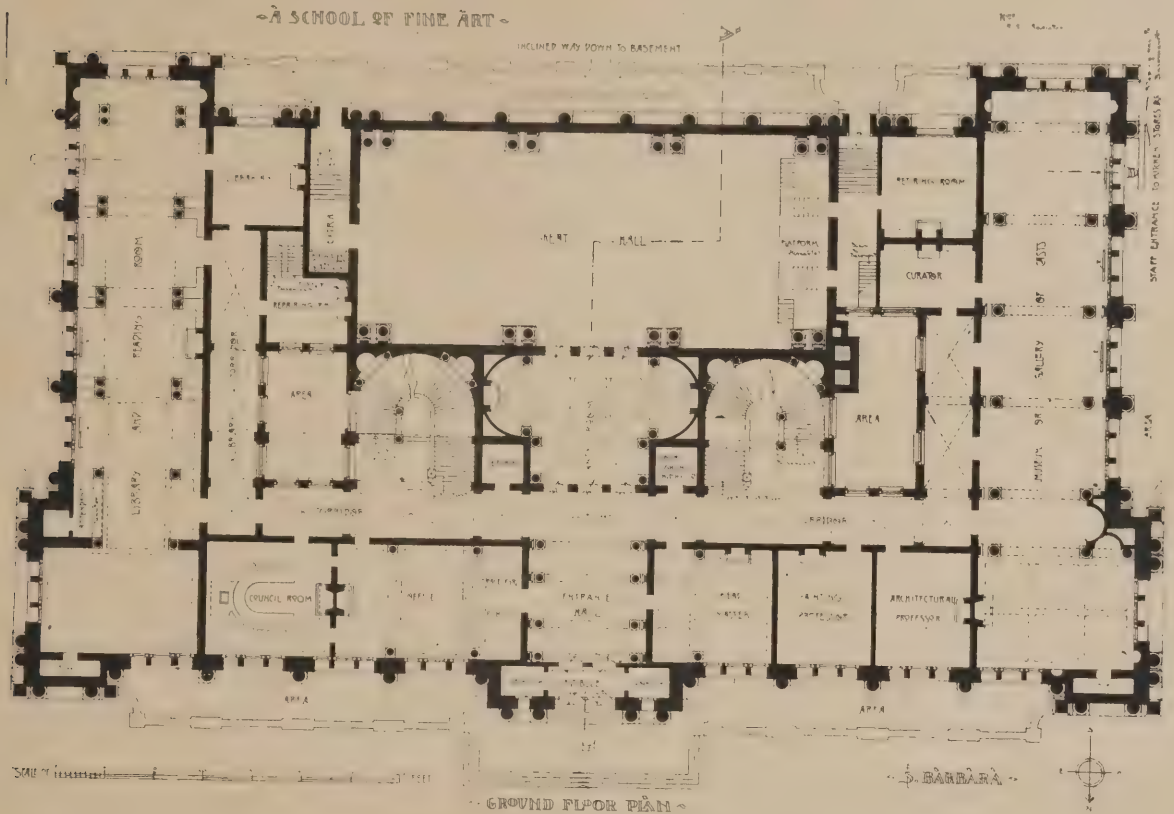
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~ J. B. BARRA ~

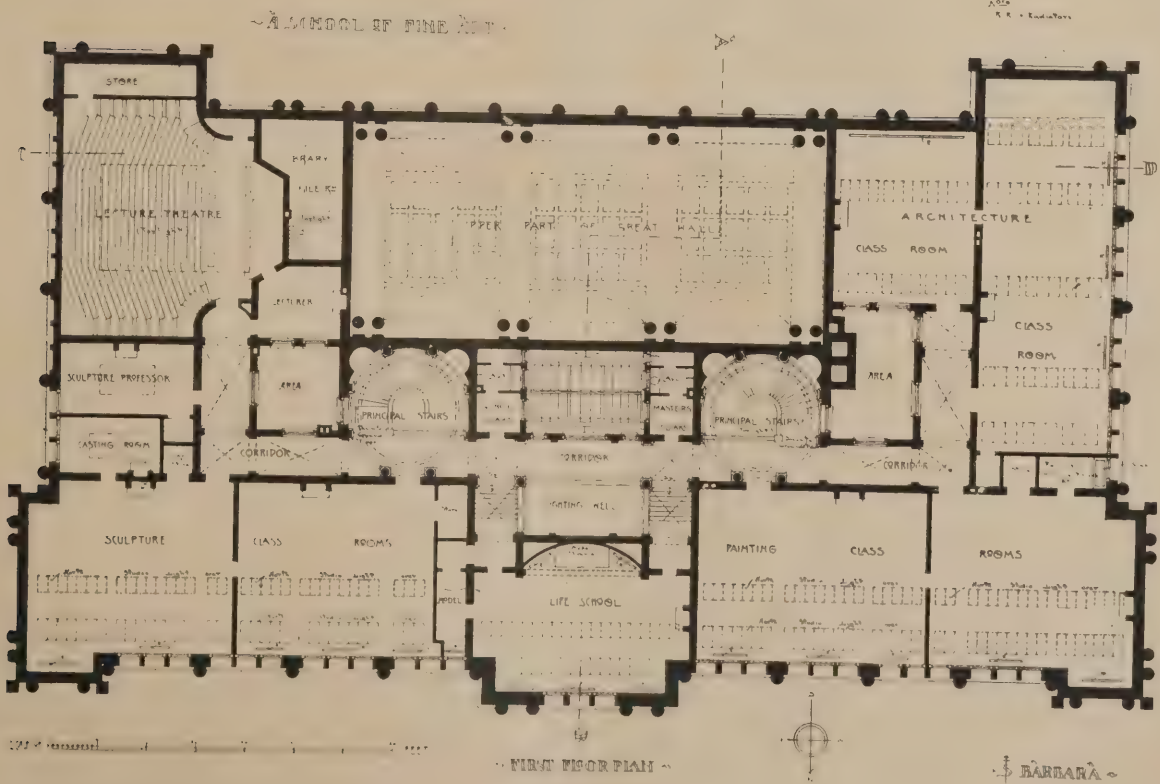


- REAR ELEVATION -

SCALE OF FEET



- GROUND FLOOR PLAN -



- FIRST FLOOR PLAN -

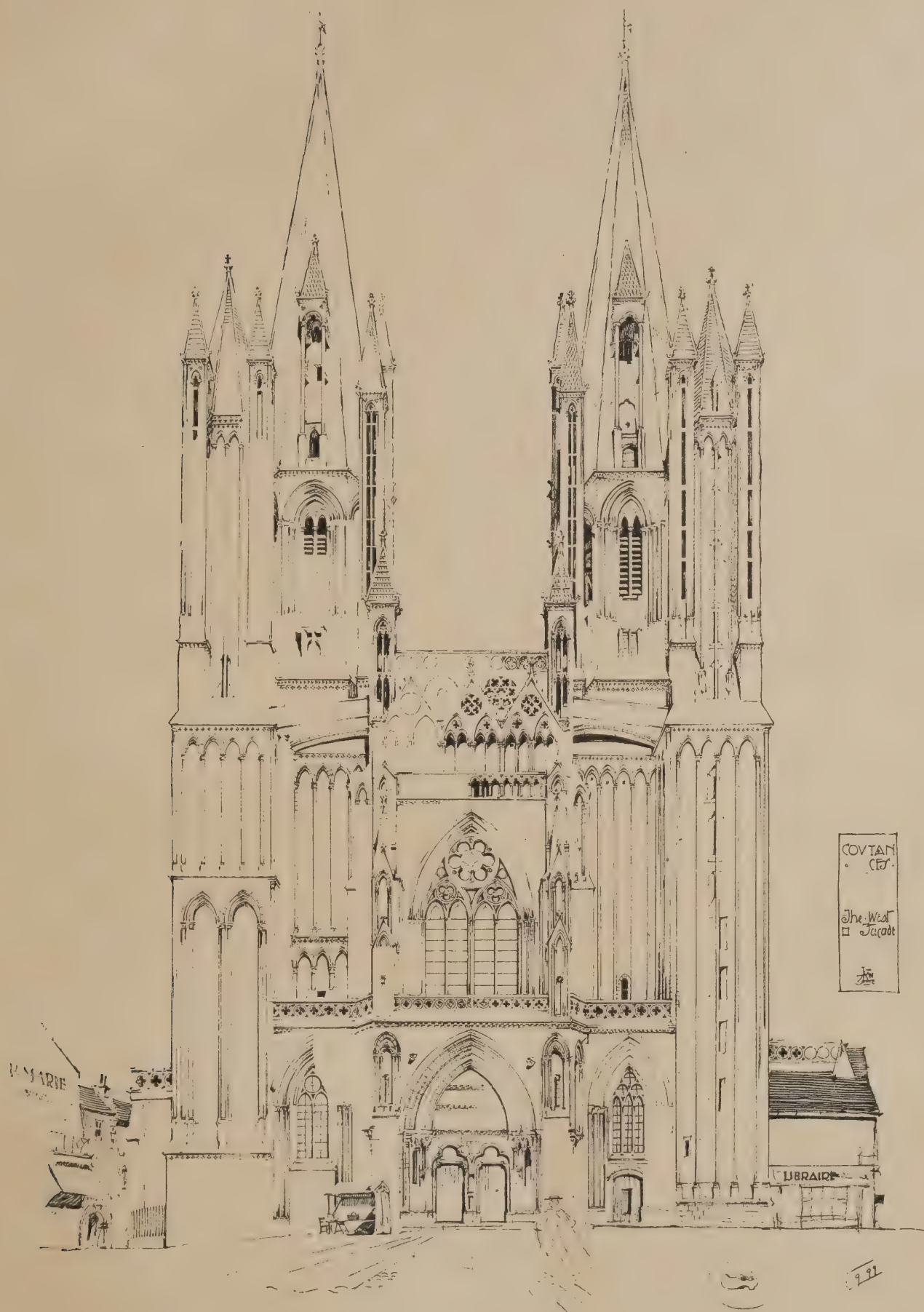
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AN OLD HOUSE AT PLYMOUTH. DRAWN BY F. L. GRIGGS.



R.I.B.A. AWARDS: THE PUGIN STUDENTSHIP: MEDAL OF MERIT. THE WEST FACADE COUTANCES.
DRAWN BY J. A. WOORE.

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THE BACTERIAL TREATMENT OF SEWAGE.*

By HERBERT T. SCOBLE, A.S.I.

BRIEFLY speaking, bacterial treatment is a return to nature's method of sewage purification. The necessary microbes are always present, and the aim of the various systems is to afford the best possible conditions, consistent with reasonable expenditure, for the multiplication and action of these beneficent organisms. Bacterial action is altogether stopped if the sewage is strongly acid. Bacteria can be roughly classified as (1) parasitic (needing a living host), (2) saprophytic (living on dead animal or vegetable matter), and (3) those which adapt themselves to circumstances and exist indifferently as parasites or saprophytes. They vary in size from $\frac{1}{10000}$ th to $\frac{1}{250000}$ th of an inch in diameter. Multiplication usually takes place by division. As Cohn puts it: "Let us assume that a microbe divides into two within an hour, four in the second hour, then again into eight in the third hour, and so on. The number of microbes thus produced in twenty-four hours would exceed $16\frac{1}{2}$ millions; in two days they would increase to 47 trillions; and in a week the number expressing them would be made up of 51 figures." Professor Boyce has found 750 million organisms in a cubic centimetre of fresh sewage.

Bacteria are also distinguished according to the conditions under which they live, and may be either anaërobic (living without air, that is, without free oxygen) or aërobic (existing with free oxygen). All bacteria are destroyed if allowed to remain too long in contact with their own products. In the absence of water, or, at least, moisture, they are unable to multiply, and become dormant. The work they do in the purification of sewage is first to break down and then to oxidise the foul matters of which it is partly composed.

Unfortunately the word "filter" has been applied to bacteria beds, and its use is so extended that it will have to pass. No mechanical action takes place, and the sewage is, therefore, not "filtered" in the true sense of the word. The material in the beds is there to afford a resting place for the bacteria, which, in its absence, be carried away with the effluent.

The systems in use can be divided into two classes, the first of which has as its object the destruction of the impurities by aërobic organisms, while the second consists of a primary decomposition by anaërobic and a secondary purification by aërobic action. The ideal system would probably provide for three separate stages of treatment—(1) an aërobic, (2) anaërobic-aërobic, and (3) aërobic. Pathogenic organisms or disease germs are, as far as our present knowledge goes, either destroyed or enfeebled in passing through an installation. Where the effluent is discharged into tidal waters an anaërobic process only is required.

Bacterial systems have this strong recommendation, that they produce no sludge. The annual cost of up-keep is, with automatic gear, nominal amount; where it is not provided, constant attendance is necessitated. The beds require raking over from time to time owing to the production of a surface film and the growth of weeds, which in warm weather is very rapid. Where screens are employed, the matter retained must be speedily taken away. I doubt whether it is worth while to include an item under a heading of "annual expenditure for the removal of the burnt-out ash." The septic tank at Belle Isle, Exeter, has taken the sewage, without screening, from 1,500 people or over three years and a half; no mineral residue has yet been removed, and the quantity of such matter in the tank in no way interferes with its efficiency. Under

The Dibdin or Sutton System

The sewage first passes through a screen which retains solid faeces, string, rags, paper, &c. It then flows on to a coarse bed of coke

breeze, ballast, or other similar material, the individual pieces of which vary in size from $\frac{1}{2}$ in. upwards. The sewage is distributed by one or more channels over the top of the bed, which is filled to within 3in. or so of its surface. It is collected on the floor of the bed by rows of agricultural drain pipes joining one main collector. After a contact of some definitely arranged duration, the discharge valve is raised and the effluent is received by a second filter. This is made up of the same material as in the first bed, but the particles are much finer; dust, however, is rigidly excluded. Series of coarse and of fine beds are provided so that each may have a rest after discharging. Assuming an 8 hours' cycle and 2 hours' contact to have been settled on, the first bed will be filled (1 to $1\frac{1}{2}$ hours), stand full (2 hours), empty ($\frac{1}{2}$ to 1 hour), stand empty ($3\frac{1}{2}$ to $4\frac{1}{2}$ hours), and then be filled, &c., again. The sewage will run into the second filter while the first is standing full, and so on. The materials employed in the construction of installations on this system are of widely different character. Beds may be made by digging pits in clay and burning the same for ballast, which is then screened and returned, but such works cannot be considered of a permanent nature. Again, I have seen beds the walls of which were of clay, the floors of concrete rendered in cement, and the filtering material coke. In this case the sewage was distributed by rows of perforated cast-iron (rain water) pipes laid on the surface of the coke, and it was collected in the usual manner. To make certain that the works will last, the floors should be of concrete and the walls of either concrete, brick or stone; all internal surfaces should be rendered in cement, and coke or furnace clinker should be used in preference to ballast. Beds have been made of many different depths with satisfactory results. The amount of fall available usually fixes the depth that can be given to the beds, but where an unlimited fall is obtainable the time occupied in filling and discharging regulates this dimension. The filling of a 13ft. bed would occupy a considerable time when the flow was slight, and the sewage would therefore be kept in the bed too long. On the other hand, if the beds were very shallow, the cost of construction would be much increased.

Colonel Ducat's Method.

of purifying sewage is to expose it to air as much as possible. Instead of building solid walls round the filtering material (vitrified clinker $\frac{1}{2}$ in. to $\frac{1}{2}$ in. in size) it is encased in agricultural drain pipes set in cement, the whole on a concrete floor. These pipes are tilted inwards at such an angle that the liquid cannot escape. At intervals layers of 3in. pebbles extend right through the bed. During winter, owing to constant evaporation, the beds would freeze were they not enclosed and warmed by a supply of hot air.

The Scott-Moncrieff System

provides separately for each of the three stages of purification. Anaërobic action takes place in a chamber containing successive strata of flint, coke, and gravel. The sewage passes up through a false bottom, rises between the flints, &c., and flows at its original level or thereabouts on to a thin layer of filtering material on a tray. It passes continuously through this, then falls a few inches and encounters other similar layers. The anaërobic action in the first chamber produces amongst other substances ammonia. This is converted by the bacteria in the upper filters to nitrous acid (nitrites). In the lower layers the aërobic present change the nitrous acid into nitric acid (nitrates). The results are very good, but the cost of constructing the trays must be taken into account when comparing this with other systems.

The Septic Tank System

is so called because the purification of sewage is begun by a process of putrefaction. The products of this first stage are passed on to fine filters where oxidation takes place. The installations on this system are uniform in character but differ widely in extent. The

tanks generally have arched roofs covered with soil and turf, but joists and concrete are sometimes used—manholes are built in to allow inspection. The filtering material is broken furnace clinker (preferable) or coke from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. in size. In a typical installation a grit chamber retains the road detritus. The sewage is conveyed by special inlet pipes to some 18in. or so below the water level of the tank. A main distributor conducts the tank effluent to the automatic gear, and rows of half-channel stoneware pipes distribute it over the filters. Under this system no screening is done. All the solids, other than road grit, enter the tank, and are there liquefied or turned into gases by anaërobic action. There is, therefore, no smell from untreated sewage. The final effluent is bright and without smell. The inodorous gases given off produce a great deal of heat when burnt, and the tank holds from eighteen to twenty-four hours' flow of sewage, and any particular discharge of foul matter soon spreads. The fall desirable for the septic tank system is 4ft. to 5ft., but less will suffice in case of need.

According to Dr. Garfield, coal makes a most excellent filtering material. The beds are arranged so that the larger particles are at the bottom, those of medium size next, and the fine ones on the surface. The chief feature of

The Polarite Biological Sprinkler System

is the method of distributing the sewage over the beds. The description of the Candy-Caink gear will show how this is done. The sewage is first treated in a small detritus chamber designed to hold the flow of half an hour. A screen at the further end prevents the solids from passing on, and it is claimed that they are broken up by bacterial action. Where sufficient fall is not available to allow two filtrations, a "sludge digesting bed" is employed. This is very similar to the first chamber in the Scott-Moncrieff system. The filters are made up of layers of "polarite" and gravel.

According to Dr. Clowes, the points of advantage of bacterial over chemical treatment are:—(1) It requires no chemicals; (2) it produces no offensive sludge, but only a deposit of sand or vegetable tissue, which is free from odour; (3) it removes the whole of the suspended matter, instead of only about 80 per cent. of it; (4) it effects the removal of 51.3 per cent. of the dissolved oxidizable and putrescible matter, as compared with only 17 per cent. removed by chemical treatment; (5) the resultant liquid or effluent is entirely free from objectionable smell, and does not become foul when it is kept; it further maintains the life of fish. (Details of the reports of the experts appointed by the Manchester Corporation, in favour of bacterial treatment, are given in the supplements to the issues of the BUILDERS' JOURNAL for November 22nd and January 31st last.)

Automatic Gear.

With automatic working it will be possible to deal with the sewage of a district by separate installations at different sites, without adding in any great degree to the cost. Extensive sewerage and pumping will thus often be avoided. The advantage of employing automatic alternating gear was first recognised in connection with the septic tank system. The original automatic alternating gear of this system is still at work, but the forms now generally adopted occupy less space, and are designed to meet varying requirements. Thus, one form provides for a timed discharge; in another an overflow from the second bed fills a bucket, which then drops and raises the discharge valve of the first bed, and so on; a further type of gear, designed for small installations, say for an asylum or country house, has for its object the control of the flow on to the filters. Were the flow not regulated the beds would receive the merest trickle at night, and in the morning an altogether excessive amount. As this might impair their efficiency the flow is stored in the tank until just enough has accumulated to fill a bed. With this gear three beds are generally provided; any two work alternately while the third is resting.

* Résumé of a paper read before the Surveyors' Institution on February 12th, 1900.

Adams' syphonic apparatus consists of an air-controlled supply and a timed syphonic discharge. Ridgway's automatic distributor is operated by the rise and fall of a float to which a pawl is attached. The Caidy-Caink distributor consists of two arms, each perforated on one side and connected with a central bucket, which in turn communicates with and is fed from a trough. The distributor revolves as the sewage emerges from the perforations, and the liquid is thus sprinkled evenly over the bed. The normal flow of four minutes is dealt with at once and causes the sprinkler to revolve for one minute.

The first point in connection perhaps with any and every scheme is—what will it cost? In every case the aim of the surveyor will be to avoid pumping, if by any means he can do so. This may at times be accomplished by reducing the gradient of the sewer for some distance from the outfall. The levels of the proposed site or sites should be accurately taken and the invert of the sewer marked on the plan. The fall that can be allowed will then be ascertained, but it must be borne in mind that the effluent will have to pass over land whenever a Local Government Board loan is wanted. Existing outfall works should be inspected, as it may be possible to adapt them. When the sewage is purely domestic no difficulty will be experienced in effectually purifying it by bacterial treatment. If fibre from wood pavements has to be dealt with, it will require special provision, as it is essential for its speedy dissolution that it be subjected to a definite anaerobic process. Trade discharges must be carefully considered, and the normal dry-weather flow should be ascertained by gauging; it is best to do this over as long a period as possible.

In England the Local Government Board's regulations are so severe in connection with bacterial systems that the cost is much enhanced. The conditions are:—(1) Each set of filters (i.e., both coarse and fine) must be of sufficient capacity to contain the normal dry-weather flow for twenty-four hours. Coarse grain beds can hold 25 per cent. sewage and fine beds 33½ per cent. This means, taking an eight-hour cycle, that the beds must be large enough to deal with three times the dry-weather flow, i.e., one volume normal, two volumes storm water. (2) Land has to be obtained at the rate of one acre per 1,000 population to take the effluent. (3) Storm water filters of some coarse material, such as clinker, burnt ballast, or gravel, must be provided in addition to the above to treat a further quantity of storm water equal to three times the dry-weather flow. Instead of filters a special area of land can be set apart to receive storm water.

The future of bacterial treatment and the future of sewage disposal are, I believe, one and the same thing. A Royal Commission is investigating the subject at the present moment and it is hoped the report, when it appears, will definitely state that, subject to certain conditions as to dimensions of tanks, beds, &c., bacterial systems may be adopted without subsequent land treatment. The report of the invaluable Manchester experiments, the results of bacterial treatment at Barking and Crossness, and the undoubted success of the installations on various systems now at work throughout the United Kingdom and abroad, warrant the inference that bacterial treatment is universally applicable. Not only is the cost less, but the results are far superior to any obtained by the use of chemicals, and the sludge difficulty does not arise. Further, as the nitrates derived from the nitrogenous substances are in such form and in such quantity as to be readily assimilated by plant life, it may be that in time to come this manurial value will be utilised by extensive irrigation. At any rate, it will not be necessary to flood the land at unsuitable seasons, nor will there be any risk of making it sewage-sick.

The County Council Buildings at Stafford are to be extended. Messrs. Wilcock, of Wolverhampton, have secured the contract for £5,199.

HOLBORN TO THE STRAND.

THE Improvements Committee of the London County Council has decided to advise the Council to invite designs from eight leading architects for the elevation of the buildings to front the northern side of the Strand, and the northern and southern sides of the new crescent road as far as the junction with the main street. Four of the architects should be nominated by the Council, and four by the Royal Institute of British Architects, and the premium to be paid to each architect for the designs should be £150. The total sum to be expended would, therefore, not exceed £1,200. The Committee was strongly of opinion that it would be much better for the Council to invite designs from merely eight selected architects than to have an open competition, for which the leading professional men would not send in designs. Among the conditions mentioned in the form of invitation it would be stipulated that the buildings may be 80ft. high from the level of the pavement; it may be desirable to treat the centre block of the crescent-shaped island as devoted to one building, the streets at the flanks of it being approached by arcaded footways with steps up towards the curved street on the north side, and by a carriage road from the end leaving the Strand; the materials to be employed in the elevations to be of stone, marble, or granite. No other materials would be admissible; the style suggested was Palladian freely treated and of a simple character, it being borne in mind that the buildings may be intended for commercial purposes; and the designs, which would be publicly exhibited, are to be sent in, addressed to the architect to the Council, within six weeks of the date of nomination by the Institute and the Council respectively. The decision of the Council with regard to this recommendation will be announced next week.

ART IN FRANCE AND ITALY.

ART in France is under the care of a special Department of the Ministry of Public Instruction, and is encouraged by an annual expenditure of from 15,000,000fr. to 18,000,000fr. (about £720,000). The ruling principles of the Direction des Beaux Arts are to leave to artists their entire freedom of conception and execution, and, further, to advance in every possible way the application of art to industry. The present Director of Fine Arts is M. Henry Roujon. There are in France eleven State schools of fine arts or decorative arts, but they are naturally of various degrees of importance. The chief one is the Ecole des Beaux Arts of Paris, which is one of the most important establishments of higher education in France and is much appreciated by foreigners because it is without a rival in the world. The other French State schools are the Schools of Fine Arts at Bourges, Dijon, Lyons and Algiers, the Schools of Decorative Arts at Paris, Aubusson, Limoges and Nice, the National School of Drawing for Girls at Paris, and the School of Industrial Arts at Roubaix. At the Ecole des Beaux Arts in the Rue Bonaparte, Paris, drawing, painting, sculpture, architecture and engraving are taught. The method consists of, first, lectures on the different branches of art; and, second, practical teaching. The professors of this institution include such men as Bougereau, J. P. Laurens, Gerôme, Bonnat, Gustave Moreau in painting, and Barrias and Falguière in sculpture. Candidates must be between fifteen and thirty years of age, and must produce a document from some competent person stating that they are capable of undergoing the test. Foreigners are admitted, but they must produce a letter from their ambassador, minister, or consul-general. The examinations for admission take place in March and July of each year. The mission of the Ecole Nationale des Arts Décoratifs de Paris is to form artists and artisans for the artistic and decorative industries. Without going into details regarding the Paris Special

School of Architecture or the Girls' Drawing School of Paris, which chiefly turns out teachers, and many other special establishments, the foregoing amply shows how well both the fine and the industrial arts are cared for by the French Government.

The art-teaching institutions of Italy may be divided roughly into two classes: (1) fine art academies, and (2) arts and crafts schools. The academies, which date chiefly from previous centuries, are confined to the teaching of drawing, painting, sculpture, architecture, and some minor branches of the fine arts. They exist principally in the larger cities, and their cost is proportionately very much higher than that of the arts and crafts schools. The latter are officially known as schools of design and modelling, schools of art applied to industry, schools of art and trade, and schools of industrial design. Their foundation is almost exclusively the work of modern Italians; that is to say, they owe their existence to the stimulus given to education and culture by the national Government. The great majority of the schools are free, but in some cases a nominal fee for registration is charged, varying from 5 francs to 20 francs a year. The cost of maintenance of the schools falls on the State. Altogether 1,511,000 lire (about £30,000) of public money is annually spent in Italy for the promotion of art and art handiwork. Of this total nearly 928,000 lire is paid for keeping up 146 schools of arts and crafts, in which 594 professors are employed to give instruction to some 16,000 pupils. As subsidies, 583,000 lire is spent on 23 fine art academies, which employ 187 professors to teach 3,515 students. These figures do not include Piedmont and a part of Lombardy. More than £26,000 is laid out annually as income derived from legacies and bequests. If the total sum of £86,000 seems small, it must be remembered that a large number of the schools of arts and crafts cost for maintenance less than £40 a year. Some large arts and crafts schools cost the State as much as £3,200 a year, but the average is only £250. The average for the fine art institutions is slightly over £1,000 a year, exclusive of the funds derived from the endowments of these institutions. The school of architecture at the Venetian Institution of Fine Arts (which dates from the thirteenth century) comprises the study of the history of architectural styles, the composition and modelling in clay of architectural ornaments, the internal decoration of buildings, perspective and water-colour drawing, with a course of lectures on aesthetics as applied to architecture. The conditions for admission to the Institute are: To be more than twelve years of age, to have passed the fourth Italian standard of elementary education, and the payment of an annual fee of thirty lire (£1 3s.). The number of professors is thirteen, and the total cost of the Institute to the State is £2,100 a year. The foregoing is a synopsis of two interesting articles which appeared recently in the "Morning Post."

"Bills of Extras" were dealt with by Mr. G. H. Oatley, F.R.I.B.A., at a recent meeting of the Bristol Society of Architects. A fruitful source of extras was very often the inability of the client to clearly formulate his requirements and supply his architect with proper particulars; another cause was the very inadequate time allowed, in these days of rush and hurry, for the preparation of the contract. Another, and perhaps the chief cause, was the possibly natural attempt of the builder to obtain as large an amount as possible for so-called extra work, owing to a misreading or misunderstanding of the contract; but this was confined to the less reputable class of builders, and arose, chiefly, when the original contract was taken at a low figure.

WE WANT A SHILLING for the B.J. Shilling Fund from every architect, draughtsman, builder, clerk of works, foreman and workman who reads the BUILDERS' JOURNAL. Have you paid yours?

Under Discussion.

A Doctor on Dwelling-Houses.

Dr. G. Vivian Poore, M.D., F.R.C.P., recently delivered a lecture on "The Dwelling-House from a Doctor's Point of View" at Carpenters' Hall. The first consideration was—Where to live, in town or country? He emphatically favoured the latter, and instanced the fact that out of every 100,000 persons born in the United Kingdom an average of 80,000 to 85,000 survived infancy; whereas in the township of Manchester the total was only 60,000. The expectation of life in a healthy country place was fifty-two years, but in Manchester it was only twenty-eight years. In the neighbourhood of London, taking 1,000 as an average, the mortality figures for 1893 gave 1,215 for the City of London, 1,592 for the Strand, 704 for Lewisham, and 673 for Hampstead, showing conclusively the advantage of the country as a place of residence. Dr. Poore next dealt with the question of soil, and put gravel and sand first, chalk second, and clay last. The subject of frontage was an important one, he added. A south-east frontage was the best, as it afforded sunshine during some parts of the day to every side of the house. Sunlight was most essential to health, and the question of frontage was all too little considered. In regard to building material, brick or stone was necessary for towns, but the lecturer strongly advocated wood for small country houses.

Renaissance Plasterwork.

At a meeting of the Edinburgh Architectural Society held on Wednesday last Mr. Harold Tarbolton lectured on the "Plasterwork of the Renaissance and its Subsequent Phases." He said that in the reign of Henry the Eighth there was a large influx of craftsmen from Italy and Germany, and it required about a hundred years for the fusion of the foreign and home ideas. Some fine examples of this period were recorded in the Palace of Nonesuch and the Broughton Chapel. After the death of their patron, Henry the Eighth, the Italians became unpopular, partly on account of religion, and left the country. In the reign of Elizabeth large numbers of German and Dutch craftsmen settled down in England. Examples of the German style are to be found in many Elizabethan mansions, and are noted for their intricacy of detail. The East of Scotland is very rich in old plasterwork, in which there is strong evidence of German, Dutch, and French influence. Inigo Jones introduced the German style into his work to a great extent. Mr. Tarbolton made a few remarks upon the methods of work in plastering. In earlier years the lime was tempered by burial in the earth for several years before being used, and it is more than probable that some ingredient was also added for this purpose. Most of the work was done *in situ* and not cast. The best material at the present time for executing plasterwork *in situ* was Parian cement mixed with a small quantity of sand. In conclusion the lecturer said that it was most important that the designer should have a thorough practical knowledge of the work, and should be capable of handling the tools, as the effect of good craftsmanship was often lost in bad design.

Dirty Streets.

"The Insanitary Condition of London Streets" was the subject of a paper read last Wednesday evening before a meeting of the Sanitary Institute, held at the Parkes Museum, Margaret Street, W., by Mr. W. Nisbet Blair, engineer and surveyor to the St. Pancras Vestry. Mr. Blair said that he was not likely to meet with contradiction in making the assertion that our streets were frequently in a very uncleanly condition; though whether that necessarily meant an insanitary condition was at any rate open to argument. He held that for a time it did not, for, until decomposition commenced, the multiplication of bacterial life did not make any progress. It was true, no doubt, that the question of street cleansing

was only made difficult by reason of the immensity of the areas and the quantities of materials to be dealt with and the consequent expenditure; but while we must be limited to some extent by the question of economy, it must not be thought that no attempt was being made towards improvement, even at a somewhat increased cost, and he had heard it admitted many times that the condition of our streets was now immensely improved upon what it was ten or more years ago. Mr. Blair proceeded to describe the methods and cost of the work in St. Pancras, saying that the cost amounted to £284 a mile for a year, 200 sweepers being employed and over 84,000 cubic yards of material being removed, which would work out at 980 cubic yards per mile, or close upon 2,000,000 cubic yards per annum for the whole of London. With regard to the snowfalls in January, 1895, St. Pancras Vestry on several days engaged 1,000 men or more in the removal of the snow, and the total cost incurred was £2,472. In conclusion, Mr. Blair's opinion was that so long as horse traction continued we should be unable to keep our streets in a condition which would escape complaint, for, besides the droppings distributed continually, there was also the ultimate graving and watering, the latter natural or artificial, necessary to prevent the slipperiness or to lay the dust. The grinding up of all this by passing wheels ensured plenty of work for the scavenger, and until motor traffic became general he feared that no material improvement in the cleansing of our streets, coming within a reasonable limit of cost, could be secured.

A Lawyer on Workmen's Compensation.

Workmen's compensation, in all its legal bearings was reviewed on Thursday last by Mr. A. H. Ruegg, Q.C., before the members of the Solicitors' Managing Clerks' Association. Mr. Ruegg said that in every civilised State a citizen had a right to personal security, and it was accepted as a duty that we should so act and so use our rights that no injury should be inflicted upon another. This became a common law obligation until the industries of the country assumed gigantic proportions. It was not until 1837 that the doctrine of common employment was raised in a case relating to a butcher's boy. The learned gentlemen went on to speak of the many erratic decisions by County Court juries when dealing with cases under the Act of 1880. He had seen £125 given for an injury to a little finger, while £25 had been awarded for the loss of a right leg. He suggested that it would serve a useful purpose if a County Court judge were given power to invest money awarded as damages, or to pay it in instalments—a system which found favour in both Germany and Austria. Dealing with the Compensation Act passed by the present Government, Mr. Ruegg remarked that it was based on the German system, although by no means identical with it. The German law grouped the different trades, making them a sort of mutual insurance company. The Act of 1897 was unpalatable to many employers, and, so far as he was aware, it was not agitated for by workmen or trade unions. As a matter of fact, the provisions were too novel to this country to be applied to trades beyond those regarded as dangerous. Dealing with the anomalies of the Act, the lecturer pointed out that if a carman fell off his load in the factory yard and was killed, his dependents would be entitled to compensation; yet if he was killed in a similar way some distance off, no compensation could be recovered. Again, before a workman engaged on a building could recover, the structure must be 30ft. high. A dock was a factory, and, but for the fact that various parts of the Factory Act were incorporated in this measure, a ship would be a factory also. Up to the present there had been one hundred appeals, and the number was not excessive considering that it was a new Act, founded upon untried principles, and that many industries were necessarily on the border line between those included in the Act and those excluded. In Germany the appeals in the High Court averaged 10,000 a year. He was convinced that sooner or later the Act would be extended,

so as to include all industries. However, the principles the Act embodied ought to have a fair trial, and let them all hope that it would be productive of nothing but good to the workmen of the country.

Old Towers at Holyrood Palace.

At the monthly meeting of the Society of Antiquaries of Scotland held last week, Mr. John Sinclair, F.S.A., Scot., read a paper on the towers of James the Fifth at Holyrood Palace. As no thorough exposition either with respect to their characteristic exterior or their intricate internal structure had yet been given, he had been induced by the interest of the subject to make an attempt to supply the deficiency. After alluding to the description by John Young, "Somerset Herald," of the palace in 1503, and noticing the entries in the Lord High Treasurer's accounts, he inferred from these, and from a reference in 1515 to the Auld Tower of Holyrood, that there was good ground for attributing the oldest part of the structure to James the Fourth. From other circumstances it was inferred that the towers shown in the views of Hollar and Gordon of Rothiemay were the work of James the Fifth, a conclusion borne out by an elaborate examination of various points in connection with their external and internal construction, and their relation to other parts of the building as it existed in the time of Mary Stuart. After tracing the changes and extensions effected by Sir William Bruce, he concluded, by giving a minute description of the interior arrangement of the oldest towers, the sole survivors of the original palace.—In another paper, Mr. Alexander Munro described a rude stone slab in the moorland at Strathly, Sutherlandshire, which bears on one face, very clearly incised, a cross of peculiar form, nearly 3ft. long. The summit and the base, as well as the two arms, terminate in circles formed by the expansion of the two outer lines of the cross. In the centres of the four circular expansions are hollows or cups of about 3in. diameter, and in the centre of the cross are traces of a fifth cup. If these could be supposed to represent the cups and rings of the Pagan sculptures on rocks and stones, we might be justified in assigning to this cross a very early date; but whether it might be assigned to the seventh century or to the thirteenth, it was a cross of a form unique in Scotland, and therefore of much archaeological interest.

A Gladstone Memorial Bust was unveiled on Wednesday last in the Debating Hall of the Oxford University Union Society. It has been executed by Mr. Onslow Ford, R.A.

Improvement Scheme at Bath.—By Lampard's Buildings improvement scheme it is proposed to pull down a number of the old houses from Julian Road up towards Landsdown Road, Bath, to form a new road 30ft. wide and build thirty-six working-class houses. The estimated cost is £14,000.

"Houses for the Working Classes in Urban Districts."—Mr. B. T. Batsford will publish shortly a volume with this title, by Messrs. S. W. Cranfield and Potter, of London, Associates of the R.I.B.A., dealing with single and double tenements and other terrace houses suitable for labourers, mechanics, and other weekly wage earners.

A new Higher Grade Board School at Birmingham has been built in Wright's Lane, Old Hill, from designs by Messrs. Meredith and Pritchard at a cost of £9,056. Accommodation is provided for 348 children, besides which the infants' school (which is not yet completed) will accommodate 340. Mr. G. Cockin, of Old Hill, was the builder.

"A Parish Church" was the title of a lecture delivered by Mr. C. Hodgson Fowler, F.S.A., before the Sheffield Society of Architects and Surveyors last week. He mentioned that, in the thirteenth century rebuildings and enlargements took place all over the country, and it was then the old nave and chancel arrangements began to be extended by the introduction of aisles. In the earlier instances, the aisles were simply built up outside, the nave walls were taken down, and arches connecting them with the new parts thrown over.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"A dexterous hand without a head to guide it is a blind tool; a head without a hand to realise its wishes is an impotent nothing."—CLAUDE BERNARD.

Army Engineering.

AN army has always several hand pumps for lifting and forcing water. These cost £17 each, and, in addition, there is a supply of piping. But even a stream cannot always be found. Lord Methuen's column on its march to the Modder River found the absence of water courses as trying almost as the obstacle set up by the Boer forces, and the river was desecrated with delight. So also with Buller's force on Spion Kop. The column in Natal has the usual service plant for boring artesian wells. It includes a hand pump with a 15in. barrel of 2½in. internal diameter, costing alone £76, with 4in. iron tubes, making up a total length of 100ft. The whole plant cost £140. With regard to pontoon work, it is somewhat remarkable that here there has been little change since Caesar's time; greater strength of pontoons may be achieved, but the method does not differ. The British pontoon structure is an expensive business. A boat with ten rowlocks costs £75, and a bipartite, meaning a boat in two pieces, with sixteen rowlocks, and locking levers, &c., costs £98. Baulks of timber and bridging trestles are also supplied. These trestles sometimes run up to £29 or £30. The necessity for reliable strength is a reason for the great cost of pontoons and trestles. From this it will be understood that there are a large number of non-combatants in the army—mechanics of every kind; and it is worth noting further the cost of their tool chests. For two regimental bricklayers and masons the cost of equipment is £5, for three carpenters £7 10s., for wheel and saddle-tree makers £11 each, for armament artificers £27 each, for collarmakers and saddlers 4 guineas, for farriers and smiths 4 guineas; while the equipment of the telegraph mechanics costs £110, including, as it does, a lathe with a 3ft. bed and 3½in. centres. This latter alone is worth £18. There is also a portable forge, which costs £160.

Incongruities in Glasgow Cathedral.

A CORRESPONDENT to a local paper points out that it is about time some of the incongruities in Glasgow Cathedral were removed. "In the first place," he says, "I would refer to the miserable array of varnished wooden benches—the property of the Town Council, I understand—which confront the eye of the visitor as he enters the choir. Why fill up the grand old Bishop's beautiful choir with such abominations? All the bases of the Gothic columns are hidden from view by the disfiguring woodwork, to say nothing of the general loss of effect by their presence there. What I would suggest is to take out all the wooden benches and re-seat the choir with chairs similar to those in that part of the building usually known as the Lady Chapel. The second point which is worthy of public consideration is the wooden erection which is tacked on to the eastern face of the stonework of the rood screen, and which serves at present as a platform for the vocalists who assist in the service. This erection, I suppose, dates from the same period as the wooden benches. Take it away and restore the rood screen to something like its original condition, and accommodate the choir in another part of the building. The last point I would draw attention to is the position of the fine memorial organ which enters so largely into the really excellent Scottish church services which are held every Sunday. Why was the builder of the instrument permitted to spoil the internal lines of the building by allowing the organ case to jut out from each wall in the manner it does? Apart from the unsubstantial appearance it has, it is not at all in keeping with the architecture, and could very well have been constructed in such a way as to add to and not detract from the effect of

the fabric as a whole. The stained-glass work in the building I will refrain from criticising. It has long ago been relegated to its proper position by those competent to judge."

Jacobean Gables.

THE Jacobean gables shown in the accompanying illustration are situated in the oldest part that now remains of Cockfield Hall, Yoxford, Suffolk, the seat of Sir Ralph Blois, Bart. From its general character the house must have been built early in the seventeenth century in the reign of James the First. The finials surmounting the gables, and on the parapet between the gables, have a very rich effect, especially as they are all slightly different in their decoration. This house has lately been restored, and a great part of it entirely rebuilt; but it is gratifying to note that this part has had nothing done to it beyond scraping, the red brick having been covered with frequent coats of lime-wash. The part that was pulled down was not very interesting externally, but there was concealed from the casual observer a very beautiful old hammer-beam roof built principally of sweet chestnut. This, unfortunately, was entirely destroyed and sold to be broken up for firewood or some such purpose. The ends of the hammer-



JACOBEOAN GABLES, COCKFIELD HALL.
DRAWN BY WILLIAM BROOKE.

beams (four only of which were visible) were most quaintly carved with grotesque faces of Gothic character. This clearly was the roof of the old banqueting hall. When removing the plaster of the walls below, the old oak stud work was revealed and in the centre of one end was a very quaint Gothic spandrel, which was over the door that led probably to the kitchens and offices. Our illustration is from a pencil drawing by Mr. William Brooke.

Ruskin's Working Man.

AS has been often stated, some of the later writings of John Ruskin, notably "Fors Clavigera," were more or less inspired by a certain working man. Mr. Edward Sutton writes to the "Nottingham Daily Guardian" to tell all about this man, whom he knew well.—Mr. Thomas Dixon was a master cork-cutter at Sunderland. He was a man of but very moderate attainments, not being distinguished beyond others in his own particular sphere of life. But there was a great fascination about him, and in conversation and manner he was inspiring, alluring, and helpful to every one who sought his society. The letters published under the title of "Fors Clavigera" were in every instance, when penned, forwarded to Mr. Dixon for his approval and comment; and were afterwards moulded and considerably reshaped in accordance with his remarks on them. Ruskin revolted against the doctrines and economists of the now discredited Manchester School, and as a consequence he wrote

and similarly submitted other letters, published under the title of "Time and Tide by Wear and Tyne: or Lettersto a Cork-cutter of Sunderland." But Ruskin was not the only one who thus honoured Mr. Dixon—Carlyle, Tennyson, Walt Whitman, Emerson, Tom Taylor (himself a native of Sunderland), Rossetti, W. B. Scott, Clarkson Stanfield (another townsman), Holman Hunt, Boehm, the sculptor, Mazzini, Orsini, Gavazzi, Garibaldi, and a host of others, in various walks of life, were similarly brought into requisition by him. His knowledge and judgment of art and literature were wonderful, varied, and extensive; and his love of both so deep and surpassing as to make his opinion and dictum invaluable and widely sought.

A Museum of Great Marbles.

THE separate museum constructed in Berlin to receive the great marbles from Pergamum, of which during the last seventeen years the major part has lain on the ground, practically unseen, in the ground-floor galleries of the present building, is now fast approaching completion. It contains a faithful reconstruction, on the scale of the original, of the vast open-air altar on the Acropolis of Pergamum, round the podium and the sides of which ran the gigantic frieze in high relief with the Battle between Gods and Titans. The chief motives of this have already become familiar all over Europe through the casts which the museums have obtained through the generosity of Berlin. Very important sections of the frieze, which is 8ft. in height and was 460ft. long, having been preserved, the effect of the altar, as thus in a great measure reconstituted, should be stupendous. This Asiatic Greek art, dating late in the second century B.C., stands in its demonstrative and rhetorical passion wholly apart from anything produced during the great periods, that is, the fifth and fourth century B.C. The technical skill displayed, the easy triumph over all difficulties of workmanship, is nothing short of astonishing. All the same, there is in these Pergamenean sculptures an element of over-emphasis and dramatic passion torn to tatters which amounts almost to vulgarity. And this is the last word that the lover of antiquity would like to pronounce in connection with Greek art.

Two Interesting Models.

ON Friday last a representative of this journal inspected two models that have been made for the Metropolitan Asylums Board by Mr. John B. Thorp, of the London Drawing and Tracing Office, 98, Gray's Inn Road, W.C. One is of the Brook Hospital, Shooter's Hill, S.E. (T. W. Aldwinkle, architect), about which it will be remembered, some discussion took place a short time ago with reference to the large expenditure for extras. The other model is of the North-Eastern Temporary Hospital at Tottenham, N. (A. and C. Harston, architects), which was built some years ago to meet an epidemic of scarlet fever. It comprises about forty wooden buildings, and was put up in the remarkably short space of seven weeks. Both models are about 6ft. square, and are made to a metre scale (as they are intended for the Paris Exhibition), which works out at about 16ft. to the inch. Their cost has been £400 altogether—£300 for the Brook Hospital and £100 for the other—and they are ingeniously constructed of wood and cardboard, billiard felt being used to represent the grass, and stained sponges the trees; the latter are very effective. The utility of models of large public buildings need hardly be emphasised, as this has been proved in many instances. The excellent manner in which they show how the buildings will look when completed well repays their cost. Of course, the trained architect can without difficulty realise from the study of plans and elevations what the completed building will be like; but this is not the case with the general public and those who generally form the building committees of public bodies. The existence of a model would assist their judgment and often prevent serious mistakes.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Book on Ivory Carving.

WEST KENSINGTON, W.—H. P. writes: "Where can I obtain a book on carving or working ivory?"

No book has been published on this subject, but there are a number of references in "Workshop Receipts" (second series), which costs 5s., and is published by Spon.

Constructing a Skittle-Alley.

CATFORD.—S. T. writes: "I should be glad if you could inform me how to construct a skittle-alley, stating dimensions, lighting, &c."

A single skittle-alley should be 40ft. long and 12ft. 6in. wide, but a double alley need only be 21ft. 6in. wide in all, being divided by a diagonal line or partition so that each court is 9ft. wide at the service end and 12ft. 6in. wide at the other. It should be perfectly level, with a concrete bed either floated in cement or covered with asphalt, and with a cleft wall right round to retain the balls within the court. A roof of some sort should be provided. A single alley should be supplied with a channel for return balls along one side, or both, laid to slope downwards to the service end.

G. A. T. M.

Rateable Value of L.C.C. Tenements.

GRAYS.—R. W. writes: "In connection with the reply in your issue for January 31st last, on 'Percentages and Property Valuation,' it would be interesting to know how the rateable value of the tenements erected by the London County Council compares with their gross rental, seeing that you state at the close of your interesting article on 'The Housing Problem' (issue January 3rd) that 'In London over 55 per cent. of the gross rental is absorbed in the expenses of management, repairs and the like, while in Liverpool 40 per cent. has been allowed.' Can the London County Council claim a larger allowance for outgoings than private owners?"

It does not appear that the County Council has any such monopoly. Section 4 (2) of the Customs and Inland Revenue Act, 1891, directs that, in the case of a house used for the sole purpose of providing separate dwellings at an annual value not exceeding £40 for each dwelling, the Commissioners shall confine the assessment to the annual value of the house, exclusive of every dwelling therein, of an annual value below £20. This may account for the low rateable value of the tenements in question.

G. H. B.

Architects' Pupils and Overtime.

BRISTOL.—ADMIRER writes: "A youth was article at a premium to an architect and surveyor, nothing being said on either side about wages. The office boy was discharged, and the pupil had to take over his duties, being told that it was not usual to pay wages to pupils and that he must do 'overtime' without remuneration. This seems to me very unfair, and I should be glad to know what is the rule as to remuneration for 'overtime.'"

This appears to be a case for the intervention of parent or guardian. The pupil should not be called upon to work "overtime" for the performance of the duties of an office boy, nor for any other purpose save upon emergency, when most principals would ask for it and most pupils would comply. At the same time, remuneration is rarely offered for such compliance, except possibly a little extra holiday when the pressure is released. If the R.I.B.A. form of articles has been used, the principal would be bound to allow his pupil sufficient time and opportunities for study, and this

clause might well be used to prevent any undue employment of the pupil beyond the regular office hours. It is by no means bad training for a pupil to act as office boy for a few months at any rate, however much it may offend his dignity.

G. A. T. M.

Liabilities for Errors in Tenders.

FOLKESTONE.—CONSTANT SUBSCRIBER AND READER writes: "A short time ago I tendered to an Urban Council for providing and fixing a cleft oak fence, and my tender, being the lower of two, was accepted. Before signing the contract I discovered I had made a clerical error, having divided the lineal feet by nine instead of three, to bring it to yards lineal. I wrote to the Council, explained the mistake, and requested that my tender be withdrawn. They replied that they should not release me; but later wrote me a letter stating that they were prepared to acknowledge the error, and, without prejudice, would offer me half the difference of the extra cost involved. As I should lose by this, will you kindly say whether they can legally compel me to carry out the work. I would add that no quantity of fencing was stated in my estimate nor had the Council's surveyor shown it on the plan or mentioned it in the specification."

If the value or amount of the work tendered for exceeded £50, the acceptance of the tender in order to constitute a binding contract should be under seal (Public Health Act, 1875, section 174, sub-section 1; *Kingston-on-Hull Commissioners v. Petch*, 10 Ex. 610; *Dartford Guardians v. Trickett*, 59 L. T. 754; *Hudson on Building Contracts*, 2nd Edn., Vol. 2, page 121.) If so, our correspondent can refuse to carry out the contract, but otherwise he cannot. If the quantity of fencing was indefinite so that the value or amount of the work might, or might not, exceed £50, then it would not "exceed £50," and our correspondent could not refuse to carry out the contract (*Eaton v. Basker*, 1881, 7 Q.B.D. 529).

H. P. B.

Local Authorities and Drainage.

CREDITON.—JUSTICE writes: "A local authority adopted the whole of the Public Health Amendment Act, 1890, but they served notice on A under the Public Health Act, 1875, 38 & 39 Vic. c. 55, section 94 and schedule 4 (form A.)—and under no other sections or provisions of Acts—to take up the old and lay . . . pipe drain . . . with inspection chambers and an interceptor near sewer.' There are no by-laws relating to sanitary work adopted by the local authority. A's drain also takes off the sewage from the w.c. which belongs to the adjoining house occupied by B. The local authority knew the facts, but requested A to do the work forthwith. A has had the work done at his own expense. (1) What is A's remedy? (2) Is B liable to A for part of the expense? (3) Can A compel the local authority to reimburse him for the whole or part of the expenses? (4) Could the above notice under the Public Health Act, 1875, be amended or made good by any court of law, so that the notice shall be applicable under the Public Health Amendment Act, 1890, or under any other Public Health Acts? (5) In the event of a lawsuit, would the cause be limited to the specific Public Health Act, 1875, and the section under which the notice was served, or could other Acts of Parliament be introduced by either party? (6) Would it be expedient or an expensive matter to lay the above facts before the Local Government Board for redress?"

(1) A's remedy (if any) appears to be against the local authority for B's share of the expense. A should consult a solicitor. (2) B is not liable to A, but to the local authority. (3) Perhaps A might recover part of the expense from the local authority. (4) There would be no need to amend the notice, because A has only done what he and B could be compelled to do under section 19 of the Public Health Act, 1890. (See *Self v. Hove Commissioners*, Div. Ct. [1895] I.Q.B. 685.) (5) The case would be decided under any Acts of Parliament in force. (6) It is not likely to do good, though it might not be expensive. G. H. B.

How to Become a Student of the R.A. Architectural School.

EALING, W.—H. W. S. writes:—"I should be glad to know how one may become a student of the Royal Academy Architectural School."

No sculptor or architect is eligible for admission to the schools of the Royal Academy who is more than twenty-five years of age on the date fixed for the delivery at the Academy of works for probationership. All instruction in the Academy is gratuitous, the students providing their own materials. Applicants for admission must obtain from the Registrar, through the written request of any member of the Academy, or other artist or person of known respectability, a printed form, to be filled up and delivered at the Royal Academy, together with a certificate of birth and the required specimens of ability, on or before January 1st or July 1st. Architects must also send a certificate from an architect member of the Royal Academy, of the Royal Institute of British Architects, or any other public institution for teaching art and science, certifying that the applicant has followed up the study of architecture and architectural drawing, and has acquired a fair degree of proficiency. The specimens required from architects are:—

(1) A geometric elevation of some part of an existing building (which may be copied from published drawings or prints) in which some part of the ornament or other features shall be drawn in freehand; (2) geometric elevations of the Doric, Ionic, and Corinthian Orders, with their entablatures complete, to $\frac{1}{2}$ in. scale, the columns to be 2ft. high; (3) an original perspective sketch in pencil of an existing building, or part of a building, on a quarter-sheet of Imperial paper; and (4) a drawing of a piece of architectural ornament from a cast, shaded in pencil or chalk, or tinted, and of the size of the original. All the drawings required must be on paper, and unmounted. The above required specimens of the applicant's ability will be submitted, within two weeks of the date of their being sent in, to the Council, who will select a certain number as probationers to compete for the vacant studentships. Notice of their admission as probationers will be sent to the successful applicants, and they will be summoned to attend on a fixed day at the Academy and there execute the following works:—(1) A geometric drawing from memory only of one of the Orders, to $\frac{1}{2}$ in. scale, the Order and height of the Order to be fixed by the Council, and no book or other aid allowed, to be done in two hours, from 6 p.m. to 8 p.m.; (2) a drawing from a cast, the size of the original, to be done in seven evenings of two hours each, 6 p.m. to 8 p.m.; (3) a geometric elevation (with or without a plan) of a building, or some part of a building in London, to be done from the probationer's own notes and measurements, taken from the building itself, in two evenings of two hours each, 6 p.m. to 8 p.m., the notes and measurements to be submitted to the Council; (4) and two studies in outline, each on a quarter Imperial sheet of paper, of two of the principal casts (to be selected by the master of the school) in the architectural school, to be done in two evenings of two hours each, 6 p.m. to 8 p.m. The successful competitors will be admitted students of the Royal Academy for three years. At the end of this time, subject to the fulfilment of certain conditions and the passing of an examination, students will be admitted for a further period of two years.

Wallpaper Combination.—The Association of Wallpaper Manufacturers, after working jointly since September 30th last, is now preparing a prospectus, and an issue of capital (probably £8,000,000) will be made shortly.

Portsmouth Technical Institute.—At a meeting of the Portsmouth Town Council, held last week, a resolution proposing to rescind the motion for erecting the new technical institute on the Mayor's Lawn was lost. This matter was referred to at length on p. 400 of our issue for January 31st last.

Keystones.

Mr. William Ewart Lockhart, R.S.A., died recently at the age of fifty-three.

The **Ruskin Union** held its first council meeting on Saturday. It already has 103 members.

Mr. E. A. Chattock, of London, has been appointed electrical engineer to the Bradford City Council at a salary of £500 a year.

A new **Board School at Auldhousie, Glasgow**, has been built from designs by Mr. D. Barclay, architect, Glasgow. It accommodates 100 scholars and has cost £1,500.

A new **Technical School at Stratford-on-Avon** has been built from designs by Mr. Arthur Flower, architect, at a cost of £1,600. The art studio is 40ft. by 27ft.

Builders' Heavy Failure at Stamford.—The firm of Hinson Brothers, builders, Stamford, has filed its petition. The liabilities are about £12,500, and the assets about £6,500.

Science and Art in Cornwall.—In Cornwall last year there were sixty honours passes in science and art (twenty of them first-class), as compared with twenty-seven for the previous year.

Placards at Whitehall.—The Office of Works has decided not to allow posters to be placed on the hoardings around the huge sites in Whitehall and Parliament Street on which the new Government offices are to be built.

Royal Scottish Academy.—Mr. Alexander Roche, A.R.S.A., and Mr. John Henry Lorimer, A.R.S.A., have been elected to full membership of the Royal Scottish Academy in the place of Mr. Alexander Fraser and Mr. John Smart, both deceased.

Newport (Mon.) Technical Institute.—It has been decided to proceed with the purchase of 3,700 sq. yds. of land in Clarence Place, near Newport Bridge, for the erection of a technical institute. Lord Tredegar is the owner of the land, and he has agreed to sell it for £2,571.

New Lock at Teddington.—It has been decided to construct an additional lock at Teddington on land adjoining the present lock. This new lock will be the largest on the Thames. Its length between the gates will be 650ft. and its width 25ft. Its estimated cost is £20,000.

A South African Memorial.—Mr. John Tweed, the well-known sculptor, is making considerable progress with the fourth and final panel of the gigantic memorial which Mr. Cecil Rhodes proposes to erect near the Shangani River to Major Alan Wilson and his ill-fated party. This panel will contain nine life-sized figures.

The new High School for Girls at Kirkham, Preston, which the Worshipful Company of Drapers has offered to build will be of brick with stone facings, and will be surmounted by a small tower or belfry. The building will be two storeys high, and accommodation will be provided for 100 scholars. The total cost is estimated at £4,000. The plans, will shortly be submitted to the Charity Commissioners.

A new Infectious Diseases Hospital at Braintree was opened last week. The buildings are situated on high ground just outside the town, on the Cressing Road, and consist of the hospital proper, with two wards divided by the nurses' duty-room, caretaker's house detached, and outbuildings, comprising mortuary, washhouse, disinfecting chamber, and ambulance shed. The buildings are of red brick and slated, and cost about £3,000.

The Memorial to Rosa Bonheur which is to be erected in the gardens of Fontainebleau will take the form of a bronze statue of a bull upon a stone plinth, and will be about 14ft. high. The plinth is to be decorated with four panels in bronze, one a portrait in bas-relief of the late painter, and the other three will be modelled upon her celebrated works. The cost is to be defrayed by M. Gambard, Spanish Consul at Nice.

Extensive additions to the First Avenue Hotel, Holborn, are about to be made according to designs by Mr. L. H. Isaacs and Mr. H. L. Florence, architects, of 3, Verulam Buildings, Gray's Inn, W.C.

A Great Work.—Upon the development of Hong Kong Harbour the Government is about to spend £17,000,000. A contract for extensive alterations has been placed with Messrs. Punchard, M'Taggart, Lowther and Co., of Cannon Street, E.C.

Broughton-in-Furness Church.—At the Carlisle Consistory Court on Wednesday last permission was granted for the erection of a new church tower and peal of bells which Lord Cross is presenting to the parish of Broughton-in-Furness.

The Annual Dinner of the Staff of Mr. William Griffiths, stone and granite merchant and pavior, of Hamilton House, Bishopsgate Street Without, E.C., was held at the Great Eastern Hotel, Liverpool Street, E.C., last Saturday, Mr. Griffiths presiding.

Amalgamation of Welsh Slate Quarries. A scheme is being prepared for the formation of a syndicate to amalgamate most of the Carnarvonshire and Festiniog quarries under a working agreement with the owner of the Llanberis and Penrhyn quarries. The capital will be £1,250,000.

Taunton's new Technical Institute.—The new technical institute which has been erected in Corporation Street, Taunton, was formally opened last week. The building, which adjoins the municipal buildings, has a frontage of 60ft. and comprises electrical and physical laboratories, and the necessary workshops, together with a good-sized lecture hall and ordinary room.

Dissolution of Partnership.—The partnership hitherto subsisting between John Batcheler and Charles William Leopard and carried on by them under the style of Haines and Co., at 33, Minories, E.C., has been dissolved by mutual consent as from December 30th, 1899. Mr. Leopard retires, and the business will be carried on in future at the same address and under the old style (Haines and Co.) by the remaining partner, Mr. John Batcheler.

Repairs to the Thames Embankment.—About a year ago a heavily-laden collier barge crashed into the stonework of the Thames Embankment opposite the Temple Station. The stones upon which the lamp-posts stand are of solid granite and weigh six and a half tons. It will be readily understood that it is no easy matter to get such a weight into a position almost overhanging the river, or to get the old stone out. The work is not likely to be completed for some time.

City and Guilds of London Institute.—The prizes and certificates gained by the students in connection with the City and Guilds of London Institute were presented on Thursday evening last by Sir Douglas Fox (President of the Institution of Civil Engineers). He said that to specialize in study too early was a great mistake. The great point was to lay the foundation as wide and as broad as possible. That done, the next thing was to properly apply what had been learnt.

The Municipal Year Book for 1900 has just reached us. The book is a valuable guide and reference book to municipal bodies, statistics, officials, and addresses. Additions have been made to every section and several new chapters introduced. The Irish section, describing the working of the new Government Act, will prove of special interest. The same general plan has been followed as in former issues—the English towns being divided into great towns, county boroughs, and other incorporated towns. The larger urban district councils are also dealt with. The great municipal industries—the supply of water, of gas and electricity, the management of tramways, the erection of artisans' dwellings and of municipal lodging-houses—are treated in separate sections. The publishers of the work are Messrs. Edward Lloyd, Limited, of 12, Salisbury Square, E.C., and the price is 2s. 6d.

New Companies.

Hampden English, Limited.

This company was registered on February 5th by Singleton and Co., 8, Staple Inn, Holborn, W.C., with a capital of £18,000 in £1 shares, to acquire the business carried on at Stowmarket and in London and Ireland by J. H. English, and to carry on the business of timber merchants, sawmill proprietors, timber growers, saw and file makers, &c. The first directors (to number not less than three nor more than seven) are M. V. English, G. W. Whiting, C. P. Beevor, A. E. Moeran and J. H. English. Qualification, 50 preference shares. Registered office: Creeving Road, Stowmarket, Suffolk.

Owen and Co., Limited.

This company was registered on February 6th by Jordan and Sons, Limited, 120, Chancery Lane, W.C., with a capital of £1,000 in £10 shares, to acquire the business carried on at Yorke Street, Burnley, as Owen and Co., Limited, and to carry on the business of plumbers, glaziers, &c. The first directors (to number not less than two nor more than seven) are Thomas Preston (chairman), Alex. Fyfe and H. Foden. Qualification, £50. Remuneration as fixed by the company. Registered office: 7, Yorke Street, Burnley, Lancashire.

John Sadler and Sons, Limited.

This company was registered on February 7th by Jordan and Sons, Limited, 120, Chancery Lane, W.C., with a capital of £10,000 in £5 shares, to acquire the business carried on by J. Sadler at the Shidas Lane Brickworks, Oldbury, Worcestershire, and to carry on the business of manufacturers of and dealers in red, brown, brindle, blue, glazed, ventilating, fire and other bricks, roof and floor tiles, copings, plinths, cornice copings, &c. The first directors (to number not less than three nor more than five) are J. Sadler (chairman), P. J. Sadler (managing director) and E. Pincher. Qualification, ten shares. Remuneration of J. Sadler, £150 per annum; of P. J. Sadler, £208 per annum, residence, and 5 per cent. of the net profits. Registered office: Shidas Lane Brickworks, Oldbury, Worcestershire.

Malkin Tile Works Company, Limited.

This company was registered on February 7th by Waterlow and Sons, Limited, London Wall, E.C., with a capital of £25,000 in £10 shares, to acquire the business carried on by E. Malkin and S. Malkin, at Newport Lane, Burslem, Staffordshire, under the style or firm of the Malkin Tile Works Company, and to carry on the business of china and earthenware manufacturers, and manufacturers of and dealers in pottery of any description. The first directors (to number not less than two nor more than three) are S. Malkin, H. Wood and J. Cope. Qualification, £50. Remuneration of S. Malkin, £832 per annum; others as fixed by the company.

Ford and Company, Limited.

This company was registered on February 8th by H. S. Bird, 50, Grey Street, Newcastle-on-Tyne, with a capital of £5,000 in £1 shares, to acquire the business carried on by C. B. Ford at Newgate Street, Newcastle-on-Tyne, as Ford and Co., and to carry on the business of drysalts, brush makers, oil, colour, and varnish manufacturers, importers and merchants, &c. The first directors (to number three) are C. B. Ford (managing director), G. R. Leah (chairman) and F. Bentley. Qualification, fifty shares. Remuneration of C. B. Ford, £250 per annum. Registered office: 60, Newgate Street, Newcastle-on-Tyne.

A UNIQUE OFFER is made this week to all collectors of twenty shillings and upwards for the **BUILDERS' JOURNAL Shilling Fund**. For particulars see page 35.

Professional Practice.

Belfast.—Donegall Square Church has been reopened after the completion of an extensive scheme of renovation. The re-painting of the interior and the re-polishing of the furniture, with the substitution of electric light for gas light, constitute the chief improvements. The walls are coloured green, which is relieved of any approach to sombreness by the imitation panel-work and mouldings being finished in cream and gold respectively. The organ has undergone some repairs, which contribute materially to its efficacy. The sanitation was carried out by Mr. Isaac Copeland; the electric lighting by Messrs. Smith and Parks, Mr. Greenhill acting as consulting electrical engineer; and the painting by Messrs. George Morrow and Sons, of Clifton Street, Belfast.

Bramford, Ipswich.—The Ecclesiastical Commissioners having had their attention called to the damp state of the chancel walls of Bramford Parish Church reported that the best things to do would be to render the lower parts in cement and to panel the walls with oak. The panelling and some new choir stalls have been designed by Mr. Caroe, of the firm of Messrs. Christian. The style of the stalls is late Gothic, each seat for the boys being separated by a small column, which gracefully runs up into the book-rest of the men's seat. Every seat, both for men and boys, has open carved work, each compartment being of a different design. The men's seats terminate at each end with a suitable clergy stall. There are seven seats for boys and five for men on each side. The panels which line the wall on each side, from the screen to the east wall of the chancel, are continuously separated into small sunk compartments by arrow heads, and at certain distances there is a carved member. The sedilia are also lined with similar panelling. The whole of the panelling is surmounted by carved capping, the wood used throughout being Austrian oak, which has been fumigated. The flooring of the chancel and sanctuary have been relaid with light grey and yellow tiling, and two handsome red Devonshire marble steps, of the quality called Brèche Sanguine, have been placed under the altar. The panelling and the tiling of the floor, the altar rails, and the screen have been given by the Ecclesiastical Commissioners. The stalls and the flooring of the sanctuary, and the altar steps are the gift of a friend of the church. The work of the renovation of the chancel is of a character worthy of the edifice, which has several features of special antiquarian interest. The screen, for instance, is dated about 1250, and it is stated that there are only five of this period to be found in the Kingdom. The nave is separated from the aisles by handsome massive pillars, and visitors to the church, which, by the way, is very conspicuous to travellers by the Great Eastern Railway, should not omit to inspect the font cover, which is Elizabethan (about 1550), and opens with wings on each side.

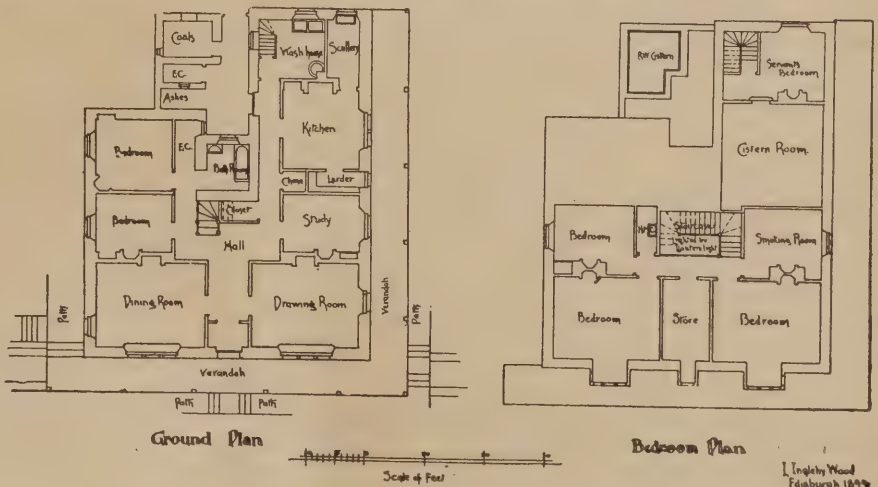
Bristol.—The new school for boys and girls erected by the Bristol School Board at Summerhill, St. George, was formally opened last week. The older Summerhill school, accommodating infants, faces the main road; the new building occupies a site adjacent to it and fronting Plummer's Hill Road. It has been designed for 350 boys and the same number of girls, and is of blue pennant, with freestone dressings. On the ground floor is a central hall, about 60ft. by 25ft., and round it are ranged seven classrooms and rooms for teachers. The apartments are well lighted and are provided with large windows through which the head teacher in the central hall can exercise a general oversight of the work. This floor has been allotted to the boys. The girls find accommodation on very similar lines on the floor above, the only difference being that the central hall is loftier, the roof being of open timber work. The floors are of fireproof construction—iron girders supporting concrete—and are laid with blocks arranged herring-bone

fashion. Mr. F. Bligh Bond, F.R.I.B.A., was the architect of the new building, and Mr. G. Humphreys the contractor. The school is warmed by hot-water appliances by Messrs. J. Crispin and Sons.

Dryburgh.—The house illustrated on this page is for Mr. W. Mitchell, of Edinburgh. The contractors are Messrs. R. and J. Greene, of Bowden, St. Boswells. The house itself is built of local red sandstone, rubble walls and red sandstone dressings, and the walls are to be rough cast and lime whitened. The roof covering is of Edwards' Ruabon tiles. A water supply was obtained after much trouble by boring an artesian well about 300ft. deep; the water is brought to the surface by means of compressed air. The building is on the slope of a hill and commands a magnificent view of Eildon Hills and the river Tweed.

mental and vocal music rooms, improvement of the residence house by the enlargement of the dining hall and the addition of several bedrooms. The increased size of the Jellicoe Hall demanded a more imposing approach than it formerly had, and the architect has endeavoured to make the entrance hall and staircase to the Jellicoe Hall a feature in his design. A system of exhaust ventilation, has been provided, and Messrs. Maguire and Gatchell are responsible for the heating of the college by the American radiator system. The building work has been carried out by Messrs. Samuel H. Bolton and Sons, from the design and under the superintendence of Mr. R. Caulfield Orpen. The cost has been about £71,000.

Durham.—The new gymnasium which has been erected in connection with the Durham



HOUSE AT DRYBURGH, N.B. L. INGLEBY WOOD, ARCHITECT.

It is situated about a mile and a quarter from St. Boswells railway station, and is close to the famous ruins of Dryburgh Abbey.

Dublin.—The building operations which have been in progress for the last twelve months at the Alexandra College are now practically complete. A portion of the college premises adjoining the Jellicoe Hall has been brought into harmony with the rest. It is intended, in the near future, to still further extend this treatment of the exterior, so as to mark clearly the limits of the college property. The additional accommodation gained by these alterations may be thus summarised:—Enlarged Jellicoe Hall and gymnasium under it, a spacious cloak room, a series of classrooms over the Hall, and over these again instru-

Grammar School is of coursed Dunhouse stone, with mullioned windows high in the walls, and is designed in the seventeenth century style. The building consists of a gymnasium, with a porter's lodge adjoining, and dressing rooms, with a shower bath for the use of the members. A staircase from the main porch leads to a gallery that extends along one side and one end of the building to accommodate the spectators at gymnastic displays. The gymnasium is 60ft. long by 30ft. wide by about 25ft. high, and is floored with wood blocks and panelled round with wood. It has been fitted up by Messrs. Stempel, of Regent's Park, London. The work has been carried out by Messrs. Gradon and Sons, of Durham. Mr. W. S. Hicks, of Newcastle-on-Tyne, was the architect.

Views and Reviews.

AUGUSTE RODIN.

The attention of all true lovers of art should be directed to whatever is shown in England of the works of "the greatest living sculptor of France. Having said this, and recommended a visit to Carfax and Co., Ryder Street, there remains but little to say, for other critics have been there, and found that the matter for anything but a very brief notice is wanting. The sketches and studies are easily seen to be those of an absolute master, and hardly less interesting than selections from the leavings of other great artists might be. Comparing Rodin's studies with those of past masters we find what they have in common to start with, but there are differences, fundamental and temperamental, which will force them apart some day, and far as the poles asunder we find their achievements to be. There is this to be said for Rodin—that he must be compared with the greatest or none, and as we find his name coupled with Michel Angelo's in some of the notices which have appeared, it seems that just this should be said on our side. His influence as a teacher has probably been greater among the sculptors of this generation than that of anyone else, but as a master he is idiosyncratic, standing alone to be left alone rather than slavishly copied.

It has been remarked very truly that modelling is not sculpture, and that a clay model does not necessarily become monumental by merely becoming perdurable, as when cast into moulds to re-appear as a bronze. There might be an interesting debate on this point, as it involves the whole question of style, and I should like to have other opinions.

E. R.

TWO FAMOUS CHURCHES.

We have so frequently had occasion to call attention to the usefulness and general attractiveness of the volumes in the series of handbooks known as "Bell's Cathedral Series," that the publication of a new volume does not call for any extended notice. It is sufficient to remark that the excellencies which characterise the series as a whole are fully represented in this latest volume. The illustrations are from photographs by the author, Rev. Thomas Perkins, M.A., Rector of Tarnworth, Dorset, and are sufficiently numerous and sufficiently architectural in character to render the volume interesting and instructive to the architectural student. Wimborne Minster has suffered much at the hands of the nineteenth century restorer, and we are glad to note that Mr. Perkins apprises this misplaced energy at its right value. Both Wimborne and Christchurch are full of historic as well as architectural interest, and the volume, which is the result of Mr. Perkins's studies and observations, is an eminently readable one.

"Wimborne Minster and Christchurch Priory" (Bell's Cathedral Series); by Rev. Thomas Perkins, M.A., F.E.A.S. London: George Bell and Sons. 1s. 6d.

RECORD OF THE TIMBER TRADE.

The annual issue for 1900 of "Timber and Wood-Working Machinery" is a most interesting one, and fully equal to the previous ones. As a review of the timber trade in its various branches this annual is unsurpassed, both for wealth of illustrations and entertaining and useful letterpress. The subjects treated of this year are the mahogany industry of British Honduras, the timbers of Tasmania, the greenheart industry of Demerara, New Zealand and its timbers, the manufacture of timber on the Pacific Coast of North America, the export timber trade of Western Australia, the teak trade of Siam, the sawmills and timber yards of High Wycombe; miscellaneous notices are given of well-known firms in the timber trade and novelties in wood-working machinery. A plate containing portraits of the leading sawmill engineers of Europe is given as a special supplement, with notes on their careers.

"Timber and Wood-Working Machinery: Special Illustrated Issue, February, 1900." Edited by W. L. Bird. 1s. London: The Botolph Press, Ltd., Swedland Court, Bishopsgate, E.C.

New Patents.

These patents are open to opposition until March 24th.

1899.—Moving Stairways.—1,618. J. BUCHANAN and G. F. THOMPSON; both of Liverpool. This stairway consists of a series of flaps or treads hinged at the back to two endless chains that pass around wheels at the top and bottom of the staircase. The treads are kept horizontal by means of trunnions travelling in grooves on the inner faces of the stringers, and are composed of a number of narrow strips connected together by a backing of flexible material. Moving sides, consisting of wide endless bands running over vertical drums, are provided, and at the top end the treads fold down on the chain to pass under the tapered edge of the landing.

Sewer or Drain Covers.—1,735. H. LINDLEY, Liverpool. The cover has two doors pivoted and counterbalanced. Normally they lie in the shape of the letter V against a kind of grid, which is the prolongation of two deflectors. Near the bottom of the casing, on the inside, is a shelf for receiving disinfectant. The doors are fitted with rubber to improve the joint. It is claimed that the device effectually prevents the escape of smells and gases.

Door and other Knobs.—2,802. G. H. BLACKHURST, Birmingham. To avoid having cast-brass neck parts which require to be tapped, a metallic wire coiled to form a screw is used. It is leaded into the neck, which is then practically solid, having a screw of a durable character.

Syphon Flushing Cisterns.—3,916. S. CLARK, Glasgow. At the end of the short leg of the syphon there is a chamber containing a rubber ball or bladder, from which a pipe depends to the closet, ending in a ball. When this latter is squeezed the bladder is expanded, displaces the water in the short leg, and so starts the syphon.

Portland Cement Manufacture.—4,813. L. WHITE, London. The fuel is mixed or ground with the slurry (or other material from which cement is to be made) and fed into a rotary furnace; it is preferable to use 25 per cent. or 30 per cent. of fuel. By this arrangement it is claimed that there is great economy of fuel and labour, and a larger output of cement.

Water Closets.—7,836. J. A. REID, Glasgow. The essential part of this invention consists in having a sealed cistern and a valve for starting the flush at the foot of the pipe falling from the cistern. No syphon is used. When the valve is opened (it is controlled by a handle) the water in the fall pipe and cistern is discharged, and at the same time a cock on the service pipe is closed; this cock opens when the lower valve closes.

Sewage Purification.—20,759. T. J. BARNARD, Truro. The solid is separated from the liquid matter by passing the sewage through a series of beds; the first consists of coal slack of about the size of walnuts; the next of fine coke or coke breeze; and the last of broken charcoal. After passing through these beds the liquid undergoes upward filtration through lime. The sludge is mixed with coal tar and used as fuel; 2½ per cent. of tar is added for open-grate purposes, and 10 per cent. for steam producing purposes.

Pulley Blocks.—22,852. E. ALLDAY and W. T. EADES; both of Birmingham. The sheave is made in the form of a ring and runs against rollers on its inner periphery. It also has a projection or rib fitting into grooves in the rollers.

Door Springs.—23,590. J. and T. KELLY, Edinburgh. Inside a casing secured to the floor are two built-up springs connected to two levers. To the end of each of these levers is attached a chain connected with a cam on the door spindle. The door will thus close from either side.

The following specifications were published on Saturday last, and are open to opposition until March 31st. A summary of the more important

of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—1,387, BRYDEN, window blinds. 1,466, MOORE, taps. 2,327, PEASE, structural arrangements applicable to roofing and walling. 2,373, DUCAT, supplying air to filters for the purification of sewage. 2,779, ROUNSIVELL, travelling crane or hoist. 4,086, PEAKE, method of and apparatus for feeding "tile-bats" to tile presses. 4,241, PURVIS, method of manufacturing tiles, pipes, chimney pots and bricks. 4,628, MILLS (*Pagnon*), process for the production on glass of decorative pictures or designs. 4,814, WHITE, manufacture of Portland cement. 5,051, TAILBY, guards for circular saws. 5,188, DOULTON, closet supply-valve fittings. 5,293, PEAKE, method of and means for treating sewage and trade effluents. 5,305, ERQUEM, stencil or similar copying apparatus. 5,452, DAVIDSON, centrifugal fans or pumps. 5,516, GREEN, paper hangings. 5,755, LAUERMANN and GAZE, manufacturing stucco or plaster-like articles, ornaments, or surfaces. 6,029, BEAN and RINGWOOD, apparatus for generating acetylene. 6,277, MOSS, method of and means for attaching handles to the heads of brushes and mallets. 6,988, MORRIS, pipe fittings for use in connection with heating apparatus. 10,699, JONES, street lamp posts, electric light standards, &c. 14,369, GILSON and BOOER, leaded lights for stained glass. 16,843, TATTERSALL, tap filter and splash preventor. 20,780, DOCKREE, brushes. 23,399, LANGENSIEPEN and BACHMANN, process of manufacturing granular, grinding, cutting, and sawing material. 23,503, WELTY and RUMBAUGH, machine for grinding and polishing plate glass. 23,689, NEFKENS, appliances for drying roofing tiles, bricks, &c. 25,026, ALEXANDER, mechanism for feeding material to a brick-making machine. 25,518, VAISSE, valves or cocks. 25,646, RAMSEY, DAVIES and LEE, top for chimneys, ventilators, &c.

COMING EVENTS.

Wednesday, February 21.

SOCIETY OF ARTS.—Mr. Edwin Bale on "Artistic Copyright." 8 p.m.

SURVEYORS' INSTITUTION.—Annual Dinner at Holborn Restaurant. 6.30 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. Henry R. Kenwood, M.B., D.P.H., F.C.S., on "Methods of Disinfection." 8 p.m.

PROVIDENT INSTITUTION OF BUILDERS' FOREMEN AND CLERKS OF WORKS.—Ordinary Meeting at 8 p.m.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

Thursday, February 22.

CARPENTERS' HALL.—Prof. T. Roger Smith, F.R.I.B.A., on "English Halls and Mansions." 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Meeting at 8 p.m.

SOCIETY OF ARCHITECTS.—Mr. E. J. Naldrett on "The Legal Position of Architects in Relation to Local Authorities." 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. Ernest Sammelson on "Improvements in the Longworth Power-Hammer;" and Mr. Ewart C. Amos on "Portable Pneumatic Tools." 8 p.m.

YORK ARCHITECTURAL SOCIETY.—Mr. A. J. Penton on "Building Traditions."

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Lower Limb." 6.15 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

Friday, February 23.

ARCHITECTURAL ASSOCIATION.—Mr. A. W. Henning on "The Exterior Treatment of Sharp or Acute Angles in Street Buildings." 7.30 p.m.

THE GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James Lochhead, A.R.I.B.A., on "The Decay of Building Materials." 8 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Edgar Wood, A.R.I.B.A., on "An Architect's Experience in the Development of Design." 6.45 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—VIII 11.30 a.m.

SANITARY INSTITUTE.—(Lectures and Demonstration for Sanitary Officers: Part II.)—Paper on "Calculations, Measurements, and Plans and Sections." 8 p.m.

INSTITUTION OF CIVIL ENGINEERS. (Students' Meeting.)—Mr. B. Humphrey and Mr. H. E. O'Brien, B.Sc., on "Bearing Springs." 8 p.m.

Saturday, February 24.

DUNDEE INSTITUTE OF ARCHITECTURE.—Mr. Charles Ower on "Travel, Part of an Architect's Education." 7 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Shrubhill Cable Station and Macdonald Road Electric Light Station.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Inspection and Demonstration at the Sutton Sewage Works, at 3 p.m., conducted by Mr. C. Chambers Smith.

ARCHITECTURAL ASSOCIATION.—Second Spring visit.

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—Visit to the London County Council Sewerage Works at Barking.

Monday, February 26.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

VICTORIA AND ALBERT MUSEUM (South Kensington).—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XVI.—Renaissance Christian Art." 6 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. Joseph Priestley, B.A., M.D., M.R.C.S., D.P.H., on "Ventilation, Warming and Lighting." 8 p.m.

PHILOSOPHICAL SOCIETY OF GLASGOW (Architectural Section).—Mr. George Walton on "Personal Experiences in Decorative Work." 8 p.m.

Tuesday, February 27.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Meeting at 4 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Inspection and Demonstration at John Knight and Sons' Soap Works, Silvertown, at 8 p.m.

Wednesday, February 28.

SOCIETY OF ARTS.—Professor Carus-Wilson on "Pneumatic Despatch." 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers).—Mr. J. C. Thresh, D.Sc., M.D., on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Mr. John Begg on "Johannesburg Before and After the War, from an Architect's Point of View." 8 p.m.

CURRENT PRICES.

FORAGE.

		£ s. d.	£ s. d.
Hay, best ...	per load	8 10 0	4 0 0
Sainfoin mixture ...	do.	8 15 0	4 5 0
Clover, best ...	do.	4 5 0	5 0 0
Beans ...	per qr.	1 7 3	—
Straw ...	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ...	per cwt.	1 7 8	1 8 8
Colza Oil, English ...	per cwt.	1 6 9	1 6 10½
Copperas ...	per ton	2 0 0	—
Lard Oil ...	per cwt.	1 11 0	—
Linseed Oil ...	per cwt.	1 4 0	—
Petroleum, American ...	per gal.	0 0 7 3/8	0 0 7 1/2
Pitch ...	per barrel	0 9 0	0 0 6 3/4
Tallow, Town ...	per cwt.	1 7 6	1 11 0
Tar, Stockholm ...	per barrel	1 6 0	—
Turpentine ...	per cwt.	2 0 1½	—
Lead, white, ground, carbonate per cwt.	do.	1 3 0	1 4 0
Do. red ...	per cwt.	1 0 4½	—
Soda crystals ...	per ton	3 0 0	—
Shellac, orange ...	per cwt.	8 4 6	—

METALS.

Copper, sheet, strong ...	per ton	85 0 0	—
Iron, bar, Staffs. in London ...	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet ...	do.	11 0 0	—
Lead, pig, Spanish ...	do.	16 12 6	16 15 0
Do. do. English common brands ...	do.	16 17 6	—
Do. sheet, English, 6lb. per sq. ft. and upwards ...	do.	18 10 0	19 0 0
Do. pipe ...	do.	19 10 0	—
Nails, cut clasp, 3in. to 6in. ...	do.	10 0 0	11 0 0
Do. floor brads ...	do.	9 15 0	10 15 0

		£ s. d.	£ s. d.
Tin, Foreign ...	do.	141 0 0	141 10 0
Do. English ingots ...	do.	145 0 0	—
Zinc, sheets, English ...	do.	27 10 0	28 10 0
Do. do. Veille Montaigne ...	do.	27 7 6	—
Do. Spelter ...	do.	22 10 0	22 17 6

TIMBER.

Sort Woods.			
Fir, Dantzic and Memel ...	per load.	3 0 0	4 0 0
Pine, Quebec Yellow ...	per load.	4 7 6	6 5 0
Do. Pitch ...	do.	3 12 0	3 15 0
Laths, log, Dantzic ...	per fath.	4 10 0	5 10 0
Do. Petersburg ...	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd. do.	do.	12 10 0	14 0 0
Do. do. unsorted do.	do.	12 5 0	12 10 0
Do. Riga ...	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	do.	17 0 0	—
Do. do. 2nd do.	do.	8 15 0	12 0 0
Do. do. Unsorted do.	do.	10 15 0	11 0 0
Do. do. White do.	do.	7 15 0	11 5 0
Do. Swedish ...	per P. Std.	9 5 0	17 5 0
Do. White Sea ...	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st ...	do.	21 5 0	24 5 0
Do. do. 2nd do.	do.	10 5 0	12 0 0
Do. do. 3rd & 4th do.	do.	8 10 0	8 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	9 10 0	13 5 0
Do. do. 3rd & 2nd do.	do.	9 0 0	10 0 0
Do. New Brunswick do.	do.	7 5 0	8 0 0
Battens, all kinds ...	do.	8 0 0	9 5 0
Flooring Boards, 1 in. prepared, 1st ...	per square	0 8 9	—
Do. 2nd ...	do.	0 7 8	—
Do. 3rd & 4th ...	do.	0 7 8	0 7 9

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Ash, Quebec ...	per load	8 17 6	4 10 0
Birch, Quebec ...	do.	8 12 6	3 17 6
Box, Turkey ...	per ton	7 0 0	15 0 0
Cedar, lin., Cuba ...	per ft. sup.	0 0 4½	—
Do. Honduras ...	do.	0 0 4 1/8	—
Do. Tobasco ...	do.	0 0 5 5/32	—

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Do. St. Domingo	do.	0 0 3 3	—
Do. Tobasco	do.	0 0 5 27/32	—
Do. Cuba	do.	0 0 7 21/32	—
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Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0 0	16 10 0
Walnut, Riga (Bauk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

HALESOWEN.—For the erection of isolation hospital, Hayley Green, Lutley, for the Stourbridge and Halesowen Hospital Committee. Mr. A. T. Butler, High-street, Cradley Heath, and Mr. H. T. Hare, joint architects. Quantities by Mr. H. R. Lloyd, Newhall-street, Birmingham.—

Sapcote and Son	£11,825	Guest and Son	£10,600
Moffat and Sons	11,500	Harley and Son	10,480
R. Fenwick	11,199	J. Dallow	10,395
Boven and Son	11,079	Dorset and Co.	9,800
C. A. Horton	10,618	W. Willems, Old Hall*	9,447

* Accepted.

LEEDS.—For making up part of Old Park-road, Roundhay, for the Rural District Council. Mr. E. J. Silcock, C.E., 10, Park-row, Leeds.—

J. Simpson	£3,700 17 2	H. Wilson	£2,986 11
J. Speight	3,306 4 7	M. Hall	2,730 0
Speight and Son	3,230 0 0		

[Last two withdrawn.]

LLANFAIR-FECHAN (Carnarvon).—For the erection of public hall, council chamber, and offices at Llanfair-fechan. Mr. Richard Davies, architect, Bangor.—

B. G. Williams	£4,589 0
E. Jones	4,500 0
W. and O. Pritchard	3,911 0
R. and J. Williams, Upper Bangor	3,772 10
R. and J. Williams, Contract No. 2 (joinery)*	1,840 0
E. Thorp and Sons, Llandudno	3,695 0
Erasmus Jones, Llanfair-fechan	3,444 10
Erasmus Jones, Contract No. 1 (masonry)*	1,114 10
Erasmus Jones, Contract No. 3 (slating, plastering)	850 0

[Total accepted, £23,304 10s.] * Accepted.

MALLOW (Ireland).—For the execution of water supply works, Doneraile, for the District Council. Mr. B. E. F. Sheehy, C.E., Council-room, Malow.—

Jeremiah Hasselt*	£1,237	William Phelan	£1,225
Charles A. Wallace*	1,250	A. W. Smith	1,185

* And 2s. 3d. per lineal yard extra for excavation of pipe trench through rock.

NORTHAMPTON.—For the erection of school buildings and assembly hall, for the trustees of the Wesleyan Church Extension Scheme. Mr. H. H. Dyer, architect, Sheep-street, Northampton.—

Sharman and Son	£2,280 0	Hawlin	£2,090 0
Pantney	2,260 0	Beardsmore	2,053 0
Chown	2,199 0	Tanner Bros.	2,050 0
Higgins	2,180 0	Crow and Gardener	2,050 0
Chapman	2,173 5	E. Green, Northamp.	
Garrett	2,094 0	ton*	2,098 0

* Accepted.

[All of Northampton.]

NORTHAMPTON.—For the erection of a boot and shoe factory for Messrs. Ingram and Co. Mr. H. H. Dyer, architect, Sheep-street, Northampton. Quantities by the architect:—

White	£2,298 17 7	Welford and Jud-	
Throstle	1,767 0 0	kins	£1,669 10 0
Crow & Gardner	1,759 10 0	G. Fisher	1,650 0 0
D. Sharman and		W. Higgins	1,650 0 0
Son	1,739 0 0	Hawlin	1,615 0 0
Pantney	1,730 0 0	H. Green	1,610 0 0
Harper	1,720 0 0	E. Green*	1,586 0 0

* Accepted.

NEWCASTLE-UPON-TYNE.—For the erection of offices and pupil teachers' centre, for the School Board. Mr. W. H. Knowles, F.S.A., architect, 37, Grainger-street, Newcastle-upon-Tyne.—

T. Hunter	£11,671 0 0	T. Lumsdon	£10,515 0 0
Jas. Smart	11,223 0 0	T. and J. White	10,430 7 4
N. W. Maughan	10,971 13 3	J. & W. Lowry,	
Cowper & Hen-		Newcastle*	10,329 0 0
derson	10,605 10 0		

* Accepted.

SWINDON.—For the erection of Primitive Methodist chapel, Clifton-street. Mr. R. J. Beswick, architect, 9, Regent-street, Swindon.—

Spackman Bros.	£1,484 4	W. Chambers	£1,225
R. J. Leighfield	1,370 0	A. J. Colborne, Swin-	
Tydean Bros.	1,331 14	don*	1,180

* Accepted.

TUNBRIDGE WELLS.—For the enlargement of central electric lighting station for the Corporation. Mr. C. H. Strange, architect, Tunbridge Wells. Quantities by Mr. Charles Norton, Tunbridge Wells.—

Thomas and Edge	£3,512	J. Jarvis	£2,431
Strange and Sons	2,638	Battley, Sons, and	
R. L. Tonge	2,500	Holness, London*	2,249

* Accepted.

CONTRACTS OPEN.

TO CONTRACTORS AND OTHERS.

The Ilford Urban District Council hereby give notice that they are prepared to receive TENDERS for the ERECTION of

1. A Pavilion.
2. A Bandstand (Iron).
3. Two Lodges.
4. Iron Fencing.

The Pavilion comprises a large refreshment room, kitchen stores, balcony, and lavatories for both sexes. The Bandstand to be 24ft. in diameter, to be erected on a brick foundation provided by the Council.

The Lodges will contain three bedrooms, parlour, kitchen and scullery.

The Iron Fencing, unclimbable, will be about 160yds. in length and 5ft. high.

Plans and specifications can be seen, and forms of Tender obtained on application to the Surveyor to the Council, Mr. HEBBERT SHAW, A.M.I.C.E., at his Offices 7, Cranbrook-road, and bills of quantities obtained upon a deposit of £5 being paid, to be returned on receipt of a bona-fide Tender.

Sealed Tenders, addressed to the Chairman, and endorsed "Tender for —" (as the case may be), must be sent to me here on or before MONDAY, MARCH 12th.

The Council do not bind themselves to accept the lowest or any Tender.

Council Offices, Ilford, Essex,
JOHN W. BENTON, Clerk to the Council.
February, 1900.

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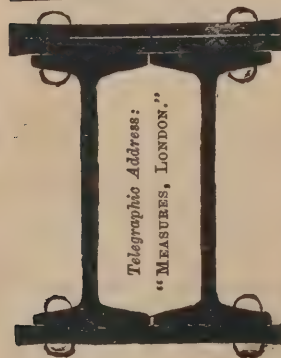
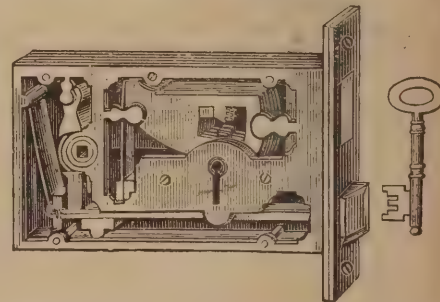
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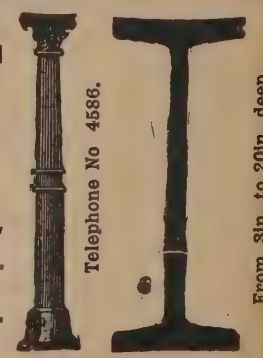
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BUILDERS' LIFTING APPLIANCES.*

By DAVID SKINNER.

(Concluded from page xii of the supplement to No. CCXLII.)

Shoring and Under-Pinning.

FOR this kind of work a screw arrangement can be used. The value of a screw, so far as its mechanical power and the amount of motion obtained is concerned, depends on its pitch only, while the strength depends upon the area of the transverse or cross section, the amount of both of which can readily be determined. As will be seen on reference to Fig. 16, the screw jack (sometimes called a bottle jack) consists of a hollow cylindrical casting A, with an internal square screw thread cut in the upper part; a screw B, provided with a similar thread, passes into it, the screw having a spherical head through which two holes are made at right angles to each other for the insertion of a lever C, at the end of which P is applied.

To avoid the extreme friction that would occur if the part which was in contact with the weight revolved with the screw, it is fitted loose upon it, being riveted in position, as shown at D; this portion is serrated. To determine the mechanical advantage, let P denote

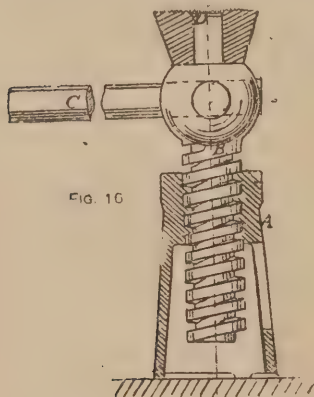


FIG. 16

the power applied at end of lever, l length of lever, p pitch of screw thread, and W weight to be supported. Then the motion of W for one revolution of screw $= p$; work of W per revolution $= Wp$; motion of P per revolution $= 2\pi l$; work of P per revolution $= P \times 2\pi l$; and these are equal $\therefore P \times 2\pi l = Wp$; or $\frac{P}{W} = \frac{p}{2\pi l}$.

$P : W :: p : 2\pi l$. The proportion between P and W can be obtained by considering the inclined plane by the hypotenuse of which the helical curve of the thread is formed on the cylinder of the screw. The principle of the inclined plane is that the weight, plus the height of the plane, equals the power multiplied by its base. The base as applied to this case is considered to be the circumference of a circle which the end of the lever describes. This gives the same formula as before. Example: $P = 20$ lbs.; distance from centre of screw to point at which P is applied, 24 in.; pitch, 1 in. Find weight supported. P 's motion through one revolution of screw $= (2 \times 24 \times \pi)$ in.; work of $P = 20 \times 2 \times 24 \times \pi$; W 's motion lin. \therefore work of $W = W \times 1$. These are equal, or $W \times 1 = 20 \times 2 \times 24 \times \pi$ $\therefore W = 3,015.936$ lbs., or about 1 ton 7 cwt.

To determine the load that can safely be put on a screw jack so that the threads of the screw will not give way by shearing, we must take the area resisting the shearing stress and multiply it by a safe shearing stress per square inch, and the result will be the safe load. In this case the pitch of the screw is 1 in., which gives thickness of thread $\frac{1}{2}$ in. There is also

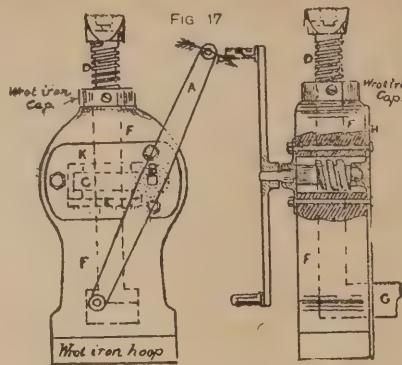


FIG. 17

four times the pitch in the nut or upper part of the casting. Therefore the area $=$ circumference of cylinder $\times 4 \times \frac{1}{2}$ in. $= 2$, which gives number of square inches. Assuming a screw of 3 in. diameter, then 3 in. $\times 3.1416 \times 2 \times 1 = 18.8496$ sq. in. Cast-iron has a safe shearing stress of $2\frac{1}{2}$ tons per square inch; then $18.8496 \times 2\frac{1}{2} = 47.124$ tons $=$ safe load on top of screw. This result shows that the shearing of the screw jack is rather a remote contingency, as it would take over 700 lbs. applied to the lever to lift 47 tons.

A worm and worm wheel may be used in combination with a screw, as in a common form of screw jack. This arrangement of lifting jack is one not very often met with in ordinary building work, but, as it has a very high mechanical advantage and is not too intricate in its mechanism, it may be considered at this point. Referring to Fig. 17, P is applied to a lever handle A fitting on the end of a shaft to which the worm B is keyed. The worm gears with a worm wheel C , which revolves in an opening made in the hardwood portion F , of which the jack is formed; the pressure acts on an iron plate. The worm wheel has a thread cut on its inside, forming the nut for the screw D , which screw cannot revolve as it moves in a groove cut in the body F . The lower part of the screw has a projecting piece G which is useful for raising heavy articles when they are near the ground. Iron plates H and K are secured to the sides of the jack, forming bearings for the worm shaft, as shown.

The motion is transmitted from the handle to the worm and worm wheel, and the screw rises or falls according to the direction of rotation of the handle. This type of jack is also made with the part F of cast-iron, though similar to the one illustrated in other respects. To determine the proportion between P and W , we have to consider their relative motions, and, as the work of each is the same, $P : W :: W$'s motion : P 's motion. In one revolution of the worm wheel the weight is raised a distance equal to the pitch, but to produce this one revolution the worm must in this case revolve $\frac{n}{3}$ times, as three teeth of

the worm wheel have been moved through in one revolution of the worm. Or, if we denote length of handle by l , number of teeth in worm wheel by n , number of threads in worm by N , and pitch of screw by p ; then $P \times \frac{2\pi l n}{N} = Wp$, or $P : W :: pN : 2\pi l n$.

$\therefore P = \frac{W p N}{2\pi l n}$, $W = \frac{P 2\pi l n}{p N}$ and $\frac{W}{P} = \frac{2\pi l n}{p N} =$ mechanical advantage.

Example: A worm wheel having 16 teeth forms the nut of a screw, 1 in. pitch; an endless screw with three threads driven by a lever 16 in. long gears with the wheel. Find the pressure exerted by the end of the screw when 20 lbs. is applied to the lever. $W = \frac{2\pi l n}{p N} = \frac{20 \times 16 \times 2 \times \pi \times 16}{1 \times 3} = 10,723.984$ lbs., or about 4 tons 16 cwt. If the worm or endless screw were single threaded, the answer would have been three times as great; if double threaded it would have been one and a half times as great. The disadvantage of this jack is that sometimes at the

critical moment the handle will not turn, perhaps on account of there being a great pressure acting between the worm wheel and the iron plate, consequently requiring a large amount of friction to be overcome when the worm wheel revolves.

An exceedingly useful lifting jack is the hydraulic jack. A section of such a jack is shown at Fig. 18. A hollow cylinder D fits on the ram B , the joint between the two being made watertight, by suitable means; leather packing rings are most suitable. C is a store for water, A is the delivery valve or clack, and B is the suction valve. These valves are kept in position by spiral springs; the valves themselves may be made of brass or copper, preferably of copper, though brass would, of course, be cheaper. K is the plunger, which passes into the pump barrel by a water-tight joint, L is the handle by which the plunger is operated, and H is a cock for relieving the pressure.

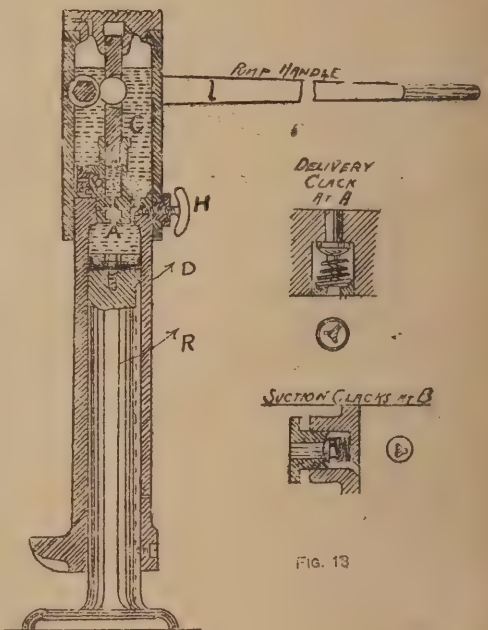


FIG. 18

When the plunger is lifted the water in store is forced through the suction valve B into the pump barrel. In the down stroke of the plunger the water in the barrel is forced through the delivery valve A into the hollow cylinder. The base of the ram resting on the ground, the increase of water on top of the ram forces up the upper part of the jack, and thus increases its length. The principle of the hydraulic lifting jack is that a pressure acting per unit of area on the plunger produces an equal pressure per unit of area on the ram, the change of pressure, therefore, being in the proportion of the respective areas. In such an appliance the mechanical advantage of the lever or handle is 12 to 1 , the diameter of the lifting ram is 3 in., and the diameter of the plunger is $\frac{1}{2}$ in. What weight can be lifted theoretically when a pressure of 20 lbs. is applied to the end of the lever? Let P denote power applied at end of lever handle, l the leverage, D^2 the area of ram, and d^2 the area of plunger. Then $P : W :: d^2 : D^2 \times l$; or $W = \frac{Pl \times D^2}{d^2}$, $P = \frac{W \times d^2}{l \times D^2}$. $\therefore W = \frac{Pl \times D^2}{d^2}$

$\frac{20 \times 12 \times 3 \times 3}{\frac{1}{4} \times \frac{1}{4}} = 2821.2$ lbs., or 1 ton 50 cwt.

21 lbs.

Working and Fixing Lifting Appliances.

If a derrick pole is employed for the raising of a heavy load, it should be guyed from four points fixed to the ground, or to anything suitable in or around the building. The reason why four guy ropes should be used is that it is much safer than using three, the fewest that can be used, and also that the pole can be more readily drifted in the direction required for placing the piece of work in

* A paper read before the Glasgow and West of Scotland Technical College Architectural Craftsmen's Society on January 26th, 1900.

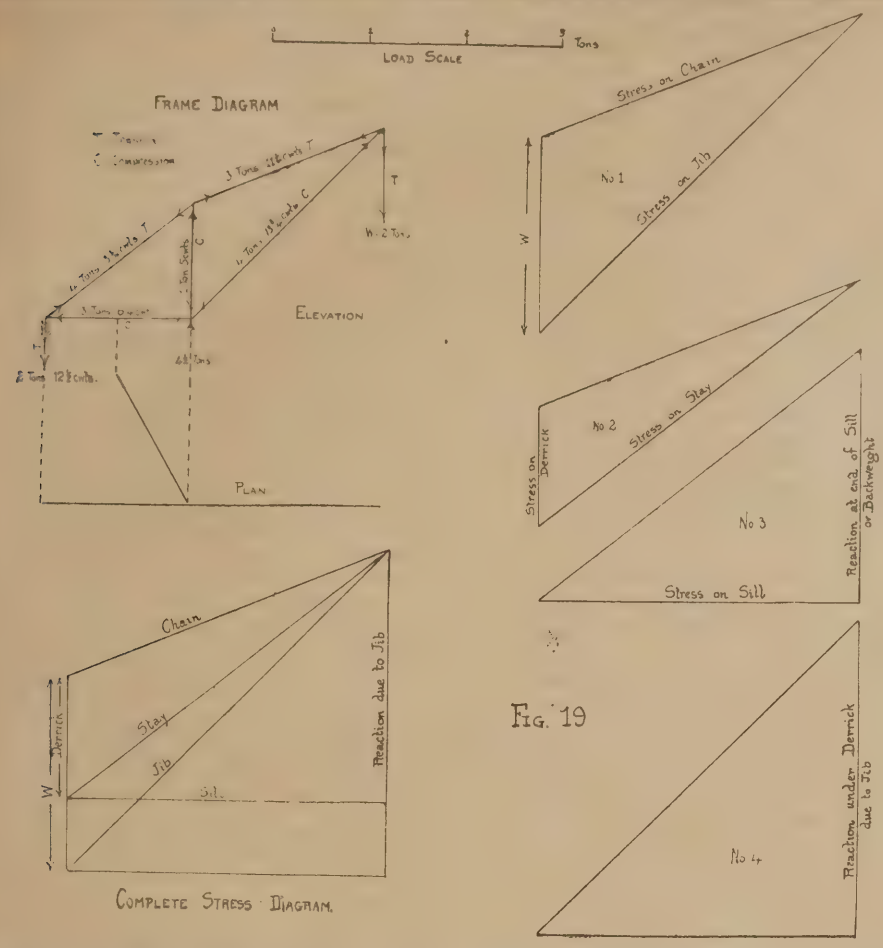


Fig. 19

arriving graphically at the components of the forces acting at the angle between the plane of the jib and the stay.

First case (Fig. 19). Suppose that we take one triangle at a time. We commence with setting down to a convenient scale the amount of the load, and, parallel to its direction, from the lower end of the line, another line is drawn parallel to the jib to meet a line drawn from the other end of line and parallel to the chain holding up the jib. These two lines measured to the same scale will give the amount of stress in the jib and chain respectively. To continue the process, set out the line of the chain, equal in length to that already found and parallel to its direction, and from one end of the line draw a line parallel to the stay to meet a line parallel to the derrick drawn from the other end of the line. These two stresses are determined as before by measuring the lines to the same scale. This brings us now to the point at which the amount of reaction or back weight can be determined. A line is set out equal in length to the stay stress, and parallel to it from the lower end a line is drawn parallel to the sill to meet a line drawn parallel to the reaction, which is vertical. This vertical line is now measured and gives the reaction, while the horizontal line gives the stress in the sill. The reaction under the derrick remains to be determined. The stress in the jib is already known. Set out the line equal to that stress and parallel to it, and from the lower end of the line draw a line parallel to the sill to meet a line drawn parallel to the reaction, which is also vertical. This vertical line gives the reaction due to the jib. To this must be added the stress down the derrick caused by the chain and stay. It will be seen that the sill stress measured in these last two triangles is the same, which, of course, ought to be the case if the frame is to be in equilibrium.

The same procedure is carried out in the second case until we come to resolve the amount of stress in the imaginary or auxiliary stay and sill into components of the original forces. Given the same frame diagram as before, but with the jib in line with auxiliary stay, to find the stresses in the different members. (See Fig. 20.)

The two cases shown give the stay in tension and the sill in compression; and also the amount of back weight required; but if the jib were swung round till it almost touched one of the stays, then that stay would be in compression and the sill would be in tension.

position. The guy ropes should be of such length that they may have a good purchase over the pole; if fixed to the ground, the point of fixing from the foot of the pole should not be less than twice its height. A double-purchase crab is the most suitable arrangement for working in conjunction with a derrick pole. The rope from the crab should be led to a single-pulley block fixed to the bottom of the pole, then up to a block hung from the top, usually an iron bolt driven through the pole, and long enough for a rope or chain sling to hang over both ends. To this sling the top block is hung. If the load is very heavy, pulley blocks may be used, as the stress on the rope is thus reduced. The pole need not be let into the ground, as the pressure acting downwards on the pole is the weight plus the power, and it is only the power which acts horizontally that tends to pull the pole towards the crab; merely resting the pole on the ground is, therefore, sufficient.

Shear legs may also be used for the same purpose, and are only guyed from two points, the load hanging down between the two legs. The rope in this case goes right to the top, and the crab should be placed as near as possible to the shear legs. Pulley blocks hung from a beam exert a pressure on that beam of the power plus the weight, in addition, of course, to their own weight.

In the ordinary crane that is used in building work, the proper securing of the structure is the important part of the erection. The fixing of the stays to the sill and the amount of back weight to be placed at that point is each of the utmost importance, as the weight prevents the crane from overturning. The stress in each member of the structure can be determined graphically by triangle of forces, namely, that if three forces acting on a point are in equilibrium, and a triangle is drawn having its sides respectively parallel to the forces taken in order, then the forces will be proportional to the sides of the triangle. We must have a known force to start with, and it is usually the load hanging from the extreme end of the jib which is taken. It will be readily understood that the swinging round of the jib will cause a varying stress to come on each part of the structure, though the stress on the jib will not vary. But if the jib

is raised or lowered the stress on it will vary, as will also the stresses on the other members of the framework. It will be sufficient for our purpose to assume the jib to be standing in the same plane as one of the stays, and, for a second case, the plane of the jib to bisect the angle between the two stays. In the first case we may take it that the other stay is doing no work, or at least a very small amount, and therefore it need not be taken into account. In the second case it is a good principle to assume an imaginary stay and sill to be in the same plane as the jib, and so

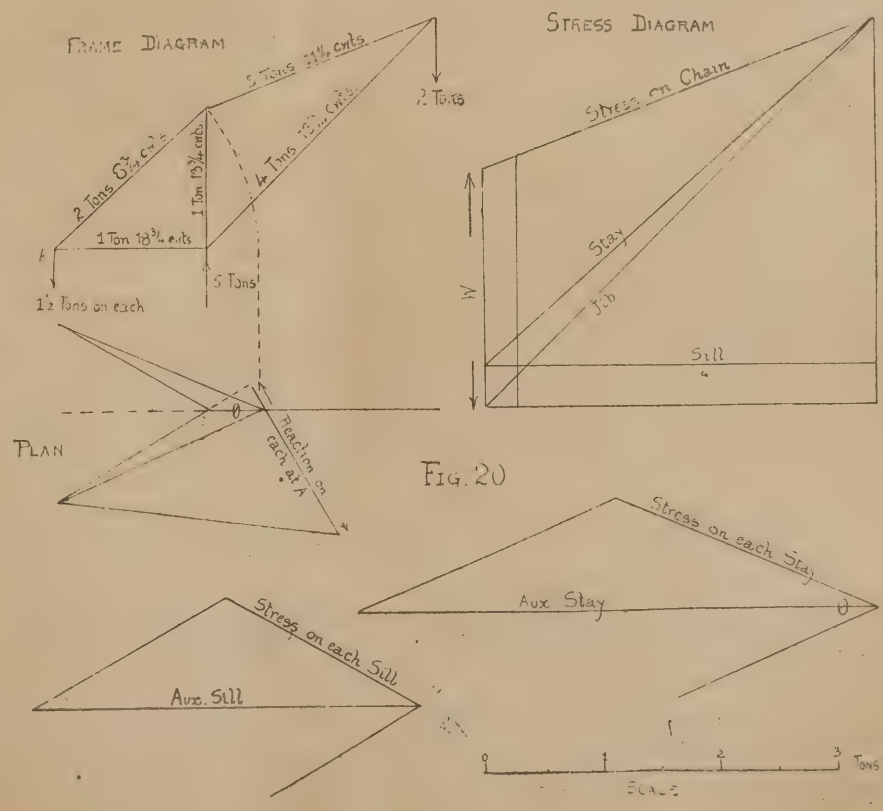


Fig. 20

This would be the weakest position for the jib to be in, as there is only the weight of the crane keeping it down at the bottom of the jib plus the resultant of the stress on the jib. The load hung on the point of a jib should be considered a live load, not a steady dead load, or, if considered a dead load, a factor of safety of not less than eight should be used. Live loads are taken at double the dead load.

In lifting a load with any of the fore-mentioned lifting jacks the surface upon which the base rests should be perfectly flat and at right angles to the direction of the thrust, and at the same time the part resting on the top of the jack should be at right angles. If a large roof were to be raised a few feet or, say, a wooden house transferred from one place to another, or anything of that nature, screw jacks should be used. The number of these should not be spared, as the greater the number of points supported the less chance will there be of racking the framework. I say the screw jack advisedly, as it is the simplest and least liable to go wrong; it is quite strong enough and its price is less than that of any of the other appliances.

Greater care should be exercised in storing lifting appliances when not in use. How often do we see some of these thrown away in some corner exposed to all weather, getting red with rust? If there are any ropes in connection with them, these will soon rot and will be very untrustworthy and dangerous if not looked after. Rope pulley-blocks should not be left in position for any length of time. If they cannot be taken down after each day's work and put in a dry place, they should be covered by some material that will prevent water getting into them. Being alternately wet and dry will soon injure any rope. In drying also ropes twist in an aggravating way and cause an extreme friction in the working of the tackle. Screws and all parts of shafts turning in bearings should be covered with tallow.

There are numerous other machines used for lifting purposes in buildings, all more or less interesting, but in this paper I did not intend to particularise any machines, but rather to show in a general way the principles of their mechanism and to give such data as would enable anyone to apply it to any appliance he may come across and so determine the advantage to be gained by such appliance. In conclusion, it may be stated that steel wire is the best material to use for crane hoisting, as it is now made to stand a high stress; besides, it is well known that small wire can be made more uniform and strong in proportion than material of larger section. Hoists added to in height as the building proceeds have been advocated in preference to cranes placed high on gabbart scaffolds, on the score of greater safety to the public if the building should be on a busy thoroughfare; but hoists require small hand cranes on the top to place the materials, if heavy, in position, and, moreover, a hoist would not be suitable for lifting long materials, such as joists, beams, roof timbers, or steel girders. The danger of anything falling in the case of the hoist is confined to the area of the well, which is, of necessity, inside or on the face of the building. Sufficient has been said in this paper to show that a crane, crab or jack are simple enough machines, and there is no reason why any craftsman should not be familiar with any of them, and, if need be, take them to pieces, clean and repair, and fit them up again properly, saving time and expense.

The Dundee Plasterers, it is reported intend asking their employers for an increase in wages of 1d. per hour.

The Oldham Carpenters and Joiners have given a three months' notice to the employers for an advance of ½d. per hour on their present wage of 9d.

High Death Rate in Dublin.—The committee appointed by the Local Government Board to enquire into the causes of the high death-rate in Dublin (it was 43.8 per 1,000 persons living for the seven weeks ended February 3rd last) is now sitting.

Surveying and Sanitary Notes.

Bradford Sewage Experiments.—The shale filter-beds at the Brierly Sewage Works are to be extended at an estimated cost of £700.

Mason's Arms Court, Queen Street, Cardiff, has been declared by the medical officer of health to be unfit for human habitation. Proceedings are to be taken against the owners of the houses.

Street Improvements at Gateshead.—Alterations are now in progress that will give a clear way for traffic coming and going by West Street, while the turn into Mulgrave Terrace will be easier and safer. The wall at the bottom of High West Street is to be removed and carried 20ft. further back, doing away with six coal depôts. Wellington Street will then be brought into line with West Street.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on February 14th the following gentlemen were elected:—As Members: P. Baldwin (Wakefield), W. J. Cornwell (Betchworth), T. Fitchern (Claremont, S.A.), H. G. Nicholson-Lailey (Caerphilly, Glam.) and A. C. Remnant (Catford). As Associates: W. J. Collins (Harrow-on-the-Hill), E. W. Norman (Forest Gate) and P. J. Roddie (Waterford).

Improvements at Scarborough.—At a special meeting of the Scarborough Town Council last week it was resolved to promote a Bill in the next Session of Parliament to make an approach road to the new marine drive, and to alter the line of sea wall of the drive. It was originally proposed to establish electric trams along the sea front from the Aquarium to Peasholm, but owing to the strong opposition of the cab and carriage interests this has been waived.

Paris Dust Carts.—Paris is amusing itself with a little municipal squabble between the Council and chiffoniers. The Council is desirous of introducing new patent closed dustbins, to be emptied each morning into patent dustcarts. The chiffoniers seeing their trade about to disappear threaten to break up these new-fangled appliances. The feeling of the populace is said to be on the side of the chiffoniers. They do not wish to lose any opportunity of making a dust.

Refuse Destructor to be built at Southport.—At their last meeting, the Southport Town Council decided to accept the tender of Messrs. Horsfall and Co. to build a refuse destructor for the sum of £9,960 (exclusive of the chimney), and to instruct Messrs. Scott and Co. to prepare and submit designs and estimates for a chimney 150ft. high and of 5ft. internal diameter. The total cost will be about £13,000, and the destructor will comprise six cells, back to back, each cell capable of consuming about ten tons of refuse per twenty-four hours.

Pavement Cleansing.—By section 29 of the Public Health (London) Act, 1891, the duty of cleansing footpaths, as well as roadways, was imposed upon local sanitary authorities. Prior to this, occupiers and owners of premises were required to clear and clean their respective frontages. Experience during snowy and frosty weather since the change in the law has shown that, whereas the individual obligation was generally prompted fulfilled, the duty which now devolves upon public authorities is very often neglected, and as a result snow and ice remain on the footways as well as roadways for a dangerously long time, awaiting removal. Hence Mr. J. Lewis, the largest individual ratepayer in Marylebone and a member of the local Vestry, proposes that the latter should urge the Local Government Board to seek the repeal of the section named, and reimpose the work of cleansing the causeways on occupiers and owners. Further, he proposes that Vestries and District Boards of Works should be invited to support this representation to the Local Government Board.

Builders' Notes.

The Clerks of Works' Association of Great Britain recently held its seventeenth annual dinner at the Holborn Restaurant, when Mr. G. H. Fellowes Prynne, F.R.I.B.A., presided. The Association has now 170 members.

Liverpool Workmen's Dwellings Contract.—The Liverpool City Council has approved the acceptance of the tender of Messrs. Holme and Green, of Liverpool, amounting to £8,067 15s. 3d., for the erection of the second portion of labourers' dwellings in Dryden Street and Rachel Street.

Fined for Building without having Deposited Plans.—At the Knaresborough Petty Sessions on February 14th, John Brook, builder, of Bilton, Harrogate, was summoned by the Knaresborough Rural District Council for committing a breach of the building by-laws by erecting a house without his plans having been approved by the Council. The defendant was fined £3 and costs.

Large Building Enterprise in Leeds.—The report of the City of Leeds Central Estates, Limited, states that most of the old buildings have been demolished, and the new street leading from Duncan Street to Kirkgate partly formed. Plans dealing with the whole of the property have been prepared, and the contracts for the new buildings, which involve an expenditure, apart from the site, of nearly £100,000, have been let to Messrs. Armitage and Hodgson, of Leeds. Mr. T. W. Cutler, F.R.I.B.A., F.S.I., of London, is the architect. The greater portion of the scheme, which comprises a new Bull and Mouth Hotel, a large emporium facing Briggate, and twenty-two shops in Kirkgate, New Central Street, and Central Road, will be completed during the next twelve months.

Claim by a Clerk of Works.—Before Mr. Justice Bruce at the Gloucester Assizes last week an action was brought by John Gaven, clerk of works, against the Gloucester Corporation for £182, balance of wages. It was contended that plaintiff accepted the situation under the impression that he was to be paid for the job, which was estimated to last from sixteen to eighteen months. Defendants pleaded that plaintiff was engaged at three guineas a week, without any stipulated time, and could be dismissed at a week's notice, since he was paid weekly. Plaintiff claimed that three or six months was reasonable notice. His Lordship in summing up said that unfortunately there was no special usage in this trade. The jury found that plaintiff was entitled to six months' notice, and fixed the compensation at £81 18s., this being six months' salary, and grounded their verdict on the opinion that plaintiff could not get other employment during that time.

Frost and Household Water Supply.—Strictly speaking the safest course to pursue for the householder who suspects any disarrangement of his hot-water supply is to draw the fire and call in an expert to examine the fittings and determine what steps should be taken. With the high-pressure system, when frost momentarily interferes with the supply, there is no necessity to draw the fire, but this can be kept going quietly all night. In the case of the old or low-pressure system of supply the conditions are different, and the sudden rush of cold water into an empty, red-hot cistern must almost inevitably lead to an explosion. In this case, when a break in the water service has been detected, the only safe course to pursue is to draw the fire and call in a qualified plumber to remedy the defect. With regard to the ordinary cold-water supply, all consumers are advised to take measures to protect their service pipes in exposed positions by covering them with some non-conducting material, such as felt, bands of hay or straw, or wood casing filled with sawdust.

An Unconscientious Builder.—In the Queen's Bench Division of the High Court of Justice on February 10th the case of *Ward*

and Co. v. Wallis was heard. The plaintiffs are cement specialists carrying on business at 15, Great George Street, Westminster, and the defendant is a builder of Balham, S.W. The action was brought to recover £75 for work and labour done and materials supplied, and, alternatively, as money received by the defendant to the use of the plaintiffs. The facts were as follows: In January, 1898, the defendant entered into a contract with a Miss Barry for the erection of a mission hall at Bethnal Green for £2,277. The contract provided that certain patent concrete pavings in the building were to be supplied by the plaintiffs for £126 5s., and this sum was included in the bill of quantities upon which the defendant tendered. The plaintiffs did their work and obtained a certificate from the architect that £125 5s. was due to them, the amount having by agreement been reduced by £1. The plaintiffs applied several times to the defendant for payment, and on April 19th, 1899, issued a writ; but instead of claiming the whole amount they gave credit, in error, for a payment on account of £75, leaving a balance due of £50 5s. This mistake arose through the plaintiffs having been paid £75 by a person of the same name as the defendant in respect of another matter, which payment they wrongly credited to the defendant. After being served with the writ, the defendant paid the plaintiffs the balance of £50 5s. alleged to be due and the costs of the writ, and obtained from the plaintiffs a receipt showing that the whole of their account had been paid by him to them. The defendant forwarded the receipt to the architect, and was paid the balance due to him under the contract, including the full amount of the plaintiffs' account. The plaintiffs subsequently discovered the mistake which they had made and brought this action. On an application under Order 14 the Master gave the plaintiffs liberty to sign judgment for the amount claimed. The defendant appealed, and it was contended on his behalf that the present action would not lie, there having been a settlement of the plaintiffs' claim in the previous action. Mr. Justice Kennedy came to the conclusion that the defendant knew, when he was served with the writ in the first action, that he was being wrongly credited with a payment on account of £75, and he ought, acting conscientiously, either to have returned the £75 to the architect or to have paid it over to the plaintiffs. His Lordship held that the plaintiffs were entitled to recover the £75 as money had and received by the defendant to their use. A further point had been raised, that the payment of the money by the architect to the defendant made it money had and received for the plaintiffs, but his Lordship did not agree with this view. The money had been paid by the architect under a mistake of fact, and it was not received by the defendant on behalf of the plaintiffs. Judgment for the plaintiffs for £75, and costs.

Blocks of Flats as Houses: an Appeal Case.—The appeal case of *Kimber v. Admans* was heard on Friday last. The plaintiff and the defendant were owners of adjoining plots of land forming part of a building estate. Each plot was subject to a covenant not to build more than one house upon it. The

defendant proposed to build a block of flats upon each plot of land belonging to him. The plaintiff complained of this as a breach of the covenant and moved for an injunction to restrain the defendant from erecting these buildings. Mr. Justice Cozens-Hardy had refused the motion, being of opinion that each block of flats was one house only, and not a series of houses. The Appeal Court concurred in this decision.

Engineering Notes.

Electric Lighting at Leicester.—The Leicester Corporation propose to spend £100,000 on electric lighting. A Local Government Board inquiry has been held.

The King James Grammar School, Knaresborough, is being ventilated by means of Shorland's patent exhaust roof ventilators, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Baptist Chapel, Caerwys, Flintshire, has been fitted with the latest improved "small tube" hot-water heating apparatus by Messrs. John King, Limited, engineers, of Liverpool, who employed their well-known special economical coil heater with waterway fire-bars.

Gloucester Tramways.—It is proposed to take up the existing tramway lines at Gloucester, alter the gauge to 3ft. 6in., extend the lines to a total length of eight miles, and equip the routes for electric traction. The total cost of the scheme would be something like £95,000.

Stable Ventilation.—In the erection of the new stables for Mr. Marshall at Dobbie's Loan, Glasgow (Mr. L. B. Buik, of Glasgow, architect), great care has been taken to make the ventilation thoroughly efficient, the work being carried out by means of the new "Natural Exhaust" ridge ventilator supplied by the sole makers, the Climax Ventilating and Heating Co., Ltd., 93, Hope Street, Glasgow.

Euston Station Extension.—It is proposed by the scheme for enlarging Euston Station to close those portions of the carriage-ways of Drummond Street, Euston Street and Euston Square situate between Seymour Street and Melton Street, and to close Seymour Row, Melton Mews, Euston Place, Euston Grove and Euston Crescent; also, to close the part of Mornington Road between Stanhope Street and Serpentine Road, and to form a new road in lieu of it; and further, to construct an additional tunnel across the western end of Park Street, by Stanhope Terrace, Regent's Park. The ratable value of the property scheduled for acquisition is about £17,000.

New York's Tramway Power Stations are very large concerns. One which has just been completed by the Metropolitan Street Railway Company has a maximum output of 70,000 horse-power. This will be exceeded by the new station under construction by the Third Avenue Tramway Company, which will have a maximum capacity of 100,000 horse-power. The Metropolitan station, which is now in full working order, is 279ft. by 210ft., and the height of the engine room is 90ft. It has

a chimney 365ft. high, supported on 1,300 40ft. poles, the tops of which were driven 19ft. below high-water level. The chimney is constructed entirely of bricks, and about 3½ millions of these were required. Its entire weight is 8,540 tons. The foundation of the building rests on piles, upon which there is a concrete floor 5ft. thick. The system which this power station is intended to serve comprises 220 miles of track, almost all of which is equipped on the underground conduit system.

Incandescent Gas Lighting: Alleged Infringement.—On Thursday last, in the High Court of Justice, the case of the *Welsbach Incandescent Gas Light Company, Limited, v. the New Incandescent (Sunlight Patent) Gas Lighting Company, Limited, and Others* was heard. This was an action for an injunction, damages, and other relief in respect of alleged infringements by the defendants of the plaintiffs' patent (granted to Mr. Oliver Imray, and numbered 3,592 of 1886) for an improvement in an illuminant appliance for burners. Mr. Justice Buckley, in giving judgment, said the complaint of the plaintiffs was not as to the form of the mantles used, which was originally protected by a patent of 1885, which had now expired, but in respect of the use of the oxides of certain rare metals as brilliant illuminants in the making of the mantles. The patent was in respect of pure thorium or thorium oxide alone or in connection with other oxides. There was nothing about pure thorium, and what was then known as thorium was not pure, but consisted to the extent of 25 per cent. of other substances. He conceived that a mantle constructed according to prescription No. 1 in the specification of thorium, pure according to the knowledge of 1886, and which gave only three candles, or of thorium pure in fact, which would give only 1·3 candles, although it was worse as an illuminating appliance than the mantle of 1885, which gave 4 or 4·5 candles, was nevertheless better if it possessed in a greater degree the qualities of rigidity, durability, or stability. He might illustrate this by saying that in point of fact subsequent knowledge had shown that it was useful because, by the subsequent discovery that a small quantity of cerium would increase its luminosity, the step which was taken in 1886 had led to the possibility of making subsequently to 1893 a mantle which was not only durable and staple, but possessed also high illuminating power. Again, he might take another test of utility—that an invention was patentable which offered the public a useful choice. Now the patent of 1886 offered the public an opportunity of making with thorium an appliance which up to that date it had been suggested could be made only with zirconium, lanthanum, or yttrium, and, whether the thorium mantle gave a higher or lower illuminating light, it might well have been, and it was now known, that it was useful to give the public the choice of using that rare earth instead of some of the rare earths mentioned in the specification of 1885. His lordship then dealt with the question of infringement, which he also decided in favour of the plaintiffs, and gave them an inquiry as to damages, an order for destruction or delivery of the infringing articles, and the costs of the action as between solicitor and client.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
Feb. 23	Blackhill, Durham—Cottages	Consett Iron Company, Ltd.	C. E. Oliver, Architect, Blackhill, co. Durham.
" 23	Aberdeen—Houses		C. G. Smith, Estate Office, Haddo House, Aberdeen.
" 23	Southampton—Shelters	Corporation	Engineer, Municipal Offices, Southampton.
" 23	Wolverhampton—School	School Board	T. H. Fleeming, 102, Darlington-street, Wolverhampton.
" 23	Londonderry—Walls	Faughanvale Presbyterian Committee.	M. A. Robinson, Richmond-street, Londonderry.
" 24	Ardara, Ireland—Church	Rev. P. Kelly	E. J. Toye, Architect, Strand, Londonderry.
" 24	Carlisle—Tomato House	Guardians	G. Armstrong, 20, Bank-street, Carlisle.
" 24	Critton, near Nottingham—School	School Board	R. Whitbread, Architect, Carlton.
" 24	Cleator Moor, Cumberland—Shop	F. B. Bennett	E. Jackson, Engineer, Whitehaven.
" 24	Pickham—Alterations	Metropolitan Asylums Board	E. and W. Henman, 61, Cannon-street, E.C.
" 25	Midhurst, Sussex—House		A. G. Gibbs, North-street, Midhurst.
" 26	Darwen, Lancs.—Shops	Corporation	Woods & Thackeray, Architects, Albert-buildings, Darwen.
" 26	Gateshead Fell—Rectory	Rev. J. Mitchell	J. Potts and Son, 57, John-street, Sunderland.
" 26	Huddersfield—Bakehouse	Industrial Society Limited	J. Berry, 9, Queen-street, Huddersfield.
" 26	Leeds—Refectory House	Gas Committee	R. H. Townsley, Gas Offices, Leeds.
" 26	Llanelli—Lairson	School Board	J. W. Watkins, Board Offices, Llanelli.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—Continued.			
Feb. 26	Perth—Electric Light Station	Commissioners	R. M'Killop, 12, Tay-street, Perth.
" 26	Salford—Stables	Electricity Committee	J. Holt, 6, St. Mary's-gate, Manchester.
" 26	Sligo—Houses		Messrs. White and Sons, Sligo.
" 26	Thornton, near Fleetwood—House	United Alkali Co.	Booth and Chadwick, 42, Oxford-street, Manchester.
" 27	Westminster—Artizan's Dwellings	London County Council	The Architect, 17, Pall Mall East, S.W.
" 27	Chell, near Burslem—Laundry	Guardians	W. H. Walley, Architect, Queen-street, Burslem.
" 27	Kemnay, Scotland—School	School Board	Clerk, School Board Offices, Kemnay.
" 28	Balcombe, Sussex—Pump House	Rural District Council	J. Mansergh, 5, Victoria-street, Westminster, S.W.
" 28	Huddersfield—Tank	Corporation	G. and G. H. Crowther, 38, New-street, Huddersfield.
" 28	Fulham—Bandstand	Vestry	C. Botterill, Surveyor, Town Hall, Waltham Green, S.W.
" 28	Milford Haven—Schoolroom	School Board	D. E. Thomas, Architect, Victoria Place, Haverfordwest.
" 28	Rochford, Essex—Bridge	County Council	P. J. Sheldon, Surveyor, County Offices, Duke-street, Chelmsford.
March 1	Ballystrang, Donegal—School		J. C. Cannon, Glenswilly, Letterkenny.
" 1	Aberdare—Retort House	Gas Company	Stevenson and Burstal, 33, Parliament-street, Westminster.
" 1	Bradford—Hall	Corporation	J. H. Cox, Surveyor, Town Hall, Bradford.
" 1	Hanley, Staffs.—Favilion	Board	E. Jones, Albion-street, Hanley.
" 1	Lisnaska, Ireland—Schools		T. Elliott, 37, Darling-street, Enniskillen.
" 1	Ealing—Conveniences	Urban District Council	Engineer, Public Buildings, Ealing, W.
ENGINEERING—			
F. b. 23	Walthamstow—Electric Plant	Urban District Council	J. Earlight, 47, Victoria-street, Westminster, S.W.
" 23	London, S.W.—Oil Tank Waggon	Uganda Railway Committee	Crown Agent for the Colonies, Downing-street, S.W.
" 24	Roscommon—Pumping Station	Rural District Council	T. O'Keefe, District Council Office, Roscommon.
" 24	Blackpool—Retort House Roof	Gas Committee	J. Chew, Gas Offices, Princess-street, Blackpool.
" 24	Looe, Cornwall—Reservoir	Urban District Council	W. Hicks, Council Offices, Looe, Cornwall.
" 26	Kingston-on-Thames—Heating	Union	W. H. Hope, Union Offices, Portsmouth-road, King's-on.
" 27	Walthamstow—Warming Schools	School Board	W. A. Longmore, 7, Great Alie-street, E.
" 27	Gloucester—Electric Wiring	Corporation	G. S. Blakeway, Guildhall, Gloucester.
" 27	Leeds—Boiler		City Engineer, Council Offices, Leeds.
" 28	Rochdale—Electricity Meters	Corporation	Lacey, Clirehugh & Sillar, 2, Queen Anne's-gate, Westminster.
" 28	Balcombe, Sussex—Pumps	Rural District Council	J. Mansergh, 5, Victoria-street, Westminster.
" 28	Downerry, Cornwall—Waterworks		Jenkin and Son, Engineers, Liskeard.
" 28	Aberdeen—Electric Tramcars	Tramways Committee	J. A. Bell, Engineer, Town House, Aberdeen.
" 28	Salford—Mechanical Stokers	Corporation	Lacey, Clirehugh & Sillar, 2, Queen Anne's Gate, S.W.
" 28	Llanddona, Wales—Sea Wall		J. Owen, Architect and Surveyor, Menai Bridge.
" 28	Rostrevor, Ireland—Sewage Disposal Tank	Great Northern Railway Company	Mr. Peldie, Scottish Provident-buildings, Belfast.
March 1	Melbourne—Electric Lighting Plant	Corporation	Agent-General for Victoria, 15, Victoria-street, Westminster.
" 1	Horsham—Electric Lighting Plant	Urban District Council	S. Mitchell, Council Offices, London-road, Horsham.
" 1	Keighley—Electric Lighting Plant	Corporation	J. M. Smyth, Engineer, Bridge-street, Keighley.
IRON AND STEEL—			
Feb. 23	Walthamstow—Railings	Urban District Council	G. W. Holmes, Engineer, Town Hall, Walthamstow.
" 24	Wigan—Gas Barrel	Electric Light Committee	H. C. Bishop, Engineer, Bedford-place, Wigan.
" 24	Manchester—Steel and Iron Work	Tramways Committee	J. M. McElroy, Town Hall, Manchester.
PAINTING AND PLUMBING—			
Feb. 21	Richmond, Surrey—Various	Town Council	F. F. Senior, Town Hall, Richmond.
" 26	Dublin—Painting		H. Williams, Office of Public Works, Dublin.
" 26	Preston, Lancs.—Painting	Corporation	Surveyor, Town Hall, Preston.
" 27	Leeds—Painting	Corporation	Engineer, Municipal-buildings, Leeds.
ROADS—			
Feb. 23	London, N.—Making-up	Wood Green Urban District Council	C. J. Guynon, Surveyor, Town Hall, Wood Green.
" 23	Hardingstone, Northampton—Materials	Rural District Council	J. Haviland, 2, St. Giles's-square, Northampton.
" 24	Belper—Materials	Rural District Council	R. C. Cordon, Surveyor, Duffield, near Derby.
" 24	Lewes—Materials	County Council	F. J. Wood, Surveyor, County Hall, Lewes.
" 24	Bedford—Materials	County Council	County Surveyor, Shire Hall, Bedford.
" 24	Bexhill—Material	Urban District Council	G. Ball, Town Hall, Bexhill.
" 24	Cerne, Dorset—Materials and Labour	Rural District Council	A. E. A. Cole, Council Offices, Cerne Abbas, Dorset.
" 24	Cupar, Fife—Road Metal		T. Aiken, County Buildings, Cupar.
" 26	Beverley—Stone	Rural District Council	E. Picker, Surveyor, Beverley.
" 26	Clayton-le-Moors—Paving	Urban District Council	A. Dodgeon, Surveyor, Clayton-le-Moors.
" 26	Llandaff, Wales—Highway Repairs	Rural District Council	J. Holden, Llandaff-chambers, 35, St. Mary's-st., Cardiff.
" 26	London, S.E.—Wood Paving	St. Olave District Board of Works	G. L. Hawker, Vine-street, Tooley-street, Southwark.
" 26	Macclesfield—Materials	Rural District Council	Assistant Clerk, Union Offices, Macclesfield.
" 26	Sibsey, near Boston, Lincs.—Granite and slag	Rural District Council	J. M. Simpson, Clerk to Council, Sibsey.
" 27	West Ham—Road-making	County Council	J. G. Morley, Town Hall, West Ham.
" 27	Bridgewater—Materials	Corporation	Surveyor, Municipal Offices, High-street, Bridgewater.
" 27	Bromley, Kent—Making-up	Urban District Council	The Surveyor, Council Offices, Bromley, Kent.
" 27	London—Works	Edmonton Urban District Council	G. Eedes Eachus, Town Hall, Lower Edmonton.
" 27	Nottingham—Materials	County Council	E. P. Hooley, Shire Hall, Nottingham.
" 27	Stockton-on-Tees—Asphalting	Rural District Council	W. Burton, Surveyor, Bellingham.
" 27	West Hartlepool—Street Works	Corporation	J. W. Brown, Borough Engineer, West Hartlepool.
" 28	Hailsham, Sussex—Materials	Rural District Council	E. Catt, Church-street, Willingdon.
" 28	Enfield—Making-up	Urban District Council	R. Collins, Court House, Enfield.
" 28	Erdington, near Birmingham—Making-up	Urban District Council	H. H. Humphries, Surveyor, Public Hall, Erdington.
" 28	Ilford—Paving	Gas Company	J. H. Brown, Gasworks, Ilford.
" 28	Litherland, Lancs.—Materials	Urban District Council	W. B. Garton, 25, Sefton-road, Litherland.
" 28	Wardle, Lancs.—Materials	Urban District Council	V. Wilson, District Council Offices, Wardle.
" 28	Fulham—Making-up	Vestry	Surveyor, Town Hall, Waltham Green, S.W.
" 28	Fulham—Works and Materials	Vestry	Surveyor, Town Hall, Waltham Green, S.W.
March 1	Batley—Materials	Town Council	O. J. Kirby, Market-place, Batley.
SANITARY—			
Feb. 24	Dukinfield—Sewer	Corporation	Surveyor, Municipal Offices, Higher King-street, Dukinfield.
" 26	Wigston Magna, Leicester—Scavenging	Urban District Council	W. G. J. Clark, 32, Bell-street, Wigston Magna.
" 26	Guilford—Sewerage Works	Rural District Council	N. Lailey, 16, Great George-street, Westminster.
" 26	Aylesbury—Drainage Works	Rural District Council	F. B. Parrott, 16, Bourbon-street, Aylesbury.
" 26	Ilford—Drainage Works	Urban District Council	J. Taylor, Sons, and S. Crimp, 27, Gt. George-street, S.W.
" 26	Poulton-le-Fylde, Lancs.—Sewer	Rural District Council	Hinnell and Murphy, 41, Corporation-street, Manchester.
" 27	Wan Isworth—Scavenging	Board of Works	H. G. Halls, Board Offices, East Hill, Wan Isworth.
" 27	Llandaff—Scavenging	Rural District Council	W. Fraser, 36, St. Mary's-street, Cardiff.
" 28	Naas—Sewers	Council	F. Bergin, Engineer, Kildare.
" 28	Litherland, Lancs.—Removal of Nightsoil	Urban District Council	W. B. Garton, 25, Sefton-road, Litherland.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Feb. 28	Sunderland—Tramways Depot		F. M. Powey, Clerk, Town Hall, Sunderland.
" 28	Findochty, Scotland—Harbour Improvements		Clerk of Commissioners, Findochty, Scotland.
March 1	Doncaster—Isolation Hospital	£25, £15	F. E. Nicholson, Solicitor, Union Offices, Doncaster.
" 12	Anstruther Easter, Scotland—School		A. C. Mackintosh, School Board Clerk, Anstruther Easter.
" 30	Belfast—Assembly Hall	£100, £50, £25	W. D. Eakin, 12, May-street, Belfast.
" 31	Ratnestall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Ratnestall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor.	J. E. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
April 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyna, Engineer, Town Hall, Eastbourne.

Property and Land Sales.

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Tuesday, February 27th
Tuesday, March 6th
Tuesday, March 13th
Tuesday, March 20th
Tuesday, March 27th
Tuesday, April 3rd
Tuesday, April 10th
Tuesday, April 24th
Tuesday, May 1st
Tuesday, May 8th
Tuesday, May 15th
Tuesday, May 22nd
Tuesday, May 29th
Tuesday, June 12th
Tuesday, June 19th
Thursday, June 21st
Tuesday, June 26th

Thursday, June 28th
Tuesday, July 3rd
Thursday, July 5th
Tuesday, July 10th
Thursday, July 12th
Tuesday, July 17th
Thursday, July 19th
Tuesday, July 24th
Thursday, July 26th
Tuesday, July 31st
Tuesday, August 14th
Tuesday, October 9th
Tuesday, October 23rd
Tuesday, October 30th
Tuesday, November 13th
Tuesday, November 20th
Tuesday, December 4th

By arrangement, Auctions can also be held on other days in town or country. Messrs. Debenham, Tewson, Farmer, and Bridgewater undertake Sales and Valuations for Probate and other purposes of Furniture, Pictures, Farming Stock, Timber, &c.

Detailed Lists of Investments, Estates, Sporting Quarters, Residences, Shops, and Business Premises to be let or sold by private contract are published on the 1st of each month, and can be obtained of Messrs. DEBENHAM, TEWSON, FARMER, and BRIDGEWATER, Estate Agents, Surveyors, and Valuers, 80, Cheapside, London, E.C. Telephone No. 503, Bank.

SALE DAYS for the Year 1900.

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FAREBROTHER, ELLIS, EGERTON, BREACH, GALSORTHY, and CO. beg to announce that the undermentioned dates have been fixed for their AUCTIONS of FREEHOLD, Copyhold, and Leasehold ESTATES, Reversions, Shares, Life Interests, &c., at the AUCTION MART, Tokenhouse-yard, E.C.

Other appointments for intermediate Sales will also be arranged.

Thursday, February 22nd
Thursday, March 8th
Thursday, March 22nd
Thursday, April 5th
Thursday, April 26th
Thursday, May 10th
Thursday, May 24th
Thursday, June 7th
Thursday, June 21st
Thursday, June 28th
Thursday, July 5th
Thursday, July 12th

Thursday, July 19th
Thursday, July 26th
Thursday, August 2nd
Thursday, August 9th
Thursday, September 27th
Thursday, October 11th
Thursday, October 25th
Thursday, November 8th
Thursday, November 22nd
Thursday, December 6th
Thursday, December 13th

Messrs. FAREBROTHER, ELLIS, and CO. publish in the advertisement columns of "The Times," "Standard," and "Morning Post," every Saturday a list of their forthcoming Sales by Auction. They also issue on the first of every month a schedule of properties to be let or sold, comprising landed and residential estates, farms, freehold and leasehold houses, City offices and warehouses, ground-rents, and investments generally, which will be forwarded free of charge on application.—No. 29, Fleet-street, Temple Bar, and 18, Old Broad-street, E.C.

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FEBRUARY 28, 1900.
No. CCLXIV.

EFFINGHAM HOUSE,
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STRAND, W.C.

An Architectural Causerie.

The Architect in Embryo.

THE writer of an article dealing with the vexed question

of pupilage and examinations in architecture lays himself open to the obvious criticism that what is new in his remarks is not true, and what is true is not new. This, however, can be said of most comments on most subjects; what the writer now wishes to do is to make a few remarks upon even so trite a subject as architectural training. For, with all due deference to those professional institutions and associations which have taken the education of the embryo architect under their wing, it can scarcely be contended that a satisfactory conclusion has been arrived at, judging by the class of work which is turned out from these schools by the pupils who have been attending them. The impression left upon the mind—after an inspection of exhibits of architectural students' work, such as those annually shown at Burlington House, the Institute, and elsewhere—is an appreciation of the beautiful draughtsmanship and the charming manner in which competitors "get up" their drawings, but a sense of disappointment in the designs so patiently delineated. In Mr. Bodley's criticism of the recent Institute designs the right note was sounded when he said he "did not think it much good to criticise drawings—theirs was not a drawing school, it was a school of architects. Drawing was not design, and they drew but poorly when they built magnificently." The President, also, in his address lays great stress on the primary importance of design. "Too great value," he says, "seems occasionally attached to the effect, technique, and execution of the drawing itself; and the quality of the architecture, a far greater thing, is sometimes, apparently, considered of secondary importance." One is bound to come to the conclusion that there must be something radically wrong with the existing form of architectural education for remarks such as those quoted above to be called forth from authorities like Mr. Emerson and Mr. Bodley when they address a body of students, remarks which seem to bear little fruit, judging by the quality of work annually exhibited. Let us consider whether the system of training does not help this state of things which, all deprecate and yet seem so powerless to stop. The old-fashioned idea of articling a pupil for a term of four to five years is denounced by all "advanced" educationalists—and with a measure of truth—as a system which supplies the architect with an office boy and a premium of some three to four hundred pounds, and ingrains into the mind of the unfortunate youth an instinctive dislike for anything and everything appertaining to the calling of architecture. Some educationalists would do away with pupilage altogether, whilst others would limit the term of articles to a year or eighteen months. In any case they are agreed that attendance at the classes of the Association and elsewhere is the proper way for the

student to acquire a knowledge of architecture. Straight from these schools the youth, as a rule, goes to the architect who will give him the most salary, in whose office he will have to trace, copy specifications, and do the usual drudgery of a junior assistant. Any knowledge of design he may acquire is haphazard in the extreme; the schools, however, have taught him to draw, and it is little wonder that he devotes all his spare time in making pretty pictures out of indifferent designs. It is obvious that the articling of a boy to an architect for a long period is a failure in most cases—from the point of view of the pupil. An architect who has sufficient work to entitle him to take a pupil has not sufficient time to teach him. Then again, as a rule the parent knows absolutely nothing about architecture, and should he select a good man to whom to article his son, it is more by luck than judgment. A

but seldom does, bestow upon the initial stages in a pupil's "articled" career, and he will be sufficiently advanced to design for himself midst the atmosphere of intelligent criticism from his chief and the assistants. The result of such a course, say, for a year or two, would be an absorption of design, instead of a perfection of draughtsmanship. This latter can be and should be acquired by all means, but it must take a second place in the training of a young architect. One may be asked, where does the examination come in the course which has been sketched out, and it must be admitted that one does not quite know. Possibly the pupil may have time to pass it, possibly not, but it really does not signify very much, and all that this article has attempted to suggest is some method in which the designing faculty could be improved—examinations are a luxury!

H. S. M.



system of education by classes or private teachers for the initial stages of the tyro's career seems manifestly advisable; but do not let this be the alpha and omega of his education. If he has a liking for his art—and one or two years' study will soon settle this point—he will himself be able to know with what sort of work he is most in sympathy; then let him enter an architect's office, not for a salary, not as an "improver"—detestable term—but as a paying pupil, who is perfectly capable of understanding and appreciating the quality of the work which is going on all round him, and able possibly to help in that work. He will have arrived at a time when he is independent of the individual attention and instruction an architect should,

Parham Hall. PARHAM HALL was formerly the seat of the first Earl of Orford. The existing remains of the Hall appear to be of the fifteenth century and are surrounded by a deep moat. There is a fine entrance gateway of the Tudor period, bearing the shields of the Orfords and Willoughbys, and of other past owners of the Hall. The building is now used as a farmhouse, and many of the original casements have been removed and modern sash windows substituted. The illustration of the Hall which we give on this page is from a drawing by Mr. Frederick Adcock.

"Ghosts" Again. In the general condemnation of the artistic "ghost" which is heard on every side (the subject was dealt with in our issue for January 10th last) there is, perhaps, one aspect of the question which is apt to be overlooked, but which merits consideration. The employer of the "ghost" is usually portrayed as a humbug, living on the reputation that belongs to another; a monster who fattens on the brains of the needy and genuine artist; while the "ghost" is regarded as a poor creature, caught between the devil and the deep sea, more to be pitied than blamed. This may be the truth, but it is by no means the whole truth. There would seem to be in this attitude of mind, too great a concern for the personal reputation and material interest of the artist, and too little for the broader interests of art; a disposition to put the artist before his art; or, perhaps, a certain tacit assumption that the worldly interests of the artist are identical with those of his art, which is not always the case. While it is impossible to defend any system based, as this one is, on fraud, yet if we consider the matter, particularly with reference to architecture, and more from the point of view of its interests rather than those of the architect—if we think the necessity of obtaining a good building to be the principal thing, and the money and reputation to be obtained by its erection to be a secondary matter, as it is—we must admit that much practical good is obtained by this system, which, in the present absence of public knowledge and appreciation, would probably not be gained without it. The erection of an important building is often placed in artistically incompetent hands. This custom is to be regretted—is, if possible, to be reformed; but while it obtains, as at present, it is distinctly to the advantage of the building that a man of some artistic ability should be engaged on its design. If he produces a fine building, it is a gain to art; if he loses the reputation thereof, it is simply a loss to himself. Should he stand out and let the bungler design it, or employ another bungler, the result is a discredit to art and no gain to anyone. The employer of the ghost is, perhaps, judged a little too harshly. He is no artist by nature, and cannot therefore be expected to look at things from an artistic standpoint. It is beside the mark to judge him by an artistic standard. He knows he is not deceiving the profession, and that his very existence proves that the public does not care. To proclaim on the housetops that he is not entitled to any credit for the design seems to him an unnecessary and ostentatious parade of virtue; everyone interested in the matter already knows it. Allowances should be made for a man in a false position. While everyone is entitled to such reputation as his work merits, yet he is a poor artist who must have the applause of the gallery ever ringing in his ears; and in these days, when the fame of the architect is, at its best, such a feeble thing, it is but a small exercise of self-denial to do without it altogether.

A. R. J.

SUBSCRIBERS TO OUR SHILLING FUND, since the publication of our last list, will find their gifts acknowledged on page 56. Those who have not yet subscribed are also requested to turn to that page.

On Reflection.

The Late Mr. William Butterfield.

By the death, which occurred last Friday, of Mr. William Butterfield, F.S.A., the architectural profession has lost one of its most distinguished representatives. It is true that Mr. Butterfield's work was done many years ago, but his influence upon his art has survived, and will long survive his personal participation in it. He was the last survivor of that little group of architects who brought about the Gothic revival—a movement which has left a permanent impress on British architecture, and which, in spite of the excesses into which some of its exponents (Butterfield among others) were led, has done much to establish nobler and truer artistic ideals among architects of the present day. Mr. Butterfield was born eighty-five years ago, two years later than Welby Pugin and three years later than Gilbert Scott. His first important building was the Church of All Saints, Margaret Street, which was completed in 1859; but perhaps his most important and most characteristic work was the building of Keble College, Oxford. His work was confined almost exclusively to collegiate and ecclesiastical architecture. Among other buildings which he designed may be mentioned the chapel and school buildings at Rugby, the grammar school at Exeter, the churches of St. Albans, Holborn; St. Augustine, Queen's Gate; and St. Mary Magdalene, Enfield. All his work was characterised by sincerity, frank loyalty to fact, patience, and striking originality. With all his devotion to the ideals of a former age, he did not ignore modern requirements. He was an artist who never degraded his art, a man with a lofty and inspiring message to his age—a message which may be read in the buildings he has erected.

Architects and State Control.

THE question of Registration of Architects is one upon which professional opinion is very much divided, but the discussion of the pros and cons generally runs upon certain well known lines, the aim of the disputants always being to show how the proposed change will affect professional interests. Attempts may be made to look at the matter from the point of view of the interests of the general public, but, as in the case of all trade and professional discussions, it is only the lay person who can really take an unprejudiced view. For this reason it is well that whenever legislation is proposed in the interests of any particular industry, the non-technical press should hold, as it were, a watching brief on behalf of the public. We are glad, therefore, to note the interest which "The Liberty Review" is taking in the question of the Registration of Architects; though we feel bound to remark that if our contemporary is able to adopt an unbiased attitude as regards the different schools of architects it is hopelessly biased in another direction. The proposal being one for Government regulation the "Liberty Review" is opposed to it, as one more example of the onward march of Socialism, which it is its mission to withstand. It persists in treating the matter as a proposal for state or municipal control of architectural practice, instead of merely a proposal for a compulsory qualifying examination. Referring to our own attitude in the matter our contemporary says: "We should greatly prefer to see the architecture of the capital in the keeping of the BUILDERS' JOURNAL than in that of any State Department. Our contemporary would do the work much better." We bow to the "Liberty Review," but assure it that there is no likelihood what-

ever of anything that can fairly be called State control of architecture becoming an accomplished fact. Architects would resist, as strenuously as anyone, any proposals to curtail their liberty of action; what they desire—those of them who support Registration—is that the unqualified men who victimise the public and bring discredit on the profession, should be prevented from undertaking work for which they have neither the knowledge nor the capacity. It is true that no State machinery can endow men with taste or brains; if modern architects are such a feeble folk as our contemporary seems to think, Registration will not improve their quality, but neither will it rob them of any lingering artistic sense they may possess. The hall mark does not improve the quality of the gold, but it enables the uninitiated to distinguish between the real and the spurious metal.

Government and the Housing Question.

EVERYONE (except, perhaps, the "Liberty Review") will welcome the decision of the Government to take in hand the question of the housing of the working classes. The Bill introduced last week by Mr. Chaplin to amend the Act of 1890 contains two admirable provisions; local authorities are to be empowered to acquire land for building beyond the boundaries of their own area, and certain vexatious restrictions which have often prevented the putting in force of the provisions of Part III. of the Act (the part dealing with the purchase of land by local authorities) are to be removed. Beyond this the Government proposals do not go. A step in the right direction has been taken, but it is a very small step indeed. The evils of over-crowding are now so well known that further investigation is needless; the fact that in London alone nearly a million people are living under conditions which the law declares to be insanitary, yet is powerless to remedy, should in itself be sufficient to unite men of all political parties in a serious attempt to find a real remedy for such a dangerous and discreditable state of affairs. Nor is the housing problem one which affects only our great cities. As recent articles in the "Daily News" have shown, there are many country villages where the poor are as badly housed as in the vilest London slums. In 1884 the Prince of Wales, speaking in the House of Lords, expressed a hope that the result of the Royal Commission on this subject, which was then appointed, would be "to recommend to Parliament measures of a thorough and drastic kind, which may be the means of ameliorating not only the dwellings of our poor, but their condition generally." Those thorough and drastic measures have not yet been forthcoming, though the need for them is far greater now than it was sixteen years ago. There are those who believe that no real improvement is possible without a radical reform of the land laws; but to proceed on that line inevitably means bringing the subject into the arena of party strife. There is more hope, it seems to us, of practical good being speedily accomplished, if the subject continues to be discussed, as it has been hitherto, as one in which it is possible for both parties to act together. Mr. Chaplin's bill should be accepted as far as it goes, and an effort made to strengthen it. The slum landlord who fattens on the degradation and misery of the poor is not a sympathetic figure, and we see no reason why a clause should not be inserted in the Bill with the approval of all parties, to compel him to reveal his identity and to submit to the destruction of his property without compensation if he will not keep it in a sanitary condition. The scandal of our existing system is that the nefarious trade of the slum landlord is such a profitable one; we must make it unprofitable.



GATEHOUSE AT SLAUGHAM PLACE, NOW AT
CUCKFIELD PLACE. DRAWN BY C. G. HARPER.

SLAUGHAM PLACE.

By C. G. HARPER.

DEEP down in a hitherto sequestered nook in the weald of Sussex stands the little village of Slaugham, sheltered from the north winds by the ridge of high ground, running east and west, on which the hamlet of Hand Cross is built. The old coach road between London and Brighton runs through Hand Cross, which indeed arose into being as a hamlet from that fact, and goes in breakneck fashion downhill in two branches: one by way of Hickstead, the other through Staplefield Common. In the angle between this fork of the highway and that of yet another road branching off to the right hand to Horsham lies Slaugham, three miles from the nearest railway station of Balcombe, where few trains stop, and six miles from the more convenient junction of Three Bridges.

The stranger enquiring in these parts for Slaugham, and pronouncing the name as spelled, will probably not be understood of the natives. "Slaffam," on the other hand, wins to instant recognition. The derivation of the place-name is hinted at in the original spelling as set forth in the *Liber Regis*, "Slougham-cum-Crolé." "Crolé" is the Crawley of to-day, six miles distant. "Slougham" is an excellently descriptive spelling, for the village is built on the very margin of the sloughs that mark the headwaters of the Arun, the Adur, and the Sussex Ouse, and it was in the very midst of these morasses that the once magnificent mansion

of Slaugham Place was built. A true exemplar, this spot, of that Sussex of which a barrister on tour through the county in 1690 writes to his wife: "I vow 'tis melancholy consideration that mankind will inhabit such a heap of dirt. The Sussex ways are bad and ruinous beyond imagination. The county is in a sink of about fourteen miles broad, which receives all the water that falls from the long ranges of hills on both sides of it, and not being furnished with convenient draining, is kept moist and soft by the water till the middle of a dry summer, which is only able to make it tolerable to ride for a short time."

These conditions make the ruins of Slaugham Place what they are to-day. Low down, in a watery meadow, they stand, the long-deserted home of the Coverts, a vanished family once among the most powerful as they were also of the noblest, in the county. The Coverts were of Norman descent. They, to use a well-worn phrase, "came over with the Conqueror"; but it is not until the close of the fifteenth century that they are found

yard to hall, but, doorless, with its massive stones wrenched apart by the clinging ivy, stands merely as some sort of key to the enigma of ground-plan presented by walls ruined in greater part to the level of the watery ground.

The measurements of the building are 175 ft. by 133 ft.; those of the inner court are 80 ft. square; of the Great Hall, 54 ft. long by 30 ft.; of the kitchen, 35 ft. square, with a great fireplace 13 ft. wide. A tradition still lingers in the neighbourhood that the establishment numbered seventy servants. The singular facts of high wall and moat surrounding a mansion of Jacobean build seem to point to the existence of an earlier building provided with these defences in days when men thought of security first and of comfort afterwards. Some few mullioned windows of earlier date than the rest of the building remain to confirm the thought.

That a building of the magnificence attested by these crumbling walls should have been allowed to fall into decay so shortly after its



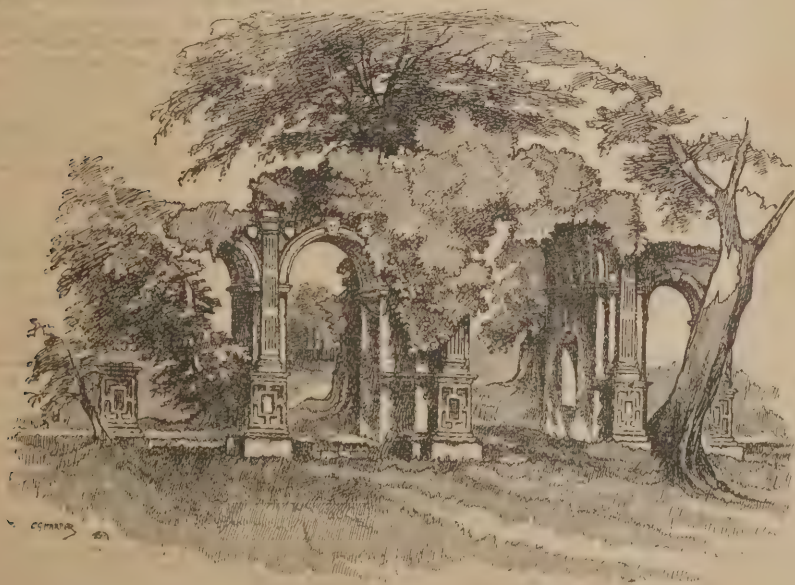
RUINS OF EAST FRONT, SLAUGHAM PLACE. DRAWN BY C. G. HARPER.

settled at Slaugham. They were preceded as Lords of this Manor by the Poynings, of Poynings, and by the Berkeleys and Stanleys. Sir Walter Covert, to whose ancestors the manor fell by marriage, was the builder of the grand mansion, whose ruins yet remain to show the almost palatial character of his conception of what was due to a magnate of his status. They cover, within the ancient walls of red brick which encompass the grounds and rise from a still partly-filled moat, over three acres of what is now orchard and meadowland. In spring the apple trees bloom pink and white amid the grey and lichened ashlar of the ruined walls of Palladian architecture; and the lush grass grows tall around the cold hearths of the roofless rooms. The noble arcaded entrance leads now, not from court-

completion is a singular fact. Although the male line of the Coverts failed, and the estates passed by the marriage of their womankind into other hands, yet their alienation would not necessarily imply the destruction of their roof-tree. The sole explanation is to be sought in the situation and the defects of the ground upon which the building was erected; a site no builder of to-day would think of selecting as suitable for so important a dwelling. Home as it is of swamps and damps, and quashy as it is even now, it must in the past have been the breeding-place of agues and chills innumerable. An ideal spot, possibly, for defensive purposes, but for domestic use not to be thought of.

Such soft and shaky earth as this could not bear the weight of so ponderous a structure as was Slaugham Place; the oozy ground subsided and pulled its masonry apart and rotted its fittings. Despairing of victory over the reeking moisture, its owners left it for healthier sites. Then the rapacity of all those neighbouring folk who had need of building material completed the havoc wrought by natural forces, and finally Slaugham Place became what it is to-day. Its clock tower was pulled down and removed to Cuckfield Place, where it now spans the drive to that romantic domain. Its handsomely-carved Jacobean stairway is to-day the pride and glory of the Star Hotel at Lewes.

The Coverts are gone; their heraldic shields, in company with an architectural frieze of greyhounds' and leopards' heads, and skulls of oxen wreathed in drapery after the Palladian manner, still decorate, beneath the enshrouding ivy, the remains of the north entrance of their mansion, and their heraldic achievements are repeated upon their tombs within the little church of Slaugham, upon the hillside. You may, if versed in heraldry, learn from their quarterings into what families they married; but the deeds they wrought, and their virtues and their vices are for the most part clean forgotten, even as the name of them is gone out of the land, who once, as tradition has it, travelled southward from London to the sea on their own land. The



SLAUGHAM PLACE; RUINS OF GRAND ENTRANCE ON NORTH FRONT. DRAWN BY C. G. HARPER.

efforts, a better grasp of the method of construction, if he first draws the work to scale. The annexed illustration (Fig. 1) will explain the method of setting out and drawing the main parts. To set out a Doric portico or frontispiece, first draw the base line A B, and erect the perpendicular line I H, and on this mark the height of the first or uppermost member of the horizontal cornice as at H, according to the number of diameters in the order. Divide the entablature into its three parts, viz., architrave (composed of two fasciæ, with a fillet also termed 'tenia'), the frieze, and the cornice. A triglyph, P, is always placed over the columns, and its breadth is equal to half the diameter of column at its base. The distance between the triglyphs is generally equal to the height of the frieze, therefore square. In some examples there are various numbers of triglyphs placed between those over the columns according to the length of cornice, but in this example there are three. The intercolumniation for the three triglyphs, according to the scale of this order, is five diameters, that is, the distance from the central line C E to the central line D F. The intercolumniation being found, take half thereof between the compass, and, setting one foot in the point I, make a point at each side upon the line A B at C and D, and then erect the perpendicular lines, C D and E F for the central lines of the columns. The triglyphs are spaced out on the base line A B as follows: Take fifteen minutes, the half breadth of one of the triglyphs between the compass, and make a mark on both sides of the point C as *a*, *b*, and on both sides of the point I, as *e*, *f*, and on the point D make two points as *c*, *d*. Now take forty-five minutes, the height of the frieze (which is the width of the metopes) between the compass, and place one foot on the point *f*, and make a point as at *h*, and then from the point *e* make a point as at *i*, from *g* to *h*, and also from *i* to *k*, which is the width of a triglyph. It will be seen that this method gives the width and positions of the other triglyphs as *ab*, *fe*, and *cd*. These widths and positions are then transferred from the base line to the frieze, working from the centre lines of the portico and columns. The width and positions of the metopes are regulated by the triglyphs. The height of the members of the cornice are set on the centre line of the column from the point *f*. The two upper lines that make the square of the cyma-recta are omitted because of the circular cornice mitring to the level returned cornice. The projections are taken from the centre line of the column. To find the pitch of the pediment, set one foot on the point H, extend the other to G, and then turn this foot to the centre line I H, and make the intersecting point O, which is the centre for the circular pediment, also termed a compass pediment. The same rule is also used to find the centre for a raking or angular pediment, as shown by the dotted line R to G.

"The spaces between the triglyphs are called metopes, and are generally filled in with some ornament. In some antique examples the metopes are alternately enriched with ox-skulls and with patera, but they may be filled in with any other ornament of appropriate form. The method of drawing the triglyph, guttæ, and panel with patera is further elucidated by the annexed sketch (Fig. 2), which shows the

elevation and section, with the parts figured, and is self explanatory. The guttæ or drops in this example are pyramidal in form, but in many examples they are conical, being cones or parts of cones. The soffit of the corona is often enriched. These enrichments should be sunk up, and never drop lower than the line of the soffit. Three forms of mutules, a 'centre' and 'rights' and 'lefts' (as shown in Fig. 1) are required for the circular cornice, so that their sides will be perpendicular and rake with the sides of the mutules on the horizontal cornice. The 'rights' and 'lefts' require to be specially made. The centre one may be obtained from the casting mould of the mutules

cornice, which sometimes happens if the latter is run first. For small work, the horizontal cornice and the architrave are run first. This is done from a parallel running rule fixed on the frieze. If the work is large, fix two running rules on the frieze, one for the cornice and one for the architrave. In both cases a running rule is required for a bearing for the ribs of each running mould, one fixed on the weathering at the top of the cornice, and one on the soffit of the architrave. After the mitres are "put in," the tympanum is fined, and then the mutules and triglyph are fixed. The upper surface of the pediment and the portico is fined as soon as the mould of the cast part is taken off. The

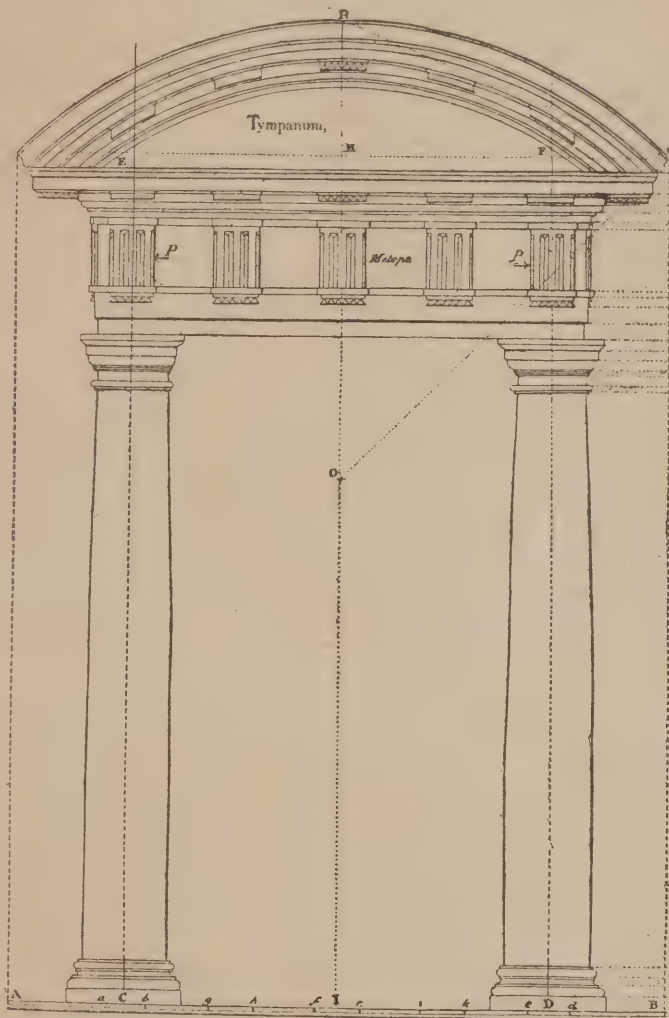


FIG. 1.—SETTING OUT AND FORMING A DORIC PORTICO.

for the horizontal cornice by bending it to fit the curve of the circular cornice. The front and sides of the mutules are sometimes enriched by a series of dog-tooth sinkings, as shown by the centre mutules and two external ones.

"The method of forming a portico in Portland cement is as follows:—First form vertical screeds on the walls close to the outer sides of the columns, taking care that they extend from the plinth of the column to a little above the level of the apex of the pediment, then fill in the plain intermediate spaces and rule them off, using the vertical screeds for bearings. On this surface set out the full size of the main parts of the work to be done. All measurements should be taken from the centre of the portico. This centre line is obtained from the centres of the columns, as described for the setting out. If the work is large, or the pediment to be run, the circular cornice or angular cornice, as the case may be, should be run first, so as to save long mitres, also to prevent stuff falling on the horizontal

columns and the soffit of the architrave are next formed, the former being carried out in a similar way as described for diminished columns."

Carnarvon Improvement Scheme.—A large improvement scheme has been adopted by the Carnarvon Town Council. It contemplates the demolition of three insanitary areas, and the erection on them of working class houses. The total estimated cost is £18,418.

Housing at a Profit.—A return of the income and expenditure for the past year in respect of the dwellings for artisans and labourers erected by the Liverpool Corporation has been issued. From the Victoria Square dwellings, which consist of 272 tenements and twelve shops, there is a net income of £1,613 17s. 11d. The Juvenal dwellings, comprising 100 tenements and one shop, produced a net income of £537 3s. In the Arley Street dwellings are 34 tenements; these give a net income of £273 11s. 4d. Gildart's Gardens dwellings—88 tenements—brought in a net income of £340 1s. 11d. St. Martin's Cottages consist of 134 tenements, and have realised a net income of £86 1s. 8d.

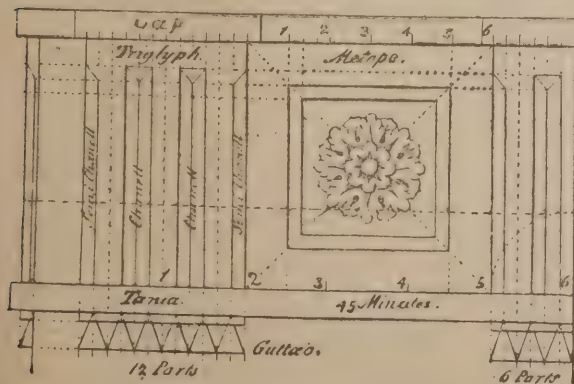


FIG. 2.—SETTING OUT TRIGLYPHS.

ARCHITECTURAL ASSOCIATION.

The Exterior Treatment of Sharp or Acute Angles in Street Buildings.

By A. W. HENNINGS.

A MEETING of the Architectural Association took place last Friday evening at No. 9, Conduit Street, Regent Street, W., the chair being taken by the President, Mr. G. H. Fellowes Pryne. The minutes of the previous meeting having been read and confirmed, the following gentlemen were unanimously elected members of the Association:—Messrs. E. G. Cole, J. H. Peacock, J. Bruce Merson, A. Wingate, H. G. Coyne and J. H. Watkins. The president announced that Messrs. L. Cabuche and F. E. Ravenscroft had been reinstated as members. A vote of thanks was then carried to the architects who had permitted the members to go over their buildings at the first Spring Visit on February 10th: to Messrs. Alfred Waterhouse and Sons for the visit to the University Hospital Extension Works; and to Messrs. A. Dunbar Smith and C. C. Brewer for permission to visit the Settlement, Tavistock Place. On the motion of the president, a vote of thanks was then given to Mr. W. H. Seth-Smith for his donation of ten guineas to the Library Fund. Mr. A. W. Hennings then read his paper, which was illustrated at the close by a large number of photographic lantern views which he criticized:—

The subject of this paper, "Exterior Treatment of Sharp or Acute Angles in Street Buildings," may seem to some rather far-fetched, and indeed it is hardly one that comes in student or class days, but sooner or later, when you get into active practice, you will have a site that is not right-angled, one whose prominent corner is much less than a right angle, and then you will find it indeed a difficult problem. First of all, the plan will trouble, for it is very obvious that the sharp angle is of no good to you—the ground enclosed is so small that it is clearly a waste of material to enclose it with bricks and mortar, and yet in a town the land is so valuable that the owner naturally does not like to sacrifice a square foot without a very good reason. Then, again, the very prominence of the angle seems to fit it especially for a business entrance; but whilst its position is apparently so suitable for that purpose, it is clear that an entrance so placed must mean long passages and consequent waste to reach the farthest parts of the building. I do not propose to-night to follow up this question of plan of the structure beyond the angle, but mention it in passing as one of the factors that will have to be considered. My attention to the subject was caused in the usual way, by having to design various buildings to fit angular sites. After a few attempts it struck me that the best thing to do was to carefully observe what had been done in such instances and I was somewhat amazed to find how many times the problem had been attempted, and also that very few of the attempts could be called really successful. The recent cutting of important new streets through old localities has resulted in the formation of many difficult sites, and, after carefully looking at the various treatments, I have come to the conclusion that they all fall under one of two heads:—Firstly, the architectural lines of the two façades are simply returned across the sharp angle; and secondly, a distinctive treatment to express the angle.

Now, the first method is the easiest and cheapest. It is, therefore, most generally used, and, although it is really an avoidance of the problem, it is not therefore bad; and as long as there is only a flat roof to the building there is no difficulty, but directly a pitched roof is required it is easy to see that the junction of the ridge running parallel to each front must meet at a great distance back from the angle, and will want something to mask it, whilst if the angle enclosed is so small that one roof only can be used for a covering, the result will be a ridge running towards the broadest part, and I venture to think it will pass the wit of

man to make such a roof presentable on the exterior.

To return to the plan. The first thing that suggests itself is to cut off the useless point—in fact, to truncate the angle—and the amount so cut off will depend chiefly upon how much land your client is willing to sacrifice. If it is only a little there will be only a narrow face to treat, and possibly the best thing for this is to carry the strings and cornices round and vary the windows, but it is surely the most bald way of treating it by simply cutting off the angle. The right thing to do seems to be to make a small return at right angles to the façades and then to fill up the intervening space with a wall at right angles to the bisection of the angle. This at once gives interest, and not only satisfies the eye with proper mitres to the strings and cornices, but serves a second useful purpose by well enclosing any detail put on the end. Do not in any case put a distinct feature on to the end unless you so enclose it—for the inevitable result is that this feature will look stuck on and not grow, as it should, out of the structure.

If, however, a considerable angle can be cut off so that there is a reasonably wide face to treat, you will at once have room for special features if the site and purpose of the building warrant it; but the before-mentioned right-angled returns to the façades are absolutely necessary to enclose and mark it.

Another way is to sacrifice the point and join the two façades by means of a curve. This is the most popular way to judge by the number of times it occurs in our streets, and any treatment of this must be ruled by the smaller or greater radius of the curve. If small, there is very little scope, and perhaps the best thing is to simply run the strings to cornices round it; but this requires care. Again, the necessity of right-angled returns to the façade must be borne in mind; the curve is so much more clearly defined by their use, and the breaks, be they small or great, at once give a chance to enclose a special feature. Still another way to enclose the curve is by means of projections taking the form of pilasters or strips, and there is a very notable example of the bold effect of this treatment in Mappin and Webb's premises at the junction of the Poultry and Queen Victoria Street.

There are also examples, and good ones too, where there is no break or mark, but the effect there seems to have been produced by reason of the great size of the curve, and it is really the façade continued and can hardly be called a treatment of an angle site. Returning to the smaller curve, the natural growth upwards seems to be towards some sort of turret and it is in this that there are so many failures. So long as the features are inclosed by the lines of the building they are kept in their places, and unless very strange and uncouth do not greatly offend. But directly they get clear and are outlined against the sky, and have to be judged on their own merits, the difficulty begins. Here, it may be remarked, that no amount of ingenuity displayed in the formation of a turret by transitions from octagons to circles and back again, with all sorts of cunning and spicy detail, will atone for the lack of pleasing outline. Many of the competition designs published in our technical journals show this extreme cleverness, but when any of them are carried out somehow the result is not so good, and with humiliation one has to confess that the sober, simple outline to be seen on so many stable turrets erected during the last century are much more satisfactory than the clever but laboured productions of the present day. They are to my mind products of that unrestfulness so typical of the times.

As to the window treatment of the curve, the size must determine how many windows there shall be at each level. If very small, a blank end will probably be best, for lintels or arches put on a small curve have a very uncomfortable and weak look from certain points of view. This is, perhaps, a truism, but you will find modern examples of the error.

There are some very satisfactory treatments where a pier is at the centre of the face of the curve with windows each side, and certainly the effect is strong—it seems to efficiently

buttress the angle. The introduction of a doorway at the base of the curve does not seem very desirable, although it is frequently done, but it tends to weaken the appearance, and its details will inevitably break the clean sweep of the curves.

Another point for consideration in the treatment of an angle or of a curved end is—how many of the horizontal features of the façades should be taken round or across it. Some are necessary to tie it in, but if all are taken across the result seems to be merely a continuation of the façades, and it will, I think, be very clearly seen that the most successful of the designs are those where the principal and strongest features are used, the subsidiary ones being stopped by a pier or return.

In City buildings, however, the most difficult place to treat properly seems to be the shop front. If there is no door the angle is obviously a splendid place for the display of goods, and piers sufficiently substantial to satisfy the eye are seldom allowed. This is a lamentable fact, but still it is a fact that you will have to deal with, one that will cause you much trouble. To ignore it, and treat the building as a design only above the shop cornice, is weak, but it is the course usually followed, and to judge such designs you must see them when the shutters are up, when a solid base sufficient to support the superstructure is apparently formed. An answer to this objection is that when the shops are in use the streets are so crowded that this defect is hidden, but surely it is always possible to bring some strong line down, and the right-angled returns to the façades before advocated will here serve a very useful purpose.

In domestic or office designs it is nearly always possible to get a strong base, as, for example, the delightful corner at the Institute of Chartered Accountants, where the stonework of the base is not only carried right round the curve, but its appearance of strength emphasised by means of horizontal rustications.

There is yet another way of treating the angle, and that is to so mask it that it is impossible to know that it is an acute angle. This is hardly a commendable thing to do, but there is an important example in the Bank of England at the corner of Princes Street and Lothbury. If it were not for the tanks above the attic storey you would not guess that the angle was less than a right angle, whereas it is really very sharp. No one can deny its cleverness, but it does not seem to be on right lines.

The City abounds in various angular treatments, and honest criticism must admit that many of them are very clever indeed; there seems to be no lack of imagination in them, and oftentimes they must be judged by their design and not by their detail. The latter is often bad—very bad, and would disgrace our Elementary Class of Design—but there the design is, and as such it is to be criticised. The City is, indeed, a glorious school for study, and is a great example of the truth of the old tale of "Eyes and no eyes." To those who have learned the language the streets become, as it were, an open book, wherein something good and useful can always be read, but how many of us do so? A rush from the train to the office in the morning, and another rush back in the evening gives one but a blurred idea of what is to be seen. But go up to town one fine summer's morning—say, between four and five, before even the workmen begin to get about—and you will be astounded at the wealth of design there is to be seen when all the streets are quiet, and you can stand to look at a building without attracting a crowd. Then you will find the charm of London and at once come to the conclusion that many cities we rush to see on the Continent are not to be compared with ours—not even for picturesqueness. What glorious sketches many of the streets would make, and perhaps some day we may even get some in the Association Sketch Book.

Mr. H. D. Searles-Wood proposed a vote of thanks to the lecturer which was seconded by Mr. W. H. Seth-Smith, and supported by Messrs. S. F. Clarkson, Booth, G. B. Carvill, Matt Garbutt, C. H. Brodie, and G. H. Fellowes.

Prynne. The motion was then carried unanimously, and Mr. Hennings replied. The chairman announced that the next meeting of the Association would take place on March 9th, when Mr. C. E. Bateman would read a paper on "Small Houses." The meeting then terminated.

Travel: Part of an Architect's Education.*

By CHARLES OWER.

TRAVEL is as necessary a part of the architect's education as drawing or mathematics, and students of the fine art of architecture must not forget that it is necessary to be strong, healthy, well-educated, and gentlemanly in manner, to work hard, and to be content with nothing less than the best. Our student must have the faculty for taking infinite pains, and be possessed of a strong body and a healthy mind, with the elements of a liberal education ground into it. This being so, an architectural student should spend, at least, half his leisure time in the open air cycling, sketching, botanising, examining the quarries and the buildings in progress in his district during the summer; and in winter he should dance, skate, hear good music, and read the best literature, in order to become a cultured man, which, in the opinion of Matthew Arnold, can be attained by reading about five hundred books, which give a knowledge of the best that has been thought and said in the world. The other half of the student's time outside the office should be devoted to scientific and artistic evening classes.

The architect should know something about everything, and as much as possible about his profession—"Age cannot wither nor custom stale its infinite variety."

Architecture is an art which has come down to us from the earliest ages, and if we are to learn by the works of the great masters we must go to see these works. It is impossible to appreciate a great picture by looking at photographs or engravings of it, and the conditions which affect the study of a great building are much more complex than those of a picture. A picture can be seen in one light only, the building in many. The building changes in the course of years, but the picture remains the same. A building is affected by its surroundings, and the picture is not; yet, there are some persons who would recommend a painter to travel, while regarding this as unnecessary for the architect. Such persons never get their ideas expanded beyond their local prejudices, for it will be found that all our leading men travel, sketch, and read. In all time past this has been the case, else how do you account for the spread of great architectural ideas in ancient times—where did our rounded and pointed Gothic arches come from? Certainly not out of our soil. Where did our grand cathedral architecture come from? Not out of the North. No. All our architectural ideas came, like our religion, from the Far East—brought to our shores by men who travelled when few did so. At the present time travel is more than ever a necessity. How do you educate an artist?—by showing him fine paintings; how a sculptor?—by allowing him to see the finest ancient and modern statues; and how an architect can be educated without seeing fine buildings, I do not know. It becomes us, therefore, to enquire—(1) Why should we travel? (2) How should we travel? (3) When should we travel? (4) Where should we travel? (5) What should we do when travelling?

Why should we travel?

The fact that travel enlarges a man's mind, gives him new ideas, makes him more catholic, is too well known to need much emphasis. But, in addition, there are reasons which are very special to the student of architecture.

It has been the universal necessity of our profession to sketch, and every man who ever

reached a reputable place was draughtsman sufficient to express his ideas in the form of perspective sketches of the forms he saw in his mind's eye. But this faculty was not gained by mere office work; it was fostered by the drawing of natural objects and buildings. These studies should not stop at ancient buildings, but should include any good modern work. In any case details and mouldings can only be appreciated by close examination and measurement on the spot.

In the usual routine of an office training, a man gets into certain ruts, styles, or tricks of design, which is a dangerous state, leading to conceit and all kinds of trouble and to the idea that if a man can make a fairly good drawing he is therefore an architect. You all know the kind of man, and there is no cure for him but travel.

An architect should also know something of the other fine arts, and should have seen the great art masterpieces, which, as a rule, are in the neighbourhood of fine buildings. These are some of the special reasons why the architect should travel.

How should we travel?

This part of my subject naturally includes the preparations for travel. Now I consider that the great preparation one has to make is the preparation of oneself—the preparation of the mind. So far as I know this can be best done by reading first the best books dealing with the subject generally, such as Ruskin's "Stones of Venice," "Seven Lamps of Architecture," and the various books referring to the particular district or place to be visited.

Nothing makes a tour so charming or profitable as this kind of preparation, and if you are engaged in studying a building or district of which you know the history, it makes the whole place live. I would recommend to you for a simple experiment to go and see Stirling, Dunblane, and Doune, and then to take a good map and go to the hill behind Callander and trace the course of the stag in "The Lady of the Lake." How much more you can get out of Florence and Venice after reading Ruskin, Romola, "The Makers of Florence," "The Makers of Venice," and from Rome after Marion Crawford's "Ave Roma Immortalis," and Hare's Walks, those only who have done it can know. Therefore, I say, read well before you start. Your kit need not exceed about 40lbs. in weight.

Leaving all minor details to yourselves, a word about colours. Water colours are most commonly in use, but I prefer Creta Lavis pencils, an ounce of fine turpentine, a stump to spread or blend the colour, and a scrap of emery paper to clean it. Out of a case of pencils containing twelve colours, including white but no black, costing 2s. 9d., and weighing with the case 4ozs., I can get results, better, quicker, and with less trouble than when I used water colours.

Nowadays the bicycle is one of the handiest means of getting about in one's own district, and it is a good and economical way to spend a holiday to fix on a good architectural centre, and from it work the surrounding country. Brechin, Stirling, Linlithgow, Dumfries, Kelso, Durham, Lincoln, Oxford, and Cambridge are all suitable for this system of working in this country. Then in an architectural cycling tour (which should cost about ten shillings per day all told) you may select a route which will include a sequence of interesting buildings. One of the most interesting tours in this neighbourhood is to visit the residences of the ancient Scottish monarchs. Beginning at Falkland, in Fife, you can go through Kinross to Loch Leven, where Queen Mary was imprisoned, to Dunfermline; then to Edinburgh, Linlithgow, Stirling, Doune, Scone, Perth, and home. All along the route you will find matter for your sketch-book, beautiful scenery, and historical buildings. Don't forget to read your history of Scotland before you go, and Grant's "Yellow Frigate." Fife is full of quaint bits in Crail, St. Andrews, St. Monans, Strathmiglo, Culross, &c. I am inclined to think that in going from city to city the quickest way is always the best, so that you may have plenty of time to go slowly at the places where you

work lies. It may not be out of place here to say that travelling costs more the older you become.

When should we travel?

My answer to that is, as often as you can afford it, but especially when you are young. I maintain that parents or guardians who desire that their charges should have sufficient education to take a place in the front rank of the architectural profession must furnish the young man with sufficient means to travel for at least three months during the course of his apprenticeship. I calculate this would cost about £50. The present system produces students without zeal and practitioners without love for their art, because in their youth they are not made aware what a glorious and inspiring art they have the privilege of following. Therefore, I say, travel when you are young, enthusiastic, and before the stern necessities of business have increased your responsibilities.

Where should we travel?

Anywhere where there is good architecture. What you want is to get your view extended beyond the environment you are in all day and every day. See Edinburgh, Glasgow, Aberdeen, Peterborough, York, Chester, Oxford, Cambridge, and their environments; then Normandy, Paris, Germany, Italy, Spain, Berne, and Fribourg in Switzerland, and, if you are born wealthy and lucky, there is the mysterious East, with Egypt and India after that. Any place where civilisation and the Arts have grown old together, there you will find what you seek, if you seek aright. From Japan to Kirkwall you will find that men in all ages have had ideas worthy of your attention. By such means you will release yourself from hackneyed forms, and your work will be interesting and original. You will not be tempted to repeat one form of roof *ad nauseam*, nor do just the same as your apprentice master did under conditions which have much improved since he wrought.

What should we do when travelling?

We should sketch, take notes, and photograph anything that strikes us as uncommon, picturesque, or beautiful, not forgetting to make plans and use colour to elucidate our meaning. There is not time nowadays to sit down before a building and make a drawing of it, when with a Kodak you can get a sufficient view of the building in a fraction of a second, which, conjoined with sketches of the mouldings and a thorough examination of the plan, should be sufficient. To sit down to sketch an elaborate house is a splendid exercise, but it is not business, any more than frontal attacks are admissible in modern warfare. To become enthusiastic over architecture you must have seen it, and to really see it once through the proper eyes is always to love it. But you must go out into the world to see it, and to do that you must travel.

Rebuilding of Highgate Archway.—The rebuilding of Highgate Archway is practically completed. All the girder work is finished; the old stone and brick arch is rapidly being demolished and will soon be a thing of the past.

Stockport Infirmary.—The Diamond Jubilee wing (estimated to cost about £12,000) has made but slow progress during the last twelve months owing to the building trade disputes, but it is hoped that the new building will be ready for occupation this year.

The Provident Institution of Builders' Foremen and Clerks of Works has just issued its annual report, which shows the excellent work this institution is performing. The amounts paid for pensions to men and women have been increased, with a corresponding increase in the total expenditure, which, considering the great good affected by this fund, should be quickly made up. During last year the sum of £366 12s. was expended, making a total of £10,331 13s. 6d. expended in pensions for the last forty-nine years. Subscriptions and donations should be sent to the treasurer, Mr. J. Stapleton, 35, Aytoun Road, Stockwell, S.W.

*Résumé of a paper read before the students of the Dundee Institute of Science and Art, on February 24th, 1900.

A LARGE BRIDGE COMPETITION: PREMIUMS, £1,500.

By JOHN PLUMMER, SYDNEY, N.S.W.

THE Australian colonists, like their American kinsfolk, manifest a preference for doing things on a big scale whenever possible. In Sydney the citizens possess the largest organ and one of the largest town halls in the world; while north and south of the city are two of the largest public pleasure reserves to be found in any country outside the United States. The Hawkesbury River, of which the people of New South Wales are as proud as of the famous Sydney Harbour, is spanned by an immense railway bridge, the largest of its kind in the Southern Hemisphere, and, as regards foundations, a most remarkable one. The actual length of the bridge between the abutments is 2,900ft., and it is supported by six piers, each resting on a caisson filled with concrete and forming a solid foundation. The caissons are respectively 101, 155, 146, 147, 144, and 162ft. in depth, these different measurements representing the inequalities in the depth of the river; the last-mentioned caisson being the deepest known foundation for a bridge. The main girders are 410ft. long from centre to centre of bearings, the height of the principal girder being 58ft. above the surface of the river. Each span was constructed on a large pontoon, 335ft. long, 61ft. wide, 10ft. deep, and provided with staging sufficiently strong to bear the whole weight of the immense mass of ironwork, and high enough to enable the span, on the pontoon being floated at high water into position, to clear the tops of the opposite piers, on which the girders rested when finally in place. After the span was ready the water was pumped out of the pontoon and it was towed into its destined position between the two piers on which the span was intended to rest. As the tide fell, each end of the span descended into its proper place, and the pontoon and staging, released from the ponderous load, floated back to the gridiron. The bridge was formally opened for traffic on May 1st, 1889. The New South Wales Government is now entertaining an even more ambitious idea, that of connecting the northern and southern shores of Sydney Harbour by a bridge, which, under any circumstances, must be one of the highest and longest in existence. Such a structure has become a pressing necessity, but although its importance has been recognised by successive ministries, that of which Mr. Lyne is the head has been the first to take practical action in the matter by offering a couple of premiums, one of £1,000 and another of £500, open to all the world, for the most suitable designs for the required bridge. The designs must provide for two footways each 10ft. wide, two roadways each 20ft. wide, or one roadway 40ft. wide, also for a width of 24ft. in the clear for a double line of railway. It is considered that the bridge should be a single-tier bridge, as the extra height to be surmounted by the railway or road, as the case may be, might be an objection, but designs showing either the footways or the roadway, or both, overhead, may be submitted, and will receive consideration. The bridge must consist of a single span, and a clear headway of 180ft. above high water, for at least the middle 600ft. of its length, must be provided. The structure must be designed to carry a live load of 130lbs. per superficial foot of roadway and footpath, and every part of the roadway is to be capable of carrying a moving load of thirty tons on two pairs of wheels, and for a train on each line of railway consisting of three of the heaviest class of engine and tender in steam, followed by loaded trucks. The engines and tenders to be taken as weighing 110 tons, with a length of 55ft.; and an axle load on drivers of eighteen tons, the distributed load due to the loaded trucks to be taken as one and a half tons per lineal foot. The competitive designs will have to be delivered in Sydney not later than August 1st, 1900.

"BUILDERS' JOURNAL" SHILLING FUND.

AN OFFER TO COLLECTORS.

A SPECIALLY gratifying feature in connection with our Shilling Fund has been the way in which many of our readers have made use of the collecting forms we issued to obtain subscriptions from their friends or fellow workers. We feel convinced that a great deal more might be done in this way, as there must be many thousands in builders' workshops and architects' offices throughout the country who would willingly give a small donation to such a worthy cause if a personal request were made to them, though possibly they would not take the trouble to send off a contribution on their own account. In order to encourage those who have begun to collect and to enlist the services of many fresh collectors, we have decided to present a copy of the latest issue of "Specification" to every contributor or collector of twenty shillings and upwards. "Specification" is becoming more and more widely known as an invaluable book of reference for architects and builders; it is published at 5s. nett, and contains a vast amount of conveniently arranged and thoroughly reliable information on an immense variety of subjects relating to architectural and building practice. This offer applies equally to those who have already sent in their contributions; if they wish for a copy of "Specification" to be sent to them, will they kindly send us word to that effect? Donors of smaller sums than twenty shillings may, of course, make themselves eligible for this gift by sending in the amount of the difference.

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Legal Position of Architects in relation to Local Authorities.

By E. J. NALDRETT,
BARRISTER-AT-LAW.

A MEETING of the Society of Architects was held on Thursday evening last at St. James's Hall, Piccadilly, W., when Mr. Silvanus Trevail, F.R.I.B.A., J.P. (vice-president), presided. After Messrs. M. Hall (Halifax) and W. Stair (London) had been elected members, and Mr. G. E. Mitchell (Lowestoft) had been elected student, the following paper on "The Legal Position of Architects in relation to Local Authorities" was read by Mr. E. J. Naldrett, Barrister-at-Law:

This paper deals with the circumstances under which an architect may, sometimes, be called upon to carry on his work. The legislature has, within the last twelve years, not only brought new authorities into existence, but has largely extended the powers and duties of those which have been from time to time constituted. The Local Government Acts of 1888 and 1894 are landmarks in the history of local government outside the metropolis, and most important changes in the constitution of governing bodies within the metropolis are introduced by the London Government Act, 1899. Under our present system, we have county and district councils, municipal corporations, school boards, boards of guardians, and other bodies. These authorities are alike in this respect, that they are all corporate bodies having perpetual succession and a common seal, and consequently are within the general rule of law which requires the contract of a corporation to be under seal, subject to certain exceptions, which will be noticed presently.

A local authority may, and there are not wanting instances in which this has been done, appoint an architect as their permanent officer. This renders it necessary to consider the powers of the various authorities relative to the appointment of officers. An authority may retain the services of an architect without constituting him their permanent officer. This is the course generally adopted. In both cases the relation is contractual, but in the first-named regard must be had to any special provisions which may exist as to the appointment of officers, as well as to the formation of contracts. It is of the utmost importance to architects that the circumstances under which a valid and binding contract may be entered into with a local authority should be fully appreciated. It is probably within your knowledge, if not within your experience, that many a fee has been lost in consequence of some defect in the form, or in the mode of execution, of a contract with a local authority. Claims, just and reasonable in themselves, have been defeated by insistence upon some such technical objection on the part of the authority. I cannot do better, in drawing your attention to the general rule of law as to the

Contracts of a Corporate Body,

than refer to the case of *Church v. Imperial Gas, &c., Co.* (6 A. and E., 861), decided as long ago as 1838, in which Lord Denman, C. J., said: "The general rule of law is that a corporation contracts under its common seal: as a general rule, it is only in that way that a corporation can express its will or do any act. That general rule, however, has from the earliest traceable periods been subject to exceptions, the decisions as to which furnish the principle on which they have been established, and are instances illustrating its application, but are not to be taken as so prescribing, in terms, the exact limit, that a merely circumstantial difference is to exclude from the exception. The principle appears to be convenience amounting almost to necessity. Wherever to hold the rule applicable would occasion very great inconvenience, or tend to defeat the very object for which the corporation was created, the exception has prevailed: hence the retainer by parole of an inferior

servant, the doing of acts very frequently recurring, or too insignificant to be worth the trouble of affixing the common seal, are established exceptions." The principle thus laid down has been confirmed and followed in subsequent decisions. When a board of guardians appointed a clerk to the master of a workhouse, not by deed (that is, not under seal), and during his tenure of office discharged him, it was held that an action for wrongful dismissal would not lie as the appointment was not under seal. In another case it was laid down that the making of plans for offices was not of frequent occurrence nor a necessary part of an urban authority's business. It is quite clear, therefore, that the appointment of an architect is not an event of so frequent occurrence or of so small importance as to take it out of the operation of this general rule of law, which requires that the contract should be under seal. This general rule, applicable to corporate bodies, must be considered in connection with the statutory provisions regulating the proceedings of the various local authorities. I think it will be convenient if I now pass to a consideration of some of these special provisions concerning the appointment of officers and the formation of contracts.

Education Act, 1870

(32 and 33 Vict., c. 75). This Act, in section 35, provides that a school board may appoint "a clerk, a treasurer and other necessary officers" to hold office during the pleasure of the board. The authorities may assign to their officers such duties and salaries or remuneration as they think fit, and may from time to time remove them from office. No such appointment is to be made, except at a first meeting of a school board, unless notice in writing has been sent to every member of the board. Two or more school boards may arrange for the appointment of the same person to be officer to both or all of such boards. Schedule III., rule 7, of the Act provides that the appointment of any officer may be made by a minute of the board, signed by the chairman and countersigned by the clerk (if any), and any appointment so made shall be as valid as if it were made under the seal of the board. In this provision we have a statutory exception to the general rule of law. The appointments of school board officers are not liable to stamp duty. There are no special provisions as to other school board contracts in the Education Acts. The general rule of law applies to them. The following decisions of the courts are very instructive as to the relations which may exist between school boards and architects whose services they retain.

In *Scott v. The Clifton School Board* (14, Q.B.D. 500) the plaintiff by a minute, signed by the chairman and countersigned by the clerk, was appointed architect of the board, and under orders given by subsequent minutes, so signed and countersigned and communicated to him, he prepared plans for the board. It was held that, by virtue of the provisions of the Act, he was entitled to recover payment for his services, although the appointment and orders were not under seal. It will be seen by the judgment of Mr. Justice Mathew in this case that, owing to the nature of the appointment, the architect became an officer of the school board.

In *Start v. West Mersey School Board* (15 T.L.R., 442) Mr. Justice Wills, in giving judgment, said that the claim of the plaintiff took the form of an action for services rendered. The only real contract between the parties was one expressed in a resolution by the defendant corporation to pay the plaintiff $\frac{1}{2}$ per cent. on the cost of construction of the buildings to be erected. The action was in substance an action for breach of that contract, which was not under seal. He would have been glad if he could have taken a different view of the case, for the objection that the contract was not under seal was not one with which he could have sympathy. The objection had been taken, and he could not alter the law. Judgment was given for the defendants, with costs.

In the first case the plaintiff, an architect

became an officer of the school board, and, owing to the special provisions of the Act, he was able to recover for his services rendered, a contract under seal not being necessary. In the second case the plaintiff was not an officer of the board, and relied on a contract for services rendered. He failed to recover because the contract was not under seal.

In another case a school board resisted a claim by an architect for £250 as damages for breach of contract to employ him in the erection of schools, and for the loss of 5 per cent. on the cost of the buildings, on the ground that the resolution purporting to appoint the architect was not signed by the chairman and countersigned by the clerk as required by the rule, and was not under seal. The case was settled by judgment being entered for the defendants, without costs, the unfortunate architect receiving only £10 10s., which had been paid into court. I will now pass to the provisions of the

Public Health Act, 1875

(38 and 39 Vic., c. 55), which imposes upon an urban authority the duty of appointing a clerk, a surveyor, and certain other officers, also, "to appoint or employ such assistants and other officers . . . as may be necessary and proper for the efficient execution of this Act" (section 189). The authority may make regulations as to the duties of officers, pay them reasonable salaries and allowances and remove them at their pleasure. The Act also contains provisions that officers are not to be concerned or interested in any bargain or contract with the authority for the purposes of the Act, prohibiting the acceptance of any fee or reward other than the proper salary and allowances, and as to security being given in certain cases. A surveyor is a recognised officer, but an architect is not mentioned in the Act. The words "and other officers" are probably wide enough to cover the appointment of an architect as an officer of the authority. In such a case the foregoing provisions, as to the appointment of officers, would apply to him. This course is not likely to be adopted to any extent for several reasons; one is, that the surveyor is often called upon to discharge the functions of an architect in connection with small undertakings; and another is, that it is always open to the authority to retain the services of an architect, when required, by contract in the ordinary way.

The Public Health Act, 1875, contains provisions as to contracts by an urban authority to which I invite your attention. Every contract, the value or amount of which exceeds £50, must be in writing and sealed with the common seal of the authority. It must specify the work, materials, matters or things to be furnished, had or done, the price to be paid, and the time or times within which the contract is to be performed; also, it must specify some pecuniary penalty to be paid in case the terms of the contract are not duly performed. These provisions contained in sub-sections 1 and 2 of section 174 are obligatory, not directory merely, and unless observed the contract cannot be enforced. The following sub-sections, 3 and 4, contain directions to be observed by the urban authority, but they are directory only, and a failure to comply with them, on the part of the authority, would not render inoperative a contract in other respects valid. There are a number of decisions by the courts on cases arising under this section. I will refer to some of them by way of illustration. The defendants, an urban authority, verbally directed their surveyor to employ the plaintiff, an architect, to prepare plans for offices. The plans were prepared and the defendants advertised for tenders for building the offices in accordance therewith; but when these were sent in it was found that the plaintiff's plans were upon too expensive a scale, and the intended offices were not erected. There was no ratification under seal of the Act of the act of the plaintiff's surveyor in procuring the plans. At the trial the jury found that offices were necessary for the purposes of the defendants, and the plans were necessary for the erection of the buildings for which they were designed, and that the cost of the plans

was £94. It was held that, assuming the contract was founded on an executed consideration, the plaintiff could not recover, for section 174 was imperative and not directory, and applied to every contract for a sum exceeding £50 entered into by an urban authority (*Hunt v. Wimbledon Local Board, L.R., 4 C.P.D. 56*). It has also been held, following the case I have cited, that sub-section 1 applies to an executed contract of which the urban authority have had the full benefit and enjoyment, and which has been effected by their agent, duly appointed, under their common seal. An urban authority by contract, not under seal, employed an engineer to perform certain work exceeding in value £50; this he did, and then required the authority to affix their seal to the contract. This they did. It was held that as part of the work was unperformed when the seal was affixed, and there was consideration for affixing it, in the engineer's promise to complete the work, it was competent for the authority to constitute the contract a good contract, under seal, within section 174, in respect of the work already done, and that therefore the engineer was entitled to maintain his action for the value of that work. The absence of a contract under seal is not the only objection which has been successfully taken. A company entered into a contract with an urban district council in writing, duly sealed by the authority, to light by means of electricity certain streets, for a period of five years, for an agreed annual payment. The contract contained stipulations with respect to the materials to be supplied, the things to be done, the prices to be paid, &c., but contained no clause specifying any pecuniary penalty to be paid in case its terms were not duly performed. It was held that the contract could not therefore be enforced against the authority. We have it upon the authority of a very eminent judge that the provisions of the sub-sections 3 and 4, to which I have referred, are directory only. A similar duty to appoint officers is imposed by the Act upon rural district councils. The provisions as to contracts relate to urban councils only. They apply to a municipal corporation when acting as an urban sanitary authority.

Municipal Corporations' Act, 1882

(45 and 46 Vict., c. 50). In this Act also are provisions for the appointment of certain officers, followed by the general provision that a council shall from time to time appoint "such other officers as have been usually appointed in the borough, or, as the council think necessary," with reasonable remuneration, and to take security for the due execution of the office. It is improbable that an architect would be appointed an officer of a municipal corporation except in so far as the borough surveyor may discharge the functions of an architect. Municipal corporations, however, frequently retain the services of an architect, and the ordinary law as to contracts by corporations, which I have described, governs the relations. The contract should be in writing and under seal. There are no special provisions such as are to be found in the Public Health Act, 1875, but a municipal corporation, when acting as an urban sanitary authority, must follow the requirements of the last-named Act.

Local Government Act, 1888

51 and 52 Vict., c. 41). A county council has under this Act the power to appoint, to remove, and to determine the salary of a county surveyor. There are provisions for protecting the interests of existing officers at the time of the passing of the Act. The powers of a municipal corporation to appoint officers, other than those specifically named, are conferred upon county councils, together with the right to require security and to determine the remuneration, &c. A county council being a body corporate must contract in accordance with the general rule of law. It was under this Act that the officers of the Metropolitan Board of Works became the officers of the London County Council, and the powers, duties, and liabilities of the former body were transferred to the

latter. The powers of the superseded authority, in relation to officers and contracts, are noticed in the reference to the Metropolis Management Act, 1855.

London Government Act, 1899

62 and 63 Vict., c. 14). Under the provisions of this statute the vestries and district boards of the metropolis will be superseded by the establishment of borough councils. The powers and duties are transferred. The Act protects the interests of existing officers by providing compensation for those whose offices are abolished, or who suffer pecuniary loss. A reference must be made to the Metropolis Management Act, 1855, for the powers of the new councils as to the appointment of officers and entering into contracts. It will be their duty to appoint or continue, with power to remove at pleasure, certain officers, named in section 62, and "such other officers" as may be necessary for the purposes of the Act. There are provisions as to remuneration, taking security, &c. The councils will have power to enter into all such contracts as they may think necessary for carrying the Act into execution. Every such contract for works or materials the value of which exceeds £10 is to be in writing, and sealed with the seal of the authority. Copies of contracts are to be entered in books kept for the purpose. It may be pointed out that under the London Building Act, 1894, the London County Council may appoint a superintending architect of metropolitan buildings, with power to remove him and to prescribe the duties and salary to be attached to the office. An architect so appointed is prohibited from practicing or following any other occupation. He may, however, if he should be prevented by illness, infirmity, or other unavoidable cause, from attending to his duties, temporarily appoint a deputy with the consent of the council. The district surveyors of the metropolis are also under the control of the London County Council, and as vacancies occur they may appoint qualified persons to fill them.

Poor Law Acts

4 and 5 Wm. IV., c. 76, &c.) The Poor Law Acts and orders contain very precise provisions as to certain appointments enumerated, but there appears to be no general provision under which an architect can become an officer of a board of guardians. The ordinary contractual powers of a corporate body must be exercised by guardians when retaining the services of an architect. Contracts by guardians must conform to the rules of the Local Government Board. These regulations are applicable to contracts for the supply of goods and the execution of works, rather than to the engagement of professional services. The contract should generally be under seal and relate to some matter incident to the duties of guardians. Services retained by minute might be legally paid for by the guardians, but an architect, in the absence of a contract under seal, would not be in a position to recover for his services, except, possibly, in cases where a small amount becomes payable in connection with some obviously necessary proceeding. There are many judicial decisions on cases of

Contracts not Under Seal

in which guardians have been concerned. I will give a few examples in order of date. A contract for making a plan, not incident to purposes for which guardians are incorporated, is not binding. Gates erected at a workhouse, ordered verbally, are necessities and the guardians are liable to pay the price. A builder who executes works in addition to those specified in a sealed contract cannot recover the value. A tradesman who erects water-closets at a workhouse can recover the cost as the purposes for which guardians are incorporated require that they should be provided. A collector of poor rates cannot recover his poundage. A person employed to investigate incorrect union accounts is entitled to recover for work and labour done. These are all cases of a contract not under seal. You will not fail to realise the importance, in your relations with boards of guardians, of having a contract under seal.

There is one other matter I desire to draw your attention to in connection with guardians. The time for the payment of their debts, &c., is limited to the half-year within which they have been incurred or become due, or within three months after the expiration of such half-year, unless the Local Government Board extend the time, which they may do, for a period not exceeding twelve months after the date of the debt, &c. The half-years end on March 25th and September 29th. A parish council is a body corporate, but it need not have a common seal. Any act of the council may be signified by an instrument executed at a meeting of the council, and under the hands, or if an instrument under seal is required, under the hands and seals of the chairman presiding at the meeting, and two other members of the council. I have now dealt with the special provisions of the more important of the Local Government statutes. I have not attempted to deal with the provisions of local Acts. It remains for me to make a few

General Observations.

The appointment of an officer by a local authority appears to be complete by election, and no document in writing is required, but there should be a minute. The authority may properly pay the agreed salary or remuneration in respect of such an appointment. If, however, the officer seek to raise any question as to a breach of the engagement, in a civil court, the proceeding will fail if the contract be not under seal. This last observation does not apply in the case of a school board, to an appointment under the Public Health Act, if it be worth not more than £50, and under the Metropolis Management Act, 1855, if it be not more than £10 in value. Notwithstanding conflicting decisions upon the point, the same principle seems to apply to payments by an authority on an apparent contract, apart from the appointment of officers, not strictly in accordance with the provisions of the statute. For example, a contract under the Public Health Act exceeding £50 in value and not under seal. When the debt is justly incurred there is nothing illegal on the part of the authority in meeting it, although the payment is one which could not be enforced by the other party to the contract. I am, perhaps, in danger of travelling outside the subject in asking you to note that when an urban authority enter into a contract in writing and under seal with a contractor for the construction by him, e.g., of sewerage works, and the contract contains the usual power for the engineer, who has the control and supervision of the works, to vary, alter, enlarge, or diminish any of them, all variations and alterations coming within the terms of the power conferred on the engineer can be validly made without being under the seal of the authority. The fact must be borne in mind that the statutory authorities referred to cannot travel outside the powers conferred on them by statute. Their acts would be *ultra vires*. Obligations entered into by authorities in the most solemn form, are not binding upon them, if *ultra vires*.

There is another statute to which I feel it is important to draw your attention, viz., the

Public Authorities Protection Act, 1893

(56 & 57 Vic., c. 61). It contains the provision that where any action, prosecution, or other proceeding is commenced in the United Kingdom against any person for any act done in pursuance, or execution, or intended execution, of any Act of Parliament, or of any public duty or authority, or in respect of any alleged neglect or default in the execution of any such Act, duty or authority, certain provisions are to have effect. One of them is, that the action, prosecution, or proceeding shall not lie or be instituted unless it is commenced within six months next after the Act, neglect or default complained of, or, in case of continuance of injury or damage, within six months next after the ceasing thereof. It has not been determined by the Courts whether this provision applies to a debt due from a local authority. My suggestion to you is that delays are dangerous. If you should

be so unfortunate in your relations with a local authority as to find a resort to legal proceedings necessary, see that you move within the prescribed limit of six months, and so avoid the unpleasant experience of discovering that a short lapse of time can be an effectual bar to your claim, and that you have become liable to pay solicitor and client costs.

It has been suggested that this paper would not be complete without a reference to the subject of competitive designs. It is the practice of local authorities to invite architects to send them designs under conditions favourable to themselves, but not always quite satisfactory from the point of view of the architect. I have before me one of these formal invitations which may probably be taken as a fair example of this kind of document. Its terms are such that the local authority reserve to themselves an almost entirely free hand. The acceptance of a design is hedged about with qualifications. If accepted there is no obligation upon the authority to carry out the works in accordance with it. Even if the authority accept and carry out a design they are free to appoint an architect, other than the author, to supervise the works. The estimated cost upon the designs are based is open to amendment. In these circumstances, beyond securing a premium for an accepted design, an architect has no claim upon the authority, however much of skill and care he has bestowed upon the preparation of the design submitted. He voluntarily places himself in the hands of the authority. In most instances he may safely do this and rely upon being honourably and fairly treated by the authority. I am informed that exceptions occur and a grievance is sometimes felt. There is no legal remedy.—A discussion followed, in which Messrs. Silvanus Trevail, W. R. Mallett, J. W. Dunford, and Ellis Marsland took part.

Correspondence.

Ellipse by Compasses.

To the Editor of THE BUILDERS' JOURNAL.

WALTON-ON-THAMES.

SIR,—Will Mr. J. A. Percival and Mr. R. E. Marsden please refer to the supplement to the article of December 6th, given on page 52 of the present issue, and consider Fig. 15 as a reply to their letters in your issue of January 3rd last. In the same issue, "Student" asked a question as to the drawing of an ellipse. This was replied to by Professor H. Adams, and finished thus: "Compass curves are all circular and cannot, therefore, be parts of an ellipse, which is a curve of constantly varying radius." The latter portion of the additional matter I send is partly in answer to this reply to "Student." R. RAMM.

[Mr. Ramm informs us that illness has prevented him replying earlier.—Ed. B.J.]

A Doomed Church.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—In your issue for February 14th, is an illustration of All Saints' Church, Lambeth, S.E., which we learn will shortly disappear, with the rest of the parish, to make way for the extensions connected with the London and South-Western Railway terminus at Waterloo. To the report is added: "Never before has a whole parish been wiped out for railway purposes." The present wholesale demolition, however, cannot really boast of such a distinction. When St. Pancras Station was built, certainly one whole parish, if not two or three, were entirely cleared away, as well as an excellent church with a pleasant spire (for a London spire), that used to stand upon the north side of the New Road, now known as Euston Road. The church and adjacent terrace were recessed from the actual roadway, and divided from it by bright green and well-kept grass, the swarded enclosure being protected by low posts connected by loosely-hung and spiked chains. But in spite of the

spikes—fifty years ago—I have enjoyed many a happy swing upon those self-same chains.—Yours obediently, HARRY HEMS.

RICHMOND.

SIR,—Mr. Hems is in error when he states that "one whole parish, if not two or three, were entirely cleared away" for the building of St. Pancras Station. The church and graveyard were destroyed, but this does not imply the entire sweeping away of a "parish." As a matter of fact the neighbouring Wharf Road, Battle Bridge Road, Ossulston, Phoenix, and Bull Streets to the north and west, and the many mean streets giving off York Road remain as fragments of the parishes largely, but not by any means wholly, acquired. I am sorry to have to correct Mr. Hems, whose foible appears to be omniscience.—Yours faithfully, C. G. H.

Valuation of Houses (Repairs and Empties).

To the Editor of THE BUILDERS' JOURNAL.

LONDON, S.E.

SIR,—If there is one thing more than another that vexes the soul of the owner of house property, it is the burden of repairs and "empties," the sting of which vexation lies in a disappointment. His agent or surveyor had made out a nice little statement showing rent, deductions, years' purchase, and total value—a rosy picture—and he eagerly purchased, only to be bitterly disillusioned when the ugly facts of losses and expenses came home. It is more difficult to justify than it is to understand why the average house-agent fails to muster up enough moral courage to tell his clients the plain truth on these matters. It must be the optimism characteristic of the profession that leads a valuation surveyor to dwell on the memory of some fortunate property, and to forget all others, when they coolly set down 10 per cent for repairs, and 5 per cent for empties and losses, and so succeed in effecting a sale. These thoughts beset me when I read on page 26 of the BUILDERS' JOURNAL for February 14th how that your expert, Mr. Brand, P.A.S.I., has the courage to go even one better than this, and to give us 5 per cent for repairs, and 2½ per cent for empties and bad debts. Such a figure is seen to be inadequate and misleading, when one remembers that a house needs redecoration in its various parts every three to ten years respectively—say equal to once throughout every seven years. Such a "through-out" seldom costs less than one year's rent—often much more. There, then, at once, is 14 per cent, to which must be added the necessary current repairs to ranges, roofs, drainage, plumbers' work, &c. This would be "repairs" under favourable circumstances. But what of some other, all too common, dangers to the pocket, i.e., when the drainage has to be reconstructed, when ugly cracks appear in the walls and ceilings, and the tenants refuse any longer to put up with the inconvenience arising from dry rot, smoky flues, damp walls, and other fundamental defects. Then again, the luxuries of the past have become the necessities of the present, and many an unfortunate owner is troubled with a pretentious old house lying fallow for lack of modern "appointments," and he finds himself compelled, at last, to spend, perhaps, half its value, or more, in improvements to make it "go." I could give hundreds of illustrations of this from my own practice. I will give some details of one which happens to be before me at the moment. It is a house in St. George's Road, Pimlico, gross rental value £120 per annum; built, I should say, about forty-five years ago; present owner bought it ten years ago, apparently in good order. In 1896 it was redrained at a cost of £70. Last autumn competitive estimates were obtained for general repairs and quite plain decoration, for which £477 has now to be paid. This sum included no improvements, and as the house is used as a charitable institution, not a farthing has been spent beyond bare necessities. Now, this ought to last for the next fifteen years, with, say, twice redecoration—at £90 each—and at least £5 a year for small current repairs. On

the total term of twenty-five years of ownership, this will show a total expenditure for repairs of £800, or 28 per cent. per annum on the rental value.

I cannot, just now, refer your readers to any published accounts of the class of leasehold property instanced by your expert, but if he or any other member of the Surveyors' Institution will turn to the "Transactions" of that body, vol. XXVI., p. 304, he will see a number of property accounts, including nine groups of small leasehold property in which the average over the whole, for repairs only, is about 25 per cent, and for empties 7 per cent. It is easy to produce a house that has cost almost nothing for repairs within a limited period, but sooner or later the expense must come, and the true annual value of repairs can only be ascertained over a long term. I should be glad to hear from any house-agent that the cost of one residence or a group has, over a term of say twenty-five years, not exceeded 12 per cent per annum; if it has not—and it is quite possible in isolated cases—whether the average of his whole business comes below that percentage as shown by, and worked out from, actual accounts, adding, of course, any sums paid for repairs by the client direct to his builder and not shown in the house-agent's books.

Turning now to empties and bad debts, Mr. Brand gives it to us as 2½ per cent,—a joy to contemplate if it were true; but it is sadly underrated and can only be taken as a minimum, not as an average. This risk varies in actual fact from 2½ per cent. to 100 per cent. It is a very speculative item in dealing with one house, and can only be approximated by taking the risk as it shows itself in a large number of houses. I should myself have set it down at from 5 per cent. to 12 per cent. or more, according to my knowledge of the property and the locality. The most favourable tenancy that one could expect would be one bearing a loss of only one quarter in fourteen years, namely, 2 per cent. But what of those houses that are frequently empty, of restless or dissatisfied tenants, of declining neighbourhoods, etc.; and what of tenants that get hopelessly in arrears? Your readers must know of many properties that have been long empty, and a very little of that sort of thing soon brings up the percentage. No house should be considered free from such risks. Let any house-agent refer to his books and compare his nominal total rent roll with the cash actually received; one need not wonder how many will come up to Mr. Brand's 98 per cent., or even how many will amount to 90 per cent.

Finally, what does your expert mean by his statement: "It is not usual to deduct property tax or Schedule A income tax, for the reason that all kinds of property, landed or otherwise, are chargeable; but all other taxes paid by the owner, in addition to . . . land tax (if unredeemed), tithe, water rate, etc. . . . must be deducted"? And what are the "rates and taxes" referred to as £5 in the example given?—Yours faithfully,

F. S. I.

The Somerset Arts and Crafts Association has decided to postpone its exhibition till the spring of 1901.

Excavations at Jerusalem.—An important part of the excavations which have recently been carried on by Dr. F. J. Bliss at Jerusalem was the clearing of the famous Pool of Siloam, which to this day is used by the Arabs as a bathing place. Search was also made for the tomb of David, and at one time Dr. Bliss was of opinion that he had succeeded in finding it, but further digging contradicted this view.

FIVE SHILLINGS IS THE PRICE of the last issue of "Specification," the valuable reference book for architects and builders. It is cheap at the price, but you can get it for nothing by complying with the simple conditions mentioned on page 56.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Build by whatever plan Caprice decrees,
With what materials, on what ground you
please."—COWPER.

Our Inset Plates.

THE house at Hampstead is to be erected on a site in West Heath Road overlooking the Heath, and the rooms are planned round a square hall, which is carried up above the roofs to form a smoking room, from which extensive views will be obtained of the surrounding country. The building will be faced with red bricks and stone dressings, the upper floor being stuccoed, the gables half-timbered, and the roofs covered with green slates. The hall will be furnished with high wainscot dado, ornamental plaster friezes and scagliola piers. The architects are Messrs. Harrington and Ley, of 108 Fenchurch Street, E.C. The Galilee porch of Ely Cathedral is a very fine example of early English design and is often considered to have no equal—except perhaps that of Durham. It was built by Eustace, Bishop of Ely (A.D. 1198—1215) at his own cost. The reproductions we publish are from the measured drawings of Mr. Charles E. Varndall. The sketch of Duart Castle is by Mr. F. Inigo Thomas.

Strand Improve- ment.

AMONG the many more or less interesting and picturesque buildings which will be destroyed in connection with the Strand improvement is the famous old tavern, the "Spotted Dog" in Holywell Street. The sign of this house consists of a white dog with black spots, so fashionable some years ago. Half a century back the house was kept by one "Spotty Wilson," and at that time was in close connection with another further west, known as the "Bull's Head." Both the "Spotted Dog" and the "Bull's Head" were in their time well-known meeting places for those interested in prize-fighting; it was at the latter place that all the arrangements were made in relation to the great fight between Tom Sayers and Heenan, the American, in 1860. In connection with the impending destruction of Holywell Street, it will be interesting to refer to our article and illustrations published in No. CCLIV.

Church Crafts League.

THE inaugural meeting of the Church Crafts League was held at Leighton House on February 20th. The Bishop of Rochester was elected president, and Dr. F. D. Drewitt honorary treasurer. The following artists were elected to serve on the committee:—Sir W. B. Richmond, R.A., Mr. Henry Holiday, Mr. W. Goscombe John, A.R.A., Mr. Conrad Dressler, Mr. A. G. Walker, Miss Emily Ford, Miss Lowndes, Mr. T. Stirling Lee, Mr. Alex. Fisher, Mr. Byam Shaw, Mr. C. O. Skilbeck, Mr. J. Phillips. Also the following clergy and others:—Canon Rhodes Bristow, Canon Henry Scott Holland, Canon Gore, Canon Armitage Robinson, Rev. Charles Biggs, Rev. Percy Dearmer, Hon. Mabel de Grey, Mrs. Russell Barrington, Mr. Dyer Edwards. The rules and objects drafted by the provisional committee were then discussed and adopted, the objects being—(1) To bring the clergy and others responsible for the construction and decoration of churches into direct relation with artists and craftsmen engaged upon work of the kind; (2) by this means to restore individual character to art in churches, and to remedy the evil results of commercialism in the matter. The members of the league will be either "ordinary" or "artist" members, and the latter class will be elected by a two-thirds majority of artist members present at a meeting after due notice given. The committee is to consist of twenty-four members besides the president and treasurer, of whom twelve are to be artists, and not less than six clergy. It was announced that the following had consented to be patrons of the league:—Mr. G. F. Watts, R.A., the Archbishop of York, and the Bishops of Bristol and Steyney. The temporary address is: The

Secretary, Church Crafts League, Leighton House, 2, Holland Park Road, Kensington, W.

Discoveries at Furness Abbey.

THE researches which Mr. St. John Hope has been making at Furness Abbey on behalf of the Cumberland and Westmorland Antiquarian Society have shown that there have been several rebuildings of the church; the transepts have been lengthened, and the chapel has had apsidal ends; and so has the presbytery, so far as the evidence goes, for the second builder there destroyed the work of the first, and the third destroyed the work of the second with a recklessness worthy of a nineteenth-century restoring architect. Where graves came in their way they took up the bones and flung them into a heap in a hole dug just east of their new works. But most important of all, Mr. Hope has been able to work out the plan of Furness, when it was Savignian, before it became Cistercian. The successive enlargements of the cloisters, from a square shape originally, have been proved. Mr. J. F. Curwen, of Kendal, has undertaken, at the suggestion of the president of the Antiquarian Society (Chancellor Ferguson, of Carlisle), to make a careful plan of the curious way in which, in the presbytery, the fifteenth-century builders superimposed their work on that of the twelfth-century builders. The excavations which have been made have been a great drag on the Society's funds, but have been well worth the outlay.

Forum Excavations.

THE Church of S. Maria Libera-trice (says the Rome correspondent to the "Globe") is now no more, and the vast north-west angle of the Palatine, gloomy with the ruins of Caligula's palace and the dark grove of Ilex above them, may be almost said to frown over the Forum; for the cloudy skies, for which the present year has been so remarkable, still prevail. The late edifice, built in 1550, and restored by Cardinal Lante in 1617, must have been again restored in the earliest part of this century, although the fact has not been noticed by Nibby or other antiquaries, for under the base of one of its piers were found coins of Pius VII. The handsome "Africano" pavement of the Basilica Emilia promises to become one of the attractions of the Forum. More and more of it is coming to light. Having, however, revealed suspicious breaks in its continuity at certain symmetrical points, Signor Boni has opened the ground with the profitable result of discovering the cavities made for the former columns of the central hall, or nave. This is a matter of considerable importance, for two reasons. Firstly, it enables one to perceive that the Basilica, like that of Trajan, was constructed in "cinque navate," or five naves; and, secondly, it permits us to calculate the actual width of the great building, although, until another £2,500 may be forthcoming, it will not be possible to clear the entire site and see the northern colonnades. At various points are seen (literally) clots of bronze money much oxidised, which have been dropped therein by money-changers, probably in their flight during earthquake or fire, resulting in the collapse of the building.

The Sacred Way.

WHILE referring to these Forum excavations, an extract may be given from a letter in the "Times" by Professor Rodolfo Lanciani, whom the Royal Institute of British Architects have this year proposed as the recipient of the Royal Gold Medal. In reply to a statement of Professor Richard Norton, director of the American School of Classic Studies in Rome, he says: "In my last volume on the 'Ruins and Excavations of Ancient Rome,' pp. 181 and 206, I have distinctly stated that the course of the Sacred Way underwent at least three changes in Imperial times, the first after the fire of Nero, A.D. 65, the second after the fire of Commodus, A.D. 191, the last after the fire of Carinus, A.D. 283. This noble avenue, this Sacred Way of the late empire (its name was certainly not changed by Maxentius), this witness of the last three centuries of Roman life, measured

23 metres across from building to building, and 12'35 metres between the side-walks. The one running along the Porticus Margaritaria is 8'20 metres wide, and encumbered by many monuments, such as fountains, hemicycles, excubitoria, &c.—all post-Maxentian—mixed up with older relics (altars, pedestals, shrines), which must have been raised to the new level. This most beautiful specimen of the architectural and engineering skill of the third century is no more, if we except a short section in front of the Heroon Romuli, which is also destined to disappear. It has been obliterated to lay bare the Sacred Way and its surroundings of an earlier date."

The Founders' Competitions.

THE Master, Wardens and Court of Assistants of the Worshipful Company of Founders will hold at Ironmongers' Hall on May 9th and 10th an exhibition of designs and models in metal, wood, plaster, or any suitable material for casting, and will give a number of prizes to be competed for by founders, designers, craftsmen, and apprentices engaged in foundry business or allied trades within the City of London, or the area of the metropolitan police. Among the prizes offered is a special one of £10, given by the Worshipful Company of Ironmongers, for First Class (C) for the best panel in ornamental figure. In regard to the prizes given by the Founders' Company, it is intimated that the freedom of the company may be given in cases of special merit. The money prizes are divided into three classes—first, second (for apprentices only), and third (improvers under the age of twenty-five). Each of these classes is subdivided as follows:—(A) for the best casting (any subject); (B) for the best group, or figure, or head; (C) for the best panel in ornamental figure; (D) for the best bell (not to exceed 9in. in diameter); (E) for the best design, which may be a drawing, model, or pattern, for any kind of cast metal work. Applications are to be made to the clerk of the Founders' Company, at Founders' Hall, St. Swithin's Lane, E.C., and the works are to be delivered at Ironmongers' Hall on May 8th.

Artistic Copyright.

MR. EDWIN BALE dealt with this subject at last Wednesday's meeting of the Society of Arts, when Sir L. Alma-Tadema presided. Mr. Bale sketched the history of artistic copyright, and commented on the law under the existing Act. After promising the author copyright in his work for his life and seven years, the Act went on to say that in order to get that, when he first sells or disposes of his picture he must say to the intending purchaser: "There are two properties in this work—the picture and the copyright; I am only selling you the picture, and must ask you to sign a document reserving the copyright to me." And if the artist did not take this step and get this document, the Act gave the copyright to the purchaser of the picture; but, again, also "provided," and this time the purchaser got his cold douche, for in order that he might have the copyright he must have a document, signed by the artist, reserving the copyright to him, and if neither of these things were done, and no document were signed, the copyright did not belong to either the artist or the client. It had disappeared, and belonged to no one; there was no copyright existing in the work for anyone. He also explained the remedies proposed in the new Bill, of which the main features were: (1) To secure greater uniformity in the terms and conditions of copyright; (2) to reserve to the artist, with certain exceptions, the copyright until expressly assigned or disposed of by him; (3) to make registration of copyright, with certain exceptions, and of all dealings therewith compulsory; (4) to improve the remedies for infringement. There were two terms of copyright conferred by the Bill—for an original work of fine art, the life of the author, and thirty years after his death; and for a work of fine art made by one person from the design of another, for a photograph, for a cast from nature, thirty years from the first day of the month of registration.

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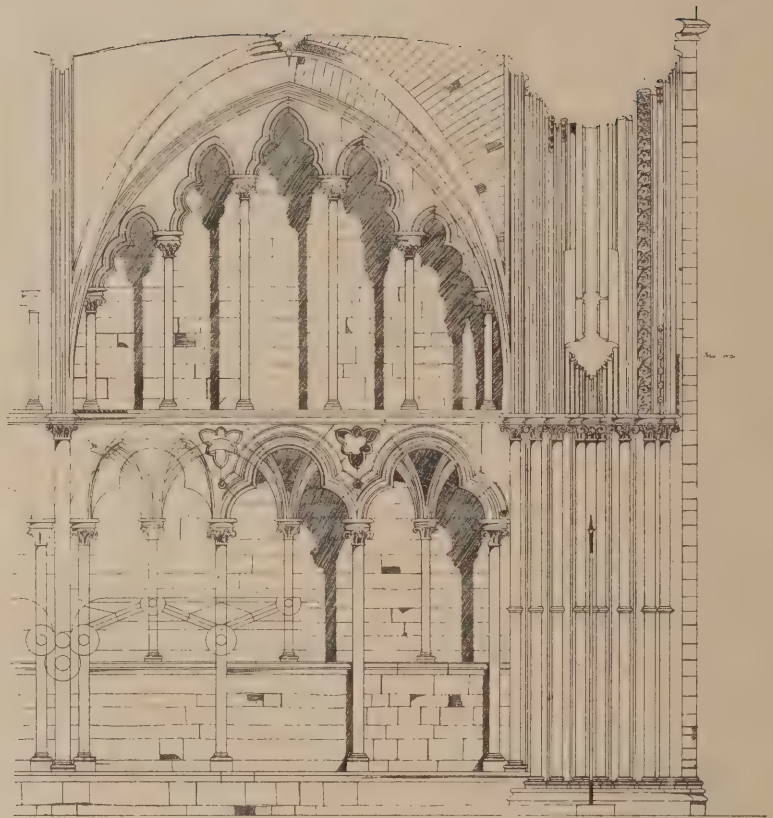
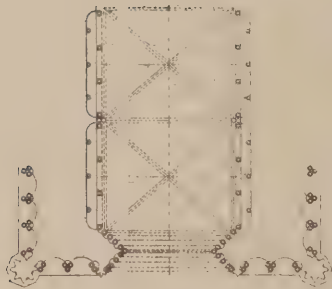
MEMORIAL GALLERY AT

DUART CASTLE, I. OF MULL.

DUART CASTLE, ISLE OF MULL. DRAWN BY F. INIGO THOMAS.

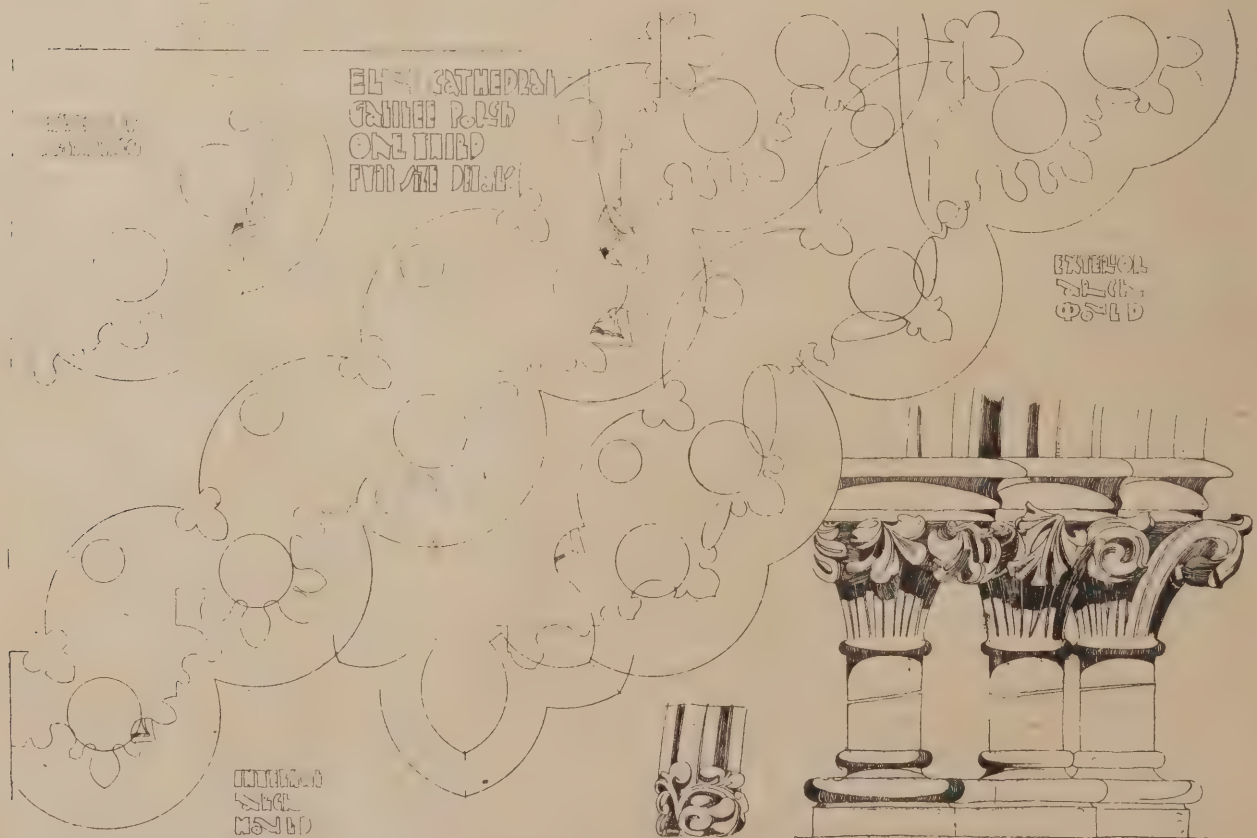
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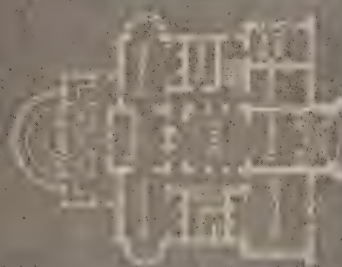
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DESIGN FOR A HOUSE AT HAMPSTEAD.
HARRINGTON & LEY ARCHTDS.



HOUSE IN WEST HEATH ROAD, HAMPSTEAD. HARRINGTON AND LEY, ARCHITECTS.

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Professional Practice.

Barry.—The new Board School which has been erected in Hannah Street has cost £13,400 and accommodates 1,300 scholars, exclusive of the manual instruction school. Messrs. J. P. Jones, Richards and Budgen, of Cardiff, were the architects, and Mr. Allan Richards was the contractor. The main building fronts Barry Road, and the elevation is carried out in brick with Bath stone dressings, one of the best features being the central halls, which are 60ft. long by 26ft. wide. No classroom has accommodation for more than sixty scholars. Open fireplaces are not used, the rooms being heated in the same manner as those at Clive Road Schools, Barry Island, by means of hot air forced by a rotary fan worked by a gas engine at the base of the building. Ventilation is provided on the Musgrave-Plenum system, while in the summer the air can be cooled before passing into the rooms. A novel feature is the provision of blackboard dado around the rooms and halls for demonstrative purposes. Provision is also made for the systematic teaching of general elementary science in a thorough and practical manner.

Birmingham.—The Midland Arcade, of which an illustration is here given, is being carried out by arrangement with "The



City Arcades" and is, in fact, a branch of that building. A large portion of one side will be occupied by "The Louvre," and the arcade will run through from High Street. There are in addition, fourteen shops, three of them, as shown, fronting to New Street. The interior decoration will be carried out in slab mosaic of brilliant colouring. The frontage to New Street will be of buff terracotta and narrow bright red bricks. The fascias to the shops will be modelled in fibrous plaster. This building, together with the City Arcades, is being carried out from designs by Messrs. T. W. T. Newton and Cheate, of 33, Newhall Street, Birmingham. The total cost of the whole arcade schemes, in the centre of Birmingham, will be nearly £200,000, and the ground rents are about £7,000 a year. There appears to be every prospect that this large scheme will be very successful from a financial point of view.

Perth.—The new factory which has been in course of construction during the past year for Messrs. John Shields and Co., Limited, is now completed. It forms an extension fronting the Dunkeld Road to the north of the original works, and although divided from the latter by a fireproof wall and having a separate engine with separate driving power, it will be worked directly in conjunction with them. It covers an area to hold 250 looms, which, with 650 looms in the old works, will give a total of 900 looms. The heating system was fitted up by Mr. James Macleish, of Perth. All inside surfaces of walls are finished with white enamelled brickwork, and the

woodwork is of varnished pitch-pine. The new factory has been designed and carried out by Messrs. Robertson and Orchar, Limited, of Dundee, who were the engineers and architects for the original works. They have also supplied the whole of the iron-work, shafting and gearing, and a considerable portion of the looms, &c. The contractors were:—Mason work, Messrs. Robert Brand and Son, Perth; joiner work, Mr. Thomas Macaulay, Dundee; glazier work, Mr. Charles Alexander, Perth; plumber work, Mr. James Macleish, Perth; gasfittings, Messrs. Frew, Watson and Co., Perth; slater work, Mr. James Buchan, Perth; plaster work, Mr. John Peebles and Messrs. John Mackay and Son, Perth. Mr. Thomas L. Keay was the clerk of works.

Troon, Camborne.—The new mission church and schools which have just been built at Troon, near Camborne, in connection with St. John's, Treslothan, from designs by Mr. H. W. Collins, of Redruth, are in the Gothic style of the fourteenth century. The buttresses are of granite and the exterior facings are of pink elvan. The nave of the church is 45ft. by 25ft, the chancel is 24ft. by 18ft., while the schools are 56ft. by 24ft. In the east and west ends of the church are three-light tracery windows. The roof is of Oregon pine, the chancel arch is built in two colour stones, and the whole of the internal dressings are of Breage granite. The east window is of stained glass and has cost £140. The schoolrooms can be made into one large hall or four separate rooms at will, by means of patent folding screens. Between the schools and the church (which are connected by a corridor) is a cottage, consisting of nine rooms. The joinery is of pitchpine, and the floors of wood blocks. The ventilation is on Boyle's system, and there is a high-pressure heating apparatus. Messrs. W. C. Hodge, of Redruth, and F. Mitchell, of Leedstown, were the builders. The cost of the whole of the buildings will probably be about £3,000.

New Patents.

These patents are open to opposition until March 31st.

1899.—Sewage Purification.—2,373. W. M. DUCAT, London. In order to maintain bacterial action during cold weather, the incoming air is warmed by laying the air inlet pipes in channels in the floor of the filter bed. The invention is particularly applicable to the filter forming the subject of patent No. 654—1897, and No. 5,803—1897, and may be used above, or, if necessary, in conjunction with the method of supplying warmed air to the filter as described in patent No. 10,427—1898.

Travelling Cranes.—2,779. W. T. ROUNSIVELL, London, S.E. There is a carrier and there are rails similar to ordinary travelling cranes, but the carrier is provided at each end with sheaves, around which ropes pass to sheaves on the traveller and are connected with the lifting gear, which may be stationary. By those means a load in any place can be lifted. Transverse movement is provided for, and by pulling the chain attached to the block the latter is raised.

Manufacture of Tiles, Pipes, Bricks, &c.—4,241. J. PURVIS, London, E.C. Unslaked lime and sharp, clean, dry sand, or ground slag, are mixed in a receiver, and made to cohere by the introduction of steam. Moulding is then done, and the articles are placed in a heating chamber in an atmosphere of steam, the temperature being gradually raised to 80 deg. to 100 C., and maintained at that for about 70 to 100 hours. The temperature is then gradually reduced. A proportion of 12½ per cent. of lime, and 87½ per cent. of sand, or 15 per cent. of lime and 85 per cent. of slag, gives satisfactory results.

Closet Supply-Valve Fittings.—5,188. H. L. DOULTON, London, S.E. At the end of the closet supply-valve spindle is a perforated piston covered by a loose disc and enclosed by a casing. When at rest, the chamber below the piston is filled with oil. When the valve is shutting off, this oil is

forced through a port in the casing, and by this means the supply-valve does not return to its seat too quickly, producing concussion in the pipes.

Street Lamp-Posts.—10,699. W. JONES, London, S.W. Inside the lamp-post is a hydrant having two projecting nozzles, with a ground casing and cock at the side. There is also on the post a fire alarm.

Leaded Lights.—14,369. H. P. H. GILSON and W. J. BOVER, both of London, S.E. The fret lead used is convex on one surface and concave on the other, and fitted in it are india-rubber strips, of channel cross-section, between which the glass is held when the lead is pressed down. No cement, oil, paint, or putty is needed.

The following specifications were published on Saturday last, and are open to opposition until May 7th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1898.—23,078. WEISS (*Preble*), lathes or apparatus for turning or shaping wood, &c. 27,431. HASTIE and GILL, manufacture of cement.

1899.—393. GODSELL, glass cup protector for incandescent gas mantles. 1,935. MORGAN and TILLOTSON, apparatus for protecting and regulating the use of seats, and means for fastening and releasing them. 2,268. BROWN, cord grip for electric lamp holders and fittings. 2,451. BOULT (*Rosback*), step-mitering machines. 2,461. CAMERON, COMMINS and MARTIN, purifying sewage. 2,469. REDMAN, connecting incandescent burners to the gas supply. 2,517. REDMAN, supports for incandescent gas-burners. 2,800. BARTLETT, treatment of cork to form a composition suitable for use for structural purposes. 3,358. McCALLUM, shoes or pockets for ends of timber joists. 3,988. SMITH, blind rollers. 5,441. OSWALD, stop valves. 5,580. COWPER, manufacture of hinges. 5,806. WHYTE, BENTON and BENTON, locks. 6,051. KENT, gas lamps or burners. 6,103. WALLACE, ventilating cover for drain traps. 6,217. SWANSON, building construction. 6,275. ASHWORTH, blinds. 6,301. PRESTWICH, valves. 6,302. PRESTWICH, steam and water valves. 6,391. VERITY, springs of swing doors. 6,506. EVANS and LEWIS, valve apparatus for use with hydraulic mains and machines. 6,544. ARTHUR EDWARD HEATHCOTE, fireplaces. 6,714. CODD, exhaust-steam heating systems. 6,779. STAEGE and TORNOW, apparatus for heating water. 6,829. GWYNNE and SARGEANT, centrifugal pumps. 6,924. CHAPMAN, construction of partition walls. 7,033. McPHAIL, apparatus for heating water or for generating and superheating steam. 7,210. BREARLEY, regenerative furnaces for heating gas retorts, and the special construction of bricks to be employed therein. 7,325. READ HOLLIDAY ACETYLENE Co. Ltd., CARDNO and HOLLIDAY, apparatus for generating acetylene gas. 7,633. BRANDT, method of fastening metal sheets, laths, or strips on bars for building, fencing, and other purposes. 7,667. ADAMS, syphonic apparatus. 8,677. LAKE (*d'Este*), pressure regulating valves. 9,209. UPTON, electric arc lamps. 10,995. WILLIS (*Lowery and Billings*), windows. 13,645. KNIGHT, artificial stone slabs and cable channels. 18,353. KIELBERG, method and apparatus for casting cement pipes. 19,362. LEBODA, apparatus for impregnating long pieces of wood. 21,152. SCHALL, screw staples. 23,407. THOMPSON (*Marsh*), flush valves. 23,696. BROOKES (*Woodman and Fiske*), electric alarm systems for the protection of buildings. 23,948. DANDSARD, drying kilns for pottery and earthenware. 24,687. ALLISON (*Woodbury*), apparatus for flushing water-closets. 24,948. RANSFORD (*Basel Mission Tile Works*), ceilings. 24,949. RANSFORD (*Basel Mission Tile Works*), tiled roofs and new lining tiles therefor. 24,950. RANSFORD (*Basel Mission Tile Works*), roofing and wall covering tiles. 25,130. BUNN and CASE, manufacture of lead oxide and white lead. 25,144. GLEASON and POTTER, fire escapes. **1900.**—27. LYON and TALBOT-CROSBIE, electric arc lamps. 45. FEENT (*Allgemeine Elektrizitäts Gesellschaft*), electrical incandescent lamps of the newest type.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Earth Closets.

W. R. writes: "Where can I obtain inexpensive sealed night-stools, earth commodes, or other similar contrivances for sleeping apartments to vagrant cells?"

Write to Messrs. Nicholls and Co., 289, Strand, London, W.C.; Moule's Patent Earth Closet Co., Ltd., 5A, Garrick Street, London, W.C.; and Messrs. Young and Marten, Ltd., Caledonian Works, Stratford, London.

T. E. C.

Rain-Water Pipes.

NEWPORT, MON.—R. H. P. writes: "A house was purchased about six years ago from a certain builder, it being one of two which had only one r.w.p. between them. The builder has lately repurchased the adjoining house, and since coming into possession he has disconnected the eaves gutter and removed the r.w.p., so that my house is left entirely without a r.w.p. He has also given me notice that I must provide my own r.w.p., and that he will hold me respon-

sible for any damage done to his premises through the rain water going over it. Is his action legal, or should he provide my house with a convenience which was existing when I bought it from him?"

The builder's action is not a legal one. He is responsible to our correspondent for all damage caused by his conduct, and should be required to at once restore the premises to their former condition.

H. P. B.

R.I.B.A. Probationers' Examination.

NEWTON ABBOT.—MARTIN CHUZZLEWIT writes: "When will the next preliminary examination, qualifying candidates for Probationers R.I.B.A., take place, and where will it be held? Would a certificate of my having passed in the third-grade perspective (first-class), issued by South Kensington Department, exempt me from any part of such examination?"

The next preliminary R.I.B.A. examination will be held in June, 1900, from Tuesday, 12th, to Friday, 15th. The examination is held in London and also at several of the non-metropolitan centres, the latter depending upon the number of candidates presenting themselves in the various districts. The last examination was held in London, Birmingham, Bristol, Cardiff, Dublin, Manchester and York. The secretary, R.I.B.A., will inform candidates as to where they will be expected to present themselves for examination. With regard to the South Kensington certificate, it is rather doubtful as to whether exemption could be obtained. It would be best to write and ask the secretary, R.I.B.A.

R. W. C.

Etiquette in Tendering.

ST. ALBANS.—R. G. E. writes: "Having prepared drawings and specification for a proposed small addition to a house, I asked a neighbouring builder to tender, and at the same time to suggest to me any reduction in the design by which he could reduce the estimate without diminishing the

accommodation. This he has done, and I promised to write him further when it was decided whether to carry out the work or not. I now wish to write several builders to tender for the work, so as to get the estimate lower, if possible. Would not etiquette compel me to tell the builder who has already tendered of my intention, and invite him to submit a fresh tender with them, or should I keep his tender and compare it with the others when they arrive?"

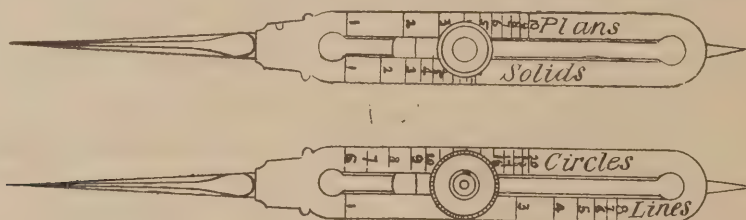
Whichever of the proposed courses be adopted it would probably lead to discontent, and the only way to avoid this seems to be to pay the builder who has already tendered a small fee, such as would cover the expense he has been put to in tendering and the value of his advice, and then to prepare a new specification embodying his suggestions and any other alterations which may by this time be decided upon, and to invite tenders from him and others on the new basis.

G. A. T. M.

Proportional Compasses.

HARLESDEN, N.W.—ANXIOUS writes: "I should be glad to know what proportional compasses are used for, as I have a pair divided on both sides, but have never seen them used."

Proportional compasses have four sets of divisions on them. The first set is engraved "lines." If the sliding clamp be set at any number, say 3, on this scale, and the compasses opened to any extent, the long points will give a length three times that between the shorter points. Drawings can thus be enlarged or reduced to any proportion by



setting the compasses to the required number. The second scale is engraved "circles." The clamp being set to any number and the longer points opened to the radius of any given circle, the distance between the smaller points will divide the circumference into the required number of parts. The third scale is engraved "plans." The shorter points having been set to the length of the side of a square, the longer ones will give the length of the side of a square as many times greater in area as the number on scale to which it is set. The fourth scale, "solids," gives in a similar manner the lengths of the sides of cubes, the solid contents of which are in the proportion of the number at which the clamp has been set.

HENRY ADAMS.

Laying Floor Boards on Breeze-Concrete.

A. G. writes: "What is the best way to lay floor boards on breeze-concrete? How should they be cramped up? Should the concrete have a coat of tar a few days before the boards are laid? What sort of tar should be used?"

The boards may be nailed either on to fillets embedded in the concrete or direct on to the floor. Wooden fillets are generally used, and hold the nails well, but they are liable to decay, and should be creosoted if used at all. Floors of concrete, in which coke breeze is not an ingredient, have coke-breeze or composition fillets, which are preferable to wood. Whichever method is adopted, however, a thin layer of asphalt, bituminous sheeting, slag wool, or asphalted felt, must be laid to (a) form a slightly yielding bed to the traffic; (b) deaden the sound (concrete is a very good sound conductor); and (c) prevent dry rot. Tar would only prevent the latter evil. The concrete must be thoroughly dry before any boards are laid. If fixing joists and fillets are employed, the following methods for cramping up may be employed:—(a) If square headings are permissible "folding" can be employed, i.e., nailing two boards parallel with each

other at an interval slightly less than the width of three or four boards. The latter are then sprung into place by jumping on them. (b) If tongued headings are required, the boards would be laid separately, and wedged up from convenient fixed points formed by driving small timber dogs into the joists. (c) If the joists have to be glued, as in parquet floors, temporary blocks would be glued to the face of the first fixed parts and joiners' cramps used from them to draw up the remaining boards. (d) The commonest method is to drive a wide chisel into the joist at the edge of the board, and lever it up with one hand while nailing with the other. If the boards are nailed on to the concrete direct the "folding" method must be employed. Floor boards should be laid in dry summer weather. If laid in the winter, however tightly cramped, the joints will open in warm weather.

E. B. B.

Book on Cologne Cathedral.

GLASGOW.—J. B. writes: "I should be obliged if you would tell me of any book in which Cologne Cathedral is fully described. What I should particularly like to know is the position it holds as regards its architecture when compared with other principal continental cathedrals."

The merits of Cologne Cathedral are fully dealt with in Fergusson's "History of Architecture": Ancient and Medieval, a new edition, revised and enlarged by R. Phené Spiers; two vols., £2 9s.; Indian and Eastern, £1 5s.; The Modern Styles: the Renaissance to the Present Day; two vols., £1 5s. These volumes are obtainable from Mr. B. T. Batsford, 94, High Holborn, W.C.

Damp-Courses in Basement.

A. G. writes: "In using Tenax or Hygeian Rock Composition between walls as a vertical damp-course in a basement, is it necessary to adopt any precautions to prevent the two parts of the wall being forced apart when the stuff is poured in? If it is, what is the best method, having due regard to cost?"

The proper practice is to have a $\frac{1}{2}$ in. cavity and grout up with the composition at a height of every four courses. There is then no danger of the two skins of the wall being forced apart. To keep the cavity clear when building up, use a planed board. When the wall is over 9 in. in thickness the thickest skin should be on the inside of the wall. The composition can be poured into the cavity from a bucket, but care must be taken not to splash the face. It is a good plan not to carry the mortar in the brickwork right up to the cavity, so that the composition will key a little into the joints. This will prevent moisture finding its way down between the damp-course and skins of the wall.

E. B. B.

Income Tax.

CHESTER.—W. H. T. writes: "The other day I received a notice from the collector of taxes demanding payment of £3 6s. 7d. on eight houses, including the one in which I reside. Five of the houses are valued at £17 11s. per annum, one at £18 17s., and two at £19 10s., and the total rents received, including the rent of the house I reside in, amount to £2 16s. per week. The assessment is made under Schedule A two-thirds value as above at 8d. in the £. The property belongs to my wife, and I want to know whether, seeing that the property does not realise £160 a year, payment of the charges can be enforced. I am given to understand that the taxes are imposed on account of my wife's combined income since her marriage to me."

By section 45 of the Income Tax Act, 1842, 5 and 6 Vic., c. 35, where a married woman is living with her husband her income is to be deemed his income for the purpose of his assessment to the tax; consequently if the assessment on the house property, together with our correspondent's annual earnings, exceeds £160 a year, he is liable to income tax.

H. P. B.

WORKMEN'S COMPENSATION.

An Interesting Scaffolding Case.

THE case of *Mason v. A. R. Dean, Limited*, Moore and Sons, third parties, was recently brought before the Court of Appeal from the County Court of Lancashire. The applicant was the widow of Frederick William Mason, who had been killed in the course of his employment by a fall from a scaffold. His employers were A. R. Dean, Limited, furnishers and decorators, of Birmingham. The accident happened on February 10th, 1899, at the Lyceum Theatre, Eccles, near Manchester. The theatre was then an incomplete building, exceeding 30ft. in height, and it was being constructed by means of a scaffolding. Messrs. Moore and Sons had, prior to the date of the accident, contracted with the building owner for the construction of the building and for the erection of the scaffolding from which the deceased man fell. Under powers reserved in Messrs. Moore and Sons' contract the architect let off to Messrs. Dean certain decorative work. The scaffolding used by the deceased and his fellow-workmen was erected by Messrs. Moore and Sons at the expense of the building owner. At the time of the accident the deceased man was painting the ceiling of the theatre, and while walking on the scaffolding one of the planks gave way and he fell to the pit floor and was instantly killed. The respondents denied liability on the ground that the employment of the deceased was not an employment to which the Workmen's Compensation Act applied; and they also alleged that Messrs. Moore and Sons or their workmen erected the defective scaffolding, and were the persons responsible for the scaffolding. The respondents delivered to Messrs. Moore and Sons a notice of claim to indemnity against all liability on account of any accident caused by the scaffolding. At the hearing of the arbitration, before the arbitrator appointed by the County Court judge, it was contended on behalf of the applicant that the respondents were undertakers within the meaning of section 7, sub-section 2, of the Workmen's Compensation Act, and that they were engaged on work of construction in a building exceeding 30ft. in height, and then being constructed by means of a scaffolding. It was contended on the part of the respondents that the work which they had contracted to do was not work of construction within the meaning of the Act, and that they were not undertakers within the meaning of the Act. The arbitrator held that the respondents were undertakers, and that they were engaged in the construction of a building exceeding 30ft. in height, such building being then in course of construction by means of a scaffolding, and he awarded the applicant the sum of £300, with costs. At the request of the respondents the arbitrator stated a case for the opinion of the County Court judge, submitting the following questions:—(1) Whether the respondents were undertakers in the construction of a building within the meaning of the Act; (2) whether the Workmen's Compensation Act applied to the employment in the course of which Mason was killed. The County Court judge set aside the award of the arbitrator with costs, on the ground that, though the respondents were undertakers engaged in the construction of a building within the Act, yet the case of *Wood v. Walsh and Sons* (1899, 1 Q.B., 1,009) showed that painting the ceiling of the theatre was not an employment within the Act. The applicant appealed and the Court allowed the appeal.

Lord Justice A. I. Smith said that in his opinion the respondents were liable in this case. The Workmen's Compensation Act only applied to certain classes of employers, as shown by section 7, sub-section 1. Did it apply to the respondents? It applied to "employment by the undertakers, as hereinafter defined, on, in, or about any building which exceeds 30ft. in height and is either being constructed or repaired by means of a scaffolding or being demolished." Here the building was not completed. The respondents were put on to do certain work which would help to bring it to completion. The contract

of the respondents with the building owner showed that the work they had to do included the putting up of a ceiling, the erection of a proscenium, and the fixing of private boxes with columns, caps, &c. No doubt a good deal of the work was decoration pure and simple. But there was ample to show that they had also to perform structural work. The building was over 30ft. high, and it was being constructed by means of a scaffolding. It was clear that the deceased man was employed on a building within the Act. Was he employed by undertakers within the meaning of the Act? By sub-section 2 of section 7, "undertakers" meant in the case of a building the persons undertaking the construction, repair, or demolition. Ought that to be construed as meaning the persons undertaking the construction of the whole building or did it also include the persons undertaking the construction of a substantial part of a building? In his opinion a person who undertook the construction of a substantial part of a building was an undertaker within the Act. He therefore thought that the judgment of the County Court judge was wrong, and that the applicant was entitled to the compensation which had been awarded to her by the arbitrator.—Lord Justice Collins was of the same opinion.—Lord Justice Romer agreed. He thought that where a building was being constructed by several persons, not jointly, but each doing a separate part, each and all of them came within the definition of "undertakers" in section 7. But only that undertaker was liable to pay compensation in whose employment the workman was at the time of the accident.—The Court refused to allow the costs of the third parties.

Views and Reviews.

HELLYER'S "PLUMBING."

It is a testimony to the great value of this book that the demand has been such as to call for a sixth edition, which has just reached us. The book is now so well known that an extensive review will not be needed. This present edition has been revised and brought up to date, many new illustrations have been added while others have been changed, and a chapter has been written on "Cesspools and their Overflows," which, we are pleased to note, does not omit to deal with the septic tank treatment of the sewage, in respect of the purification of that from a mansion. The amount of information given by Mr. Hellyer is very large, but the book has not become too bulky thereby, nor is this wealth of information given at the expense of lucidity and usefulness.

"The Plumber and Sanitary Houses." By S. Stevens Hellyer. Sixth edition. 12s. 6d. London: B. T. Batsford, 94, High Holborn, W.C.

WAGES IN THE XIX. CENTURY.

This book is intended, not as a general history of wages, but as a text book for students of this branch of statistics, explaining by examples the methods to be pursued in arriving at reliable results. The method adopted in dealing with wages *en masse* is the "kinetic," consisting in studying not wages themselves, but their rates of change, making no attempt to construct a wage census for former dates or at the present time, but to study the proportionate changes of wages period by period, and combine the figures which indicate these rates of changes independently of the actual rate of wages at any time or place. This method is certainly preferable to the general method—the "statical"—which consists in making comprehensive estimates for given years, obtaining thus the average and distribution at those times, and finally comparing the results; for the "kinetic" method has the double advantage of making it possible to use all the material available and so obtain comprehensive results, and also of bringing into play special causes, tending to an accuracy lacking in the "statical" method, which, although perfectly sound in theory, is unfortunately difficult or impossible in prac-

tice. The section devoted to wages in the Building Trades is a most interesting one, and the tables given there will no doubt be found useful to trade union secretaries and others concerned with the keeping of statistics of wages.

"Wages in the United Kingdom in the Nineteenth Century." By Arthur L. Bowley, M.A., F.S.S. 6s. nett. Cambridge: University Press. London: C. J. Clay and Sons, Ave Maria Lane.

"THE PRACTICAL MAN."

The great value of this most useful little cyclopædia of information upon land matters affecting auctioneers, estate agents, surveyors and lawyers who may be concerned with business matters, is shown by the fact of it having reached its seventeenth edition in the fifteen years since it was first published. The work is in the handy form of a pocket-book, neatly bound in cloth, and is divided into two parts. The first part is most comprehensive for its size, containing information upon the many questions of Law of every-day occurrence in the form of short sections tersely worded and clearly arranged. The sections relating to various duties now payable on a death have been rearranged and amplified since previous editions, and are now all collected under the heading of Death Duties. Short abstracts of the principal statutes passed since 1884 have been inserted. We find most useful forms of agreement, such as for working a quarry, letting houses, to build a house, for building lease, and particulars of the various clauses of note in the Acts relating to such matters as Bankruptcy, Workmen's Compensation, Bills of Sale and Stamps. We have not space to do more than merely instance a few of the particulars given. The second part comprises matters of both general and technical interest, such as the rules for using logarithms, of which tables are also given, rules for measurements and calculations generally useful; tables and calculations of use in various trades; estate and property valuations; and many tables, with explanatory notes upon the methods of using them. This part has had a number of new calculations introduced in it, and the tables have been carefully revised by the editor, Mr. E. E. H. Birch, who has also added a full index, which renders this edition still more useful. For those who are often requiring information upon Law matters, this book is one of the most useful works one could have for ready reference.

"Rouse's Practical Man." Seventeenth Edition. Revised by E. nest E. H. Birch, B.A., Barrister-at-Law. London: Sweet and Maxwell, Ltd., 3, Chancery Lane, W.C.

Church Extension in Bristol.—The populous district of St. Mark, Easton, is shortly to be provided with a fourth mission church, to be dedicated to St. Anne. When the plans were prepared it was estimated that the building might be put up for £1,200, but the price of material has so advanced that it is probable the cost will reach £1,600 or £1,800.

Royal Female School of Art.—The annual distribution of scholarships, medals, certificates, and prizes to the successful students took place at the Fishmongers' Hall on Wednesday last. During the past year the students took eleven national awards, three of these being national silver medals, and twenty book prizes. A large number of works were marked for national competition, and five were retained for selection for the Paris Exhibition.

Manchester Sewage Scheme.—At last Wednesday's meeting of the Manchester City Council the report of the Rivers Committee dated January 22nd, 1900, was adopted, reserving to the Council the right to abandon the scheme if found desirable when the detailed plans, sections, and estimates of cost are placed before the Council. This embodies the provision of ninety-two acres of filter-beds for the treatment of sewage by double contact. The experts' reports have already been published in these columns (see supplements to issues for November 22nd, 1899, and January 31st last).

Under Discussion.

The Development of Archaeology.

Before a recent meeting of the Royal Dublin Society the Rev. J. P. Mahaffy, D.D., S.F.T.C.D., delivered a lecture on "The Development of Archaeology in the Nineteenth Century." He said that the archaeologists of the eighteenth century had come to be regarded, if not as destructive barbarians, at least as mischievous amateurs, who destroyed the most precious vestiges of ancient history. They were mostly patrons of art—men who professed so to admire classic art that they loved to transfer the most noble specimens to their gardens and galleries. Workmen were employed by those archaeologists to dig into the earth in likely places for statues and other remains of ancient art, and these were often taken up out of the ground in a mutilated condition, but that made no matter if they had clever workmen who could restore a broken nose or an arm where required. The archaeologists of the nineteenth century had made up their minds that it was better to leave such art treasures as they were found, rather than endeavour to improve them by any modern work. A recent French writer had characterised our private galleries and museums as "the tombs of ancient art," and so they truly were. Great quantities of beautiful work of early art had been carried off into the museums and private galleries throughout Europe, and so we had lost by that the benefit and instruction which might be gained if those things were shown in their proper places. The Venus of Milo was one example of the practice to which he referred, and owing to the way it was treated they were only in recent years able to discover the age to which it belonged. The climax of the archaeology he had been describing dipped into the early years of the nineteenth century by reason of the action of Lord Elgin, who took down the magnificent western pediment and a good part of the frieze of the Parthenon at Athens and brought them to the British Museum. Lord Elgin thought he was helping the cause of archaeology, and considered himself a patron of art, but the name by which these works of art were now known—the Elgin marbles—had for all time pilloried him, even as Pontius Pilate was pilloried in all Christian churches. The establishment of the Dilettante Society was the first sign of an improvement in this melancholy state of things. It consisted of a group of seven or eight or ten men, and they were the first, as far as he knew, to take a scientific view of archaeology. They sent out at least two first-rate architects, who by their efforts gave us a knowledge of Greek architecture we never possessed before. By the science of archaeology he meant the study and right understanding of the remains of antiquity. In no science had the successes been more glorified than in archaeology, yet they had been accompanied by severe losses—losses in our sense of beauty and sense of reverence for the sublime productions of the past.

Earth Foundations.

Mr. J. E. Pierce read a paper on "The Theory of Earth Foundations and its Application to Practice" before a recent meeting of the Ipswich Engineering Society. The first broad principle to be mastered when dealing with foundations was that all earths, with the exception of hard rocks, dry, hard earths, and such like, must be treated to a certain extent as liquids—i.e., they had a tendency to flow and level themselves as water did. If there was a tendency to flow, then there must be an approximation to a hydraulic pressure on going below the surface. Each different class of earth, when heaped up, had a constant slope with regard to the ground, and this was called its "angle of repose." It was very easy to see that a material of a very solid nature would necessarily have a large angle of repose, while a material of a soft nature (as sand) would have a small angle of repose. If you were dealing with an earth of great liquid

tendency, i.e., with a small angle of repose, it was easy to see that the foundation must be taken lower down before the displacement balanced the pressures on that foundation. A very appropriate illustration to show the liquid nature of some earth materials was afforded in the case of driving a number of short piles in soft ground, close to one another; it was noticed after several had been driven in, that if another pile were driven it caused some of those already in to rise out of the ground. He then dealt with Rankine's formula, which showed that the majority of the materials of a soft nature, such as sand (wet), clay and so forth weighed on the average about 110lbs. per cubic foot. Concrete weighed about 120lbs. per cubic foot. Further, the depth required varied directly as the pressure. The simplest bottom was that of a rock, though, if the rock were mixed with earth and clay, there was the liability of a treacherous foundation. "It is first necessary to level up the base, so that its plane is perpendicular to the pressure which it has to sustain, but if the structure is large and the rock surface uneven it is trenched up and down in a number of small faces. The unsound portions must be removed, and gaps and fissures filled with concrete, and when this is done, it may be built upon direct. Rock foundations are very expensive in working, owing to the great labour involved in levelling, &c.; still, they are very secure." Dealing with foundations on firm earth, the lecturer pointed out that the term "firm earth" usually meant gravelly soils, hard clay, hard earth, dry chalk, and dry sand. If the material was slightly damp the angle of repose would be larger, but if there was any likelihood of it getting saturated, then the angle was considerably reduced and the material no longer partook of the nature of solid ground, but more of the nature of a soft earth. These remarks applied very well to chalk soils, and the site for a building on chalk should be well-drained. If that was possible, the structure could be built direct on the chalk after it had been levelled, but if it was subjected to great loads, then concrete should be employed to distribute the pressure. If it was certain that no lateral movement could take place, gravel was one of the best soils to build on, and it was not affected by the atmosphere, as regarded expansion and contraction. It was best not to disturb the gravel by loosening it by digging, but rather to place the foundation right on the top of it. Clay was a very treacherous subsoil; under certain circumstances it was all right, but it was affected so much by atmospheric conditions that it must be very carefully treated. Clay expanded and contracted under the action of cold and heat, and a foundation on clay must be taken to a depth in some cases of 10ft., so as to keep the clay of a uniform dampness. Mr. Pierce gave some statistics in reference to the width and depth of concrete foundations, and observed that the great thing to be watched in a concrete foundation, or a foundation of stonework, was that no part of it should be subject to tensile stresses, as concrete was very weak in tension. He quoted a rule for ordinary foundations, so as to avoid tensile stresses—"That the resultant force of the earth's pressure on the base of the foundation shall be within the middle third for a square section, and within the middle quarter for a circular section." Any material whose angle of repose was less than 35deg. must be regarded as a soft earth, and as such it would have a tendency to escape laterally. In dealing with a foundation, it was absolutely necessary to have a section of the ground to guide us in planning out the best means of carrying out the structure. With regard to bad foundations, the lecturer said that if the bad ground was only, say, 6ft. or 7ft. deep, then the easiest way of getting over the difficulty was to excavate all the bad earth, and start the foundation on firm ground. If the depth of the bad ground exceeded 10ft., with a hard strata underneath, it was usual to either pile down to the firm ground, or make use of concrete piers of very great depth, and with these our foundation could be made by a sheet piling, to prevent lateral escape of the earth, or by forming the foundation on close planks.

Keystones.

The new Art Gallery at Hull will be completed next month and formally handed over to the Hull Corporation on April 2nd.

Mr. B. S. Murphy, a fourth year student at the School of Applied Art, Edinburgh, has just been awarded a £40 travelling bursary.

A new Clock Tower at Lewisham, S.E., 45ft. high, has been erected as a memorial of the Queen's Diamond Jubilee, and has cost £646.

A new Public Hall and Library at West Kilbride, N.E., has been built from designs by Mr. A. N. Paterson, M.A., A.R.I.B.A., of Glasgow, at a cost of £2,000.

A new Wesleyan Chapel at Wolverhampton, estimated to cost £13,000, is being built in Darlington Street, from designs by Mr. Arthur Marshall, of Nottingham.

Gladstone Memorial in London.—It is proposed that the memorial of Mr. Gladstone, designed by Mr. Hamo Thornycroft, shall be erected immediately to the west of St. Clement Dane's Church.

The Statue of Sir Sydney H. Waterlow, Bart., which is to be erected in Waterlow Park, Highgate, as a memorial of his gift of the park to the people of London, has now been completed by Mr. Taubman.

A new Wing to the Stanley Hospital, Liverpool, was opened on Thursday last. It has been erected from designs by Messrs. Duckworth and Medcalf, architects, of Liverpool. Messrs. J. and G. Chappell, were the contractors.

The Death is Announced of Mr. Horace Buttery, restorer of pictures to the Queen. He was held in esteem not only by private clients, but by the authorities of the National Gallery and of the Museums of Berlin and The Hague.

Barnsley Church Competition: Result.—In the competition for the erection of the St. Edward's Church, Kingstone Place, Barnsley, the first premium of fifty guineas has been awarded to Mr. Gordon S. Packer, of Southport; the second to Mr. E. Dyson, Horwick; and the third to Mr. C. S. Herrington, Newcastle-on-Tyne.

Society of Architects Badge Competition.—Designs may be submitted up to March 22nd next for a silver-gilt presidential badge, with attachment for ribbon and shoulder buckles; outside dimensions, 2½in. Members, associates and students of the Society of Architects are eligible to compete; two guineas will be paid for the design accepted.

Riviera and Italy.—By a pleasingly illustrated little pamphlet that has been sent to us we notice that one may obtain a first-class circular ticket (available for sixty days) from London, right along the coast from Marseilles to Genoa, and back again through Turin and Mont Cenis, for £10 1s. 1d. The Continental Traffic Manager of the London, Brighton and South-Coast Railway Company, London Bridge Terminus, S.E., will be pleased to supply all particulars.

R.I.B.A. Prizes and Studentships, 1900-1901.—The following is a brief summary of the R.I.B.A. prizes and studentships for 1900-1901:—*Essay Medal and Twenty-five Guineas*—The comparative desirability of the formal or irregular treatment of street architecture in large cities. *Measured Drawings Medal and Ten Guineas*—As usual. *Soane Medallion and One Hundred Pounds*—Design for a club house in a large city. *Pugin Studentship: Silver Medal and Forty Pounds*—As usual. *Godwin Bursary: Silver Medal and Forty Pounds*—As usual. *Owen-Jones Studentship: Certificate and One Hundred Pounds*—As usual. *Tite Prize: Certificate and Thirty Pounds*—Design for an entrance gateway to a public park. *Grissell Gold Medal and Ten Guineas*—Design for a timber foot bridge across a stream. *Asphitel Prize: Books value Ten Guineas*—As usual. *Arthur Cates Prize: Books value Ten Guineas*—As usual.

COMING EVENTS.

Wednesday, February 28.

SOCIETY OF ARTS.—Professor Carus-Wilson on "Pneumatic Despatch." 8 p.m.
 SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. J. C. Thresh, D.Sc., M.D., on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.
 EDINBURGH ARCHITECTURAL SOCIETY.—Mr. John Regg on "Johannesburg Before and After the War, from an Architect's Point of View." 8 p.m.

Thursday, March 1.

ROYAL INSTITUTION.—Mr. Charles Waldstein, Litt. D., Ph.D., L.H.D., on "Recent Excavations at the Argive Hereum (in Greece)."—I. 3 p.m.
 CARPENTERS' HALL.—Mr. C. Stanley Peach, F.R.I.B.A., on "Electric Light Stations." 8 p.m.
 ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Connection of the Head with the Trunk; the Structures which Determine the Form of the Neck." 6.15 p.m.
 CIVIL AND MECHANICAL ENGINEERS SOCIETY.—Mr. M. O'Gorman, A.I.E.E., on "Ventilation of Large Buildings." 8 p.m.
 LONDON INSTITUTION.—Professor Silvanus P. Thompson, D.Sc., F.R.S., on "Electric Locomotion." 8 p.m.
 SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

Friday, March 2.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. H. D. Scarles Wood, F.R.I.B.A., on "Building Materials." 8 p.m.
 ARCHITECTURAL ASSOCIATION.—(Discussion Section.)—Debate on "The Question of the Modern By-Laws," opened by Mr. J. Humphrey Jones, B.A., Mr. J. H. Tyars and Mr. F. T. W. Goldsmith. 7 p.m.
 ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—IX.
 INSTITUTION OF JUNIOR ENGINEERS.—Mr. William Paddon on "Electrolytic Zinc as a Protective Metallic Coating for Iron and Steel." 8 p.m.

Saturday, March 3.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Inspection and Demonstration at the Express Dairy Company's Farm, College Farm, Finchley, at 3 p.m.
 BOUNDARY STREET AREA.—The Prince of Wales opens the Boundary Street Artizans' Dwellings of the London County Council.
 INSTITUTION OF JUNIOR ENGINEERS.—Visit to Messrs. Maudsley, Sons and Field's Belleville Boiler Works, East Greenwich, at 3 p.m.
 BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Royal Hospital, Chelsea, at 3 p.m. Prof. Henry Adams, M.I.C.E., on "Some Comparisons of Graphic Statics Applied to Roofs," at Carpenters' Hall. 6 p.m.

Monday, March 5.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Special General Meeting to elect Professor the Commandatore Rodolfo Lanciani, D.C.L., as the Royal Gold Medalist for the current year. Business Meeting to elect members.
 LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. A. Saxon Snell, F.R.I.B.A., on "Public Baths and Wash-Houses."
 SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. Percival Gordon Smith, F.R.I.B.A., on "Sanitary Building Construction and Planning." 8 p.m.
 SOCIETY OF ARTS.—(Cantor Lecture III.)—Mr. E. Sanger Shepherd on "The Photography of Colour."—I.
 ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XVII.—Renaissance Christian Art." 6 p.m.
 SOCIETY OF ENGINEERS.—Ordinary Meeting at 7.30 p.m.
 ROYAL INSTITUTION.—General Monthly Meeting at 5 p.m.

Tuesday, March 6.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. Thomas Drew, F.R.I.B.A., F.R.I.A.I., on "St. Patrick's Cathedral and its History." 8 p.m.
 GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. James M'Kissack on "Through Normandy with Cycle and Camera." Election of Treasurer.

Wednesday, March 7.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. George Reid, M.D., D.P.H., on "Sanitary Appliances," 8 p.m. Inspection and Demonstration at the East London Water Works, Lea Bridge, Clapton, at 3 p.m., conducted by Mr. W. B. Bryan, M.I.C.E.
 SOCIETY OF ARTS.—Dr. Carl Peters on "Macombe Country: Its Ancient Gold Fields and Industrial Resources." 8 p.m.
 BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.
 EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. A. R. Inglis, A.R.I.B.A., on "Colour in Architecture." 8 p.m.
 NORTHERN ARCHITECTURAL ASSOCIATION.—Special meeting, open to members and associates in practice, to discuss questions of Professional Practice. Introduced by Mr. J. W. Taylor, F.R.I.B.A. 7.30 p.m.

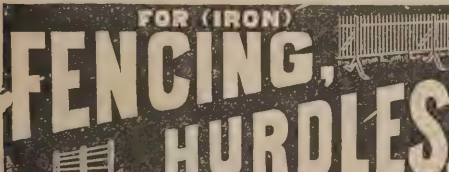
Thursday, March 8.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.
 SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.
 CARPENTERS' HALL.—Mr. William Henman F.R.I.B.A., on "The Modern Hospital." 8 p.m.
 ROYAL INSTITUTION.—Mr. Charles Waldstein, Litt. D., Ph.D., L.H.D., on "Recent Excavations at the Argive Hereum (in Greece)."—II. 3 p.m.
 ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Connection of the Head with the Trunk; the Structures which Determine the Form of the Neck." 6.15 p.m.
 SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. E. Doran Webb, F.S.A., on "Salisbury Cathedral, and How it Came to be Built."

Friday, March 9.

ARCHITECTURAL ASSOCIATION.—Mr. C. E. Bateman on "Small Houses." 7.30 p.m.
 ROYAL INSTITUTION.—Professor Frank Clowes, D.Sc., F.C.S., on "Bacteria and Sewage."

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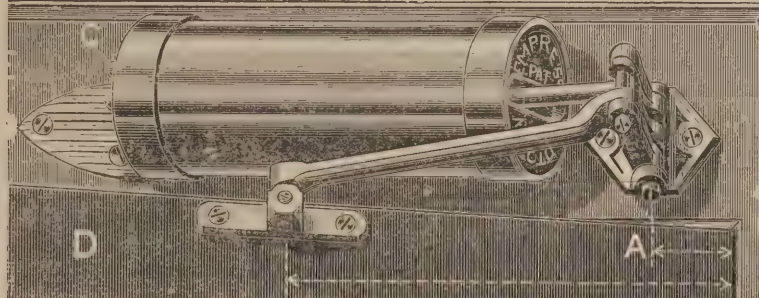



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CURRENT PRICES.

FORAGE.			
	£ s. d.	£ s. d.	
Hay, best ...	per load	3 10 0	4 0 0
Sainfoin mixture ...	do.	3 15 0	4 5 0
Clover, best ...	do.	4 5 0	5 0 0
Beans ...	per qr.	1 7 3	—
Straw ...	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ...	per cwt.	1 8 0	1 10 4
Colza Oil, English ...	per cwt.	1 7 0	—
Cooperas ...	per ton	2 0 0	—
Lard Oil ...	per cwt.	1 12 0	—
Lined Oil ...	per cwt.	1 5 3	1 5 6
Petroleum, American ...	per gal.	0 0 7 5/8	0 0 7 1/2
Do., Russian ...	per gal.	0 0 7	0 0 7 1/2
Pitch ...	per barrel	1 7 0	1 10 0
Tallow, Town ...	per barrel	1 6 0	—
Tar, Stockholm ...	per barrel	2 0 3	—
Turpentine ...	per cwt.	2 0 3	—
Lead, white, ground, carbonate per cwt.	do.	1 3 0	1 4 0
Do. red ...	per cwt.	1 0 4 1/2	—
Soda crystals ...	per ton	2 17 6	3 0 0
Shellac, orange ...	per cwt.	3 2 6	—

METALS.

Copper, sheet, strong ...	per ton	85 10 0	—
Iron, bar, Staffs, in London	do.	10 10 0	11 10 0
Do. Galvanized Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 11 3	16 17 6
Do. do. English common brands	do.	16 17 6	—
Do. sheet, English, 6lb. persq.ft. and upwards	do.	18 10 0	19 0 0
Do. pipe	do.	18 10 0	—
Nails, cut clasp, 3in. to 6in.	do.	10 0 0	11 0 0
Do. floor brads	do.	9 15 0	10 15 0
Tin, Foreign	do.	143 5 0	148 0 0
Do. English ingots	do.	147 0 0	28 10 0
Zinc, sheets, English	do.	27 7 6	—
Do. do. Vieille Montaigne	do.	21 10 0	21 15 0
Do. Spelter	do.	21 10 0	—

TIMBER.

SOFT WOODS.			
Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	3 12 0	3 15 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg 2nd & 1st per P. Std.	do.	0 1 4 1/2	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd	do.	12 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	17 0 0	12 0 0
Do. do. 2nd	do.	8 15 0	11 0 0
Do. do. Unsorted	do.	10 15 0	11 5 0
Do. do. White	do.	7 15 0	13 0 0
Do. Swedish	per P. Std.	9 5 0	13 0 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	21 5 0	24 5 0
Do. do. 2nd	do.	10 5 0	12 0 0
Do. do. 3rd & 4th	do.	8 10 0	8 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	9 0 0	9 15 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	7 5 0	10 0 0
Flooring Boards, 1 in.	per square	0 8 9	—
Do. prepared, 1st	do.	0 7 3	—
Do. 2nd	do.	0 9 0	0 11 0
Do. 3rd & 4th	do.	0 9 0	—

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	8 12 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, in, Cuba	per ft. sup.	0 0 4 1/2	—
Do. Honduras	do.	0 0 3 29/32	—
Do. Tobasco	do.	0 0 3 5/8	—
Elm, Quebec	per load	12 6	5 10 0

Mahogany, Average Price			
	per ft. sup.	£ s. d.	£ s. d.
for Cargo, Honduras	do.	0 0 4 13/16	—
Do. African	do.	0 0 3 13/32	0 8 1/2
Do. St. Domingo	do.	0 0 8 1/2	—
Do. Tobasco	do.	0 0 4 1/2	—
Do. Cuba	do.	0 0 7 21/32	—
Oak, Dantzic and Memel	per load	4 0 0	6 5 0
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0	16 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub.ft.	0 2 9	0 3 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

COLWYN.—Accepted for the erection of new stables and coach-house for Mr. M. Jackson, Norwood, Colwyn. Mr. Ashton Bremner, architect, Wynnstay Chambers, Colwyn Bay. Quantities by the architect.—

John Roberts, Colwyn Bay ... £320
COLWYN BAY.—Accepted for alterations and additions to banking premises, for the Metropolitan Bank of England and Wales. Mr. Ashton Bremner, architect, Wynnstay Chambers, Colwyn Bay. Quantities by the architect.—

J. Berth Jones, Colwyn Bay ... £290 10
EXMOUTH.—For alterations at "Donnington," Littleham Valley, for Mr. H. J. Cameron. Mr. Ernest E. Ellis, architect, Exmouth.—

T. Abell ... £243 18 7 | W. H. Perry ... £182 0 0
G. Hooper ... 195 0 0 | *Accepted.
EXMOUTH.—For the erection of a detached villa at Salterton-road (exclusive of road, &c.) Mr. Ernest E. Ellis, architect, Exmouth.—

H. Dart ... £1,000 | A. Hayman ... £290 0
G. Hooper ... 990 | W. J. Stokes ... 820
*Accepted.
EXMOUTH.—For alterations to Castle Park Cottage for Mr. J. J. Bastin. Mr. Ernest E. Ellis, architect, Exmouth.—

Cooper and Son ... £35 0 0 | W. H. Perry ... £320 0 0
W. J. Stokes ... 355 0 0 | H. Dart ... 320 0 0
H. J. Gay-Lang ... 355 0 0 | R. Cooper ... 319 0 0
F. Grace ... 347 11 6 | *Accepted.
GOMERSAL (Yorks).—For the construction of earthenware pipe sewers (400 yds.), &c., for the Urban District Council. Mr. John Waugh, C.E., Sunbridge Chambers, Bradford. Quantities by engineer.—

Thos. Egan and Sons ... £6,582 | Wm. Binns ... £5,590
Parker and Sharp ... 6,637 | Wm. Briggs, Frizing-
Wm. Waring and Son ... 6,390 | hall, Bradford ... 5,224
J. Bentley ... 6,140 | Morley and Barker ... 5,233
G. Pearson ... 5,965 | O. Metcalfe ... 5,222
W. and J. Foster ... 5,608 | *Accepted.
HEATON PARK (near Manchester).—For the extension of club premises, for the Heaton Park Liberal Club Building Company, Limited. Messrs. Maxwell and Tuke, architects, Manchester.—

Peters and Sons ... £1,175 | J. Leach and Sons ... £1,058
Bullivant and Sons ... 1,070 | G. Willison, Heaton
Jackson and Sons ... 1,070 | Park ... 1,048
J. Bland ... 1,059 | *Accepted.
LONDON.—For the rebuilding of No. 288, Edgware-road, W., for Mr. James Chambers. Mr. Eugene C. Beaumont, architect, 78, Fleet-street, E.C. Quantities by Mr. E. J. Gee, 30, Eldon-street, Finsbury.—

Holliday & Greenwood ... £4,077 | Cadman and Son ... £3,740
Grover and Son ... 3,933 | Patman and Fothering-
Henry Brown ... 3,877 | ham ... 3,741
George Neal ... 3,764 | Simpson and Son ... 3,690
*Accepted.

LONDON.—For the erection of a new warehouse, Marsh Gate-lane, Stratford, E., for Messrs. T. H. Harris and Sons. Messrs. J. T. Newman and Jacques, architects, 2, Fenchurch, E.C. Quantities by Messrs. C. Stanger and Sons.—

Outthwaite and Son ... £4,463 | Perry Bros. ... £3,987
Lark and Sons ... 4,359 | Green and Co. ... 3,750
Lawrence and Sons ... 4,155 | W. Gladding ... 3,687
G. J. Hosking ... 4,126 | Munday and Sons ... 3,617
Reed and Son ... 4,066 | *Accepted.

LONDON.—For the erection of a new school at Mandeville-street, for the London School Board, Mr. T. J. Bailey, architect:—

Leslie and Co., Limited ...	£23,972	+ £227
Miskin and Sons ...	23,957	+ 337
Gough and Co. ...	23,954	+ 300
Kilby and Gayford ...	23,780	+ 340
Clarke and Bracey ...	23,621	+ 318
Grover and Son ...	23,595	+ 349
T. L. Green ...	23,552	+ 270
Chessum and Sons ...	23,453	+ 320
Gregar and Son ...	23,378	+ 265
W. Goodman ...	23,328	+ 295
W. Shurmer ...	23,271	+ 298
L. H. and R. Roberts ...	23,204	+ 300
W. M. Dabbs ...	23,117	+ 305
J. and M. Patrick ...	22,832	+ 252
Patman and Fotheringham, Limited	22,878	+ 282
Lawrence and Sons ...	22,756	+ 271
C. Cox ...	22,688	+ 285
Edwards and Medway ...	22,593	+ 232

* Accepted.

† Additional if walls of classrooms and halls are plastered.

LUTON.—For the erection of factory in Victoria-street, for Mr. W. A. Sharp. Mr. A. Wilkinson, architect, 84, Inkerman-street, Luton:—

A. Mardle ...	£316 10	| G. Kingham ...	£253 18
D. Parkins ...	299 15	| [All of Luton.]	

* Accepted.

LUTON.—For the erection of residence, "The Downs," for Mr. Tomlin. Mr. A. Wilkinson, architect, 84, Inkerman-street, Luton:—

Hill and Foster ...	£878	| Saunders and Son ...	£710
G. Kingham ...	875	| A. Mardle ...	699
T. Field ...	810	| [All of Luton.]	

* Accepted.

† Too late.

PLAISTOW (Kent).—For the erection of north transept and enlargement of vestries, &c., St. Mary's Church, Plaistow, Bromley, Kent. Messrs. B. Wadmore and W. R. Mallett, architects, Chancery-lane, E.C.:—

D. Payne ...	£2,469	| A. Arnold and Son ...	£2,230
Goddard and Son ...	2,319	| S. D. Grady ...	2,065
Crossley and Son ...	2,238		

STYRRUP (Notts).—For the erection of the "White Swan" Inn, Styrrup, for the Workop and Retford Brewery Company. Messrs. Vallance and Westwick, architects, Mansfield:—

Vickers, Ltd. ...	£2,960	0 0	| John Athron ...	£2,740	0 0
J. Hutchinson ...	2,850	0 0	| A. Eastwood ...	2,500	0 0
Fisher Bros. ...	2,834	0 0	| D. Gill and Son,		
J. F. Price ...	2,809	12 3	| Doncaster ...	2,387	0 0

* Accepted.

SUTTON-IN-ASHFIELD.—For additions to Oddicroft Mill, Sutton-in-Ashfield, for Messrs. Barringer Wallis and Manners. Messrs. Vallance and Westwick, architects, Mansfield:—

J. Hutchinson ...	£3,483	15 0	| J. Greenwood ...	£2,796	7 6
J. F. Rice ...	3,342	5 0	| Vickers, Ltd.,		
Fisher Bros. ...	3,065	17 10	| Nottingham ...	2,667	10 0

* Accepted.

TIVERTON (Devon).—For the execution of sewage works, West Exe, for the Corporation. Mr. J. Siddalls, Borough Engineer, Town Hall, Tiverton:—

S. Manning ...	£3,261	1 11	| J. and T. Binns ...	£2,235	11 0
R. H. B. Neal ...	2,875	0 0	| Thomas & Webb,		
Grater and Sons ...	2,845	0 0	| Bristol ...	1,923	5 1
E. Powell ...	2,255	10 3	| F. Wood ...	1,811	16 0

* Accepted.

TORWORTH.—For making alterations to the "Huntsman Inn," Torworth, for the Workop and Retford Brewery Company. Messrs. Vallance and Westwick, architects, Mansfield:—

J. F. Price ...	£2,715	0 0	| Fisher Bros. ...	£2,298	0 0
Dennis Gill and Son ...	2,546	0 0	| J. Athron ...	2,263	0 0
A. Eastwood ...	2,330	0 0	R. Mettam,		
J. Hutchinson ...	2,322	0 0	Retford ...	2,188	0 8 1/2

* Accepted.

† Withdrawn.

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EXPANDED METAL.*

By WILLIAM J. POATE.

EXPANDED metal is not, by any means, an innovation, as it was first produced in commercial quantities about twelve years ago; prior to its advent, the only means of producing open metal work were either by casting or by interweaving wires, rods, or bars. Expanded metal is produced by a method directly the contrary to these, namely, by partially cutting a solid plate of metal into strands having uncut connecting intersections and spreading the metal apart at the cuts into the sizes and forms of open work required; a plate of metal is thus expanded to cover a greatly increased area.

Manufacture of Expanded Metal.

At first the machines were unable to supply expanded metal more than $\frac{1}{10}$ in. thick, for, although they would cut and open the metal simultaneously, the perfecting of the details of the machine had still to be accomplished, and the knowledge of suitable metals for cutting and expanding had to be acquired. Consequently, the use of the metal was restricted almost wholly to lathing for plastering. The necessity for heavier metals and for greater accuracy in cutting was of vital importance. Considerable sums of money were spent in improvements, and the result was the addition of another patented machine, which operates alike upon the thinnest or thickest metals with great precision. The framework of the machine consists simply of a large guillotine shear, the upper V-shaped cutters being operated from the main shaft by means of eccentrics attached to the sliding head. The lower blade of the machine is straight. In operation, the V-shaped cutters make a downward stroke and carry before them a strip of steel, leaving spaces of intervening metal uncut. The cutters then rise and the plate is automatically moved into position, so that the uncut spaces are immediately under the cutters, which again descend, forming another half mesh and completing the first. The machine works rapidly and clears itself, throwing the metal on the floor.

The size of the cutters determines the size of the mesh, and the width of the strands is determined by the distance the plate of metal is fed over the lower straight cutter. It requires the same strength and weight of machine to make a small mesh as a large one, as there are more slits and stretches in the smaller meshes than in the large. To alter the size of the mesh it is only necessary to change the upper corrugated cutters. As the machine produces the expansion by stretching the strands as they are cut, the finished article is consequently of the same length as the original strip of metal, while it is increased from twice to twelve or more times in width; that is to say, a sheet of steel 8 ft. long by 6 in. wide can become a sheet of expanded metal 8 ft. long by

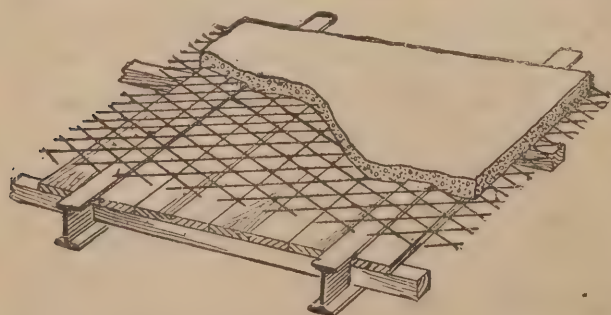


FIG. 1.



FIG. 2.

6 ft. wide. In practice it is necessary to bear in mind that the long way of the mesh is the strongest way.

Expanded Metal in Concrete Floors.

The typical construction of concrete floors on the expanded metal system may be divided into the three following classes:—(1) That in which the metal and concrete are laid over the joists, as shown in Fig. 1; (2) that in which the metal and concrete are laid on the lower flange of the joists; (3) that in which the concrete and metal floor are supported by and carried over the tops of concrete spandrels and steel channel-ribs. The first system is the cheapest, lightest, and simplest for floors of moderate strength, in spans up to 8 ft. between the girders—say for offices, hotels, schools, &c. In fixing this floor the temporary centering is easily supported by the bottom flange of the joists, whilst the continuous flooring slab thus formed is not liable to crack away from or over the girders. You will observe in Fig. 1 that the expanded metal is laid immediately over the wood centering, the

and those in various other buildings have been carried out on this system.

The system shown in Fig. 3 is patented, and is especially applicable to strong warehouse floors or for bridging over spans of, say, 10 ft. to 20 ft. without the use of intermediate joists, whilst preserving a maximum head-room. The channel arches are usually placed 4 ft. or 5 ft. apart, and are 6 in. wide, weighing about 12 lbs. per foot run. The concrete is built up on these to the level of the top flanges of the main girders. The 3 in. mesh is then laid on and covered with concrete as in the first system.

The channel-arch system has been extensively used in the Manchester Ship Canal warehouses, where there are several acres of floors of this description. In practice the channel-arch floor can be constructed to support a live load of 20 cwt. per square foot, and as the cost is less than other systems it is evident that for heavy warehouses, factories, &c., it cannot be excelled.

System No. 1 is now being employed in the new premises being built for the Eagle

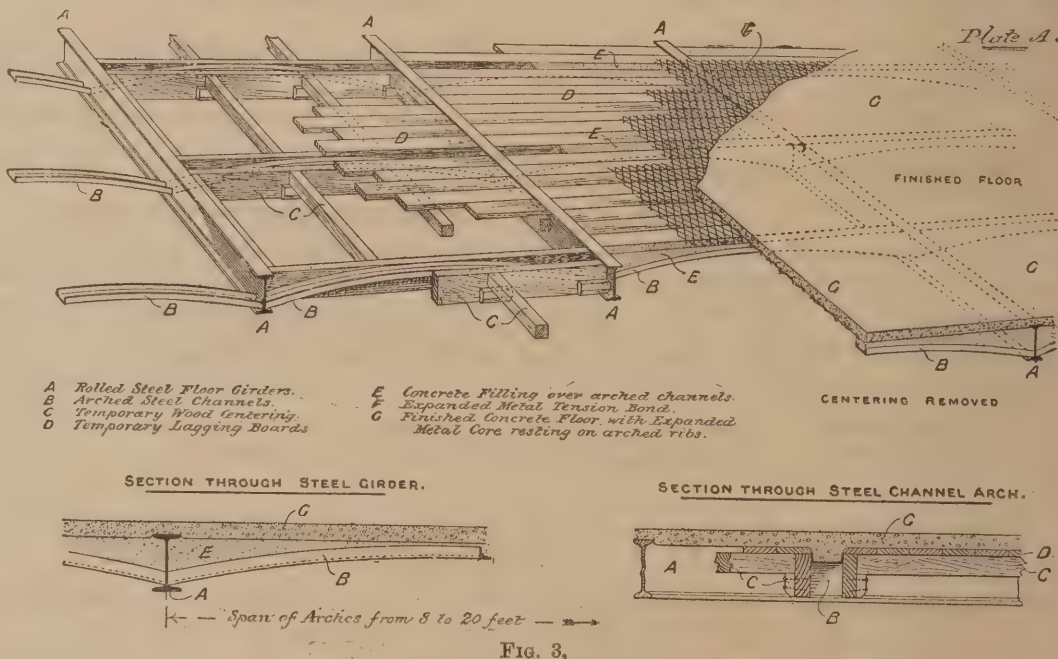


FIG. 3.

long way of the mesh crossing the rolled steel joists at right angles. When the concrete is laid on and tamped down the finer particles are forced under the expanded metal, slightly raising it, and thus forming a tension bond in the lower strata of the concrete floor. The weight of the slab may not exceed 20 lbs. to 25 lbs. per square foot of area. The floors and roof of the Southampton Theatre are carried out in this manner, with girders at 5 ft. centres; average thickness of concrete 2½ in. to 3 in.; and ingredients 4 of coke breeze to 1 of cement, laid on 3 in. mesh by ½ in. by ½ in. metal.

A floor constructed on the system illustrated at Fig. 2 may weigh from 30 lbs. to 40 lbs. per square foot of area, according to the depth of the joists. The 3 in. mesh is laid lengthwise across the lower flanges, and when the concrete is filled in and set the whole structure is securely locked together. The 3 in. floors of the Ivy Lodge Residential Flats, Fulham (joists 6 ft. apart, concrete 4 to 1 formed on 3 in. mesh $\frac{1}{10}$ in. by ½ in.)

Insurance Company in Colmore Row, Birmingham (architects, Mr. W. R. Lethaby, London, and Mr. Ball, Birmingham), and in the new composing room for the "Birmingham Daily Post," the girders being 35 ft. long and spaced at 6 ft. 9 in. centres; concrete 4½ in. thick laid on 3 in. mesh. System No. 2 is being carried out at premises for the Birmingham Mutual Bakery in Allesley Street, and at the new ice factory at Digbeth. I may add that steel embedded in cement is practically imperishable, and the expanded metal supplies to the concrete what it generally lacks—tensile resistance. With reference to tests made on concrete blocks with and without expanded metal, the summary of the report of Messrs. Fowler and Baker (the eminent engineers) shows that in the case of a 3 ft. 6 in. span expanded metal increases the strength of the slabs for carrying a uniform load from six to eight times; in the case of a 6 ft. 6 in. span the strength is increased from ten to eleven times.

Expanded Metal in Solid and Hollow Partitions.

The 2 in. solid partition is constructed by fixing tension rods at about 1 ft. centres from

* A paper read before the Birmingham Architectural Association on February 16th, 1900.

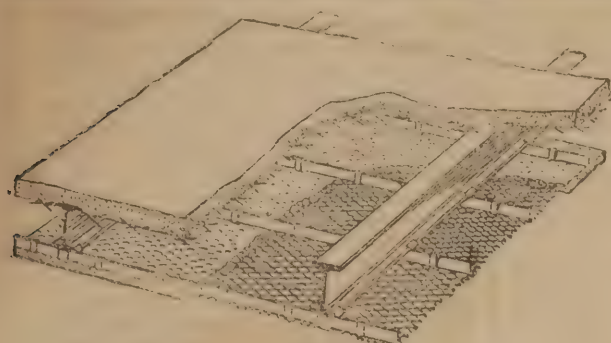


FIG. 5.

the floor to the ceiling (as shown in Fig. 4), on the line of the partition, and interlacing the mesh of expanded metal into the rods. It is then plastered on one side and a considerable key may be forced through it, forming the groundwork for the plastering on the other side; so that a partition built up in this manner is very cheap. It takes up a very small space and does not require a foundation for it to be built upon, which is an essential factor in many cases. It is not always possible to get a foundation beneath partitions, as they may be needed where there are no girders. The sound-proof qualities of these partitions have been tested and found to be quite equal to 4½ in. brickwork partitions. Other advantages of the 2 in. solid partition are—a saving of 66 per cent. of space and of more than half the weight of a brick wall. It is not essential to use expensive patent plaster in the construction. Some of the best examples have been plastered with ordinary “gauged” lime mortar. At New College, Oxford, most satisfactory results were obtained with partitions over 12 ft. high, the composition being 1 of Newberry lime to 1 of limestone and 1 of gravel, mixed in a mortar mill and gauged with 30 per cent. of plaster of Paris. Examples of the 2 in. solid partition may be seen at the Grand Hotel, Colmore Row, and at the Hen and Chickens Hotel, New Street, Birmingham.

The hollow partition is formed of light angle-iron standards fixed about 12 in. to 14 in. apart, with adjustable clips to steel joists at the top, and spiked down at the bottom to the breeze-concrete floor. Lathing clips are attached to the standards 6 in. apart and the mesh fixed on each side. This presents a rigid ground for the plaster, which is applied ¾ in. thick, making the total thickness about 4½ in. to 5 in. In the hollow partitions the angle standards are more in compression, whereas in the 2 in. solid partition the tension rods have to be strained taut. Several partitions of

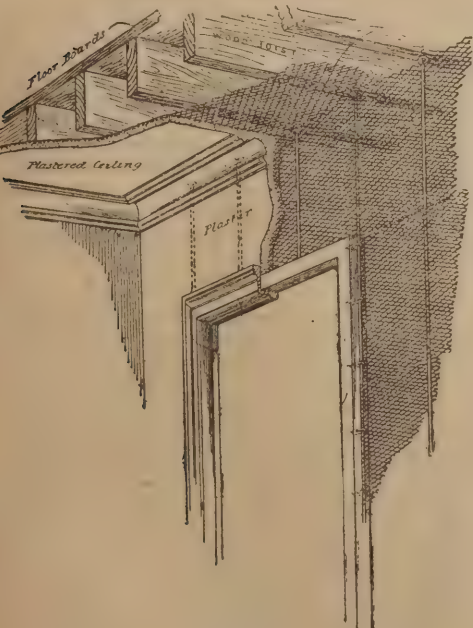


FIG. 4.

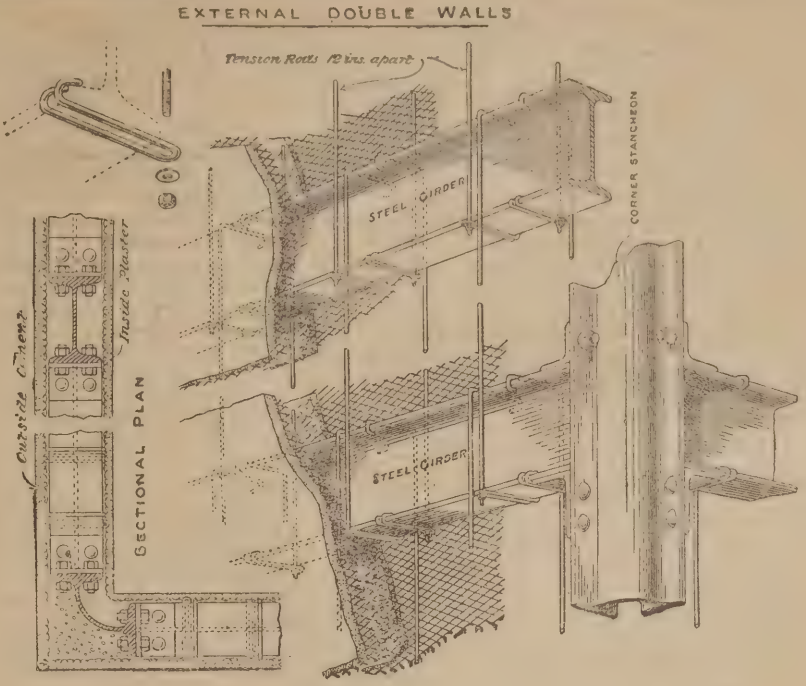


FIG. 7.

this hollow type are now in course of construction at the new premises for the Eagle Assurance Company in Colmore Row (of which the architect is Mr. Ball, Edmund Street, Birmingham).

Suspended Ceilings.

In most flooring systems where sound and fireproof efficiency is required it is desirable or necessary to use suspended ceilings, the air space between them and the floor being one of the best-known non-conductors. The method

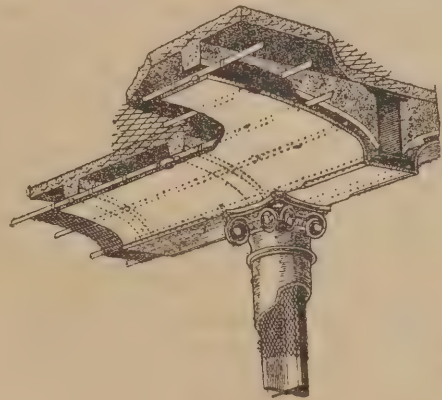


FIG. 6.

of applying expanded metal ceilings is very simple and is illustrated at Fig. 5, where the details are clearly shown, the circulating air space being the full depth of the rolled-steel joists. The steel clips and hangers are first attached to the bottom flange of the joists; the lathing bars are next placed in position, spaced 12 in. apart; the hangers are closed firmly on the bar; the mesh is then laid on and secured to the bars with small steel clips, the latter being spaced about 6 in. apart; and, lastly, the plaster is applied, usually in three coats, to bring up a total thickness of ¾ in.

Plaster for Expanded Metal.

Practically any of the plasters used in the trade may be applied to this metal fabric, but it is necessary that the first coat (or rendering) should be free from all acid or corrosive ingredients. The second and third coats not being directly on the metal, such properties are of little consequence. A satisfactory mortar or lime plaster may be formed of 1 part of well-burned fresh slaked lime and 1 or 2 parts of clean, sharp pit or fresh-water sand, with which should be thoroughly incorporated 1 lb. of dry, long, well-beaten hair to every three cubic feet of plaster. This mixture may be gauged with a small quantity of Paris or Portland cement to accelerate setting. To

prevent waste pressure should be avoided when applying it to the ceiling. The finished surface may be whitewashed, painted, or papered, according to taste.

The great advantage of expanded metal lathing, irrespective of its fire-, damp- and insect-proof properties, is the excellent key it affords for the plaster, combined with every facility for moulding, cutting, and attaching to wood or ironwork. It also prevents the plaster cracking under the influence of unusual heat, which constantly occurs in ceilings where wood laths are used. In ordinary wood floors the metal lathing is often used by directly attaching it to the underside of the wood joists with staples or spikes. Expanded metal is also used for many other purposes, such as encasing columns and stanchions, as shown in Fig. 6; no system of fire-resisting construction is efficient unless the steel and ironwork is properly encased. It is also largely used for outside construction in America (see Fig. 7). A building on this principle has recently been completed at the Gas Works, Dublin. [We are indebted to the Expanded Metal Company, Ltd., of 39, Upper Thames Street, E.C., for our illustrations].

A Lecture on Sewage Disposal was recently delivered at Sheffield by Mr. S. H. Adams, of York, before the Association of Sanitary Inspectors. After dealing with the earlier methods of sewage disposal, he described the Fosse system of Paris, and the manufacture of sulphate of ammonia at Bondy. Whilst fully appreciating the advantages pertaining to various systems, the lecturer expressed his feeling that from a combination of what was known as the holding-up or contact system and a septic or resolving tank the best—that is, the most reliable—results were obtainable. Where sewage was simply treated in transit of a limited time through a filter, bacterial agency was also limited to the time occupied by the sewage in transit; then if this sewage were long in transit the filter would apparently become a holding-up filter of doubtful construction, whereas on contact beds sewage might be retained until actually purified, regardless of the nature of the sewage itself. The advantages of the first settling tank lay in the fact that as far as possible all organic matter would be (if the tank were large enough) in solution before the liquid was put upon the beds. It was undoubtedly the case that many sewers served the purpose of the resolving tank; this and the varying conditions governing the work would show that no fixed rule was applicable to all, but that each installation should be dealt with according to the exigencies of the case.

Builders' Notes.

The death is announced of Mr. Ben Gooden, stone merchant, Brighouse. He was well known in the Yorkshire stone trade, and was highly esteemed.

The Lowestoft Master Builders' Association held its first annual dinner on Thursday last. The Mayor, Councillor E. E. Johnson, presided.

The death is announced of Mr. Ralph Platt, of Southport, at the age of eighty-one. He was a brickmaker who, it has been estimated, supplied over two hundred million bricks to Southport.

New Board School for Pudsey.—Plans have been passed for the new board school for the southern part of Pudsey, to be erected in Valley Road, Littlemoor, at a cost of about £7,000. The tenders have been let as follows:—Mason, John Ambler, Pudsey, £3,180; joiners, E. Hutton and Son, Fulneck, £2,130; plumber, W. Barrand, Leeds, £675; plasterers, Laycock and Son, Pudsey, £170; slaters, Hill and Wilson, Bradford, £360; painter, G. H. Smith, Pudsey, £98.

Cartwright Memorial Hall, Bradford.—It is stated that in consequence of increases in the prices of the various classes of building material and labour, the plans accepted for the Cartwright Memorial Hall in Bradford, which were originally estimated to cost £38,000, cannot now be erected for less than 25 per cent. more. It will be remembered that Lord Masham gave £40,000 for the erection of the hall in Manningham Park, and the question now being discussed is, will Lord Masham's gift have to be supplemented out of the rates, or other plans substituted?

London County Council.—In the course of a long report the Improvements Committee stated that the length of frontage of the buildings which would face the northern side of the widened Strand would be 850ft.; the frontage of the southern side of the new crescent would be 1,080ft.; whilst the length of frontage on the northern side of the crescent from Wellington Street to St. Clement's Inn would be 1,220ft. The length of the frontage on the eastern side of the main street from the crescent to Holborn would be 1,430ft.; on the western side 1,300ft. The total length of frontage therefore of the new buildings which would be erected in connection with the complete improvement would be 5,980ft., or nearly 1½ miles. The recommendations of the Committee with regard to inviting designs from eight leading architects and controlling the architectural features of the new thoroughfare (full particulars of which were given on page 42 of last week's issue) were postponed for a fortnight.

Solicitors as Builders.—On Thursday last at the London Bankruptcy Court the public examination was held of Arnold, Sismey and Arnold, London, solicitors, carrying on business under the style of Keighley, Arnold and Sismey. They filed their own petition and furnished a joint statement of affairs showing a total indebtedness of £364,001, of which £278,652 was treated as fully secured and £86,187 as likely to rank, the assets being returned at £21,177, including an estimated surplus of £12,912 from securities held by creditors. It appeared that in and subsequent to 1895 the firm acquired certain building sites and house property in the City and West End of London, and had since been engaged (mainly with the aid of borrowed money) in building operations of great magnitude, which had been the cause of their failure. A scheme providing the payment of a composition of 7s. 6d. in the pound has been accepted by the creditors. The hearing was adjourned for three weeks.

Surveying and Sanitary Notes.

Cost of Clearing Snow from Streets.—The St. Giles's Board of Works have spent this month an additional £320 for labour and £455 for cartage in clearing away the snow from the streets in their district.

Sanitary Institute Congress and Exhibition.—The Sanitary Institute has resolved to postpone the congress and exhibition arranged for the present year at Nottingham, owing to the large responsibilities placed upon the country by the war, and their probable effect on the success of the exhibition.

Surveyors' Institution.—It has been decided, on the invitation of the Yorkshire Provincial Committee, to hold the next county meeting at Leeds, on April 25th and 26th. The first day will be devoted to papers and discussions, with a dinner in the evening; the second day to excursions to various places of interest in Leeds and its neighbourhood.

The Annual Dinner of the Surveyors' Institution was held last Wednesday evening at the Holborn Restaurant, the president, Mr. T. M. Rickman, occupying the chair. Mr. Jesse Collings, M.P., said the Institution was established thirty-two years ago and now had 3,000 members. The new building in Great George Street had cost nearly £40,000, and had a library of about 10,000 volumes.

Insanitary State of Dublin.—In the course of the Local Government Board enquiry into the public health of Dublin, Mr. Maguire, formerly chairman of the Public Health Committee was examined last week. He said that, taking all of Dublin, no unprejudiced engineer would pass more than half of the houses, new and old, including Merrion Square and all the other squares and streets in the city.

Decision Affecting Roads.—The North British Railway Company appealed against notices requiring them to execute granolithic pavements in Bothwell, Glasgow. Sheriff Principal Berry recently found for the company, holding that the notices go beyond what is authorised by statute, which authorises the repair and not the formation of either highways or footpaths.

Leeds Street Improvements.—The Leeds Improvements Committee has decided to recommend the City Council to spend £67,000 on the purchase of various properties required for public improvements in Duncan Street, Smithies Street, Wade Lane, Woodhouse Lane, Lands Lane, Meadow Road, Easy Road, Brunswick Row, and Back Nile Street. It is intended to demolish a large portion of the property on the north side of Duncan Street with a view to making that thoroughfare of the same width as Boar Lane.

Prosecution for Insufficient Lavatory Accommodation.—At Burslem, Staffs., last week, before the stipendiary magistrate, Messrs. Doulton, Limited, were charged with "failing to provide and maintain sufficient and suitable washing conveniences for all persons employed in dangerous processes, as near as practicable to the places in which such persons were employed." Miss Deane, H.M. Inspector, proved that on January 16th last, when she visited the factory in company with Miss Anderson (H.M. Principal Lady Inspector of Factories) she found that in the lower works, where fourteen workers were employed, no lavatory accommodation was available, and that in the upper works a trough with waste-pipe, containing four loose basins and with five taps, was provided for the use of thirty-five workers. Mr. Baily, manager for Messrs. Doulton, gave evidence that alterations were in progress which would include increased lavatory accommodation.—The case was dismissed.

Local Authorities and Private Drains.—An important decision under the Public Health Act was given on Thursday in the Court of Appeal when the case of *Sykes and another v. The Sowerby Bridge Urban Sanitary Authority* was decided. The plaintiffs had

constructed a drain to carry off the surface water which flooded the land, and did great damage in the neighbourhood of the stone quarry, of which they were owners. The Sanitary Authority claimed that they were entitled to use the drain, basing their claim on the Public Health Act of 1875. An injunction against the authority had been obtained in the Halifax County Court, but this decision was reversed in the Divisional Court and that decision was now appealed against.—Mr. Lawson Walton, in arguing in favour of the decision in the Court below, based his argument on the fact that the drain discharged itself into a public sewer.—Lord Justice Smith, in giving judgment, said he had no doubt that the drain was a sewer within the meaning of the Public Health Act of 1875. He quoted the section of the Act governing the appeal, and said the point at issue was the meaning of the words "his own profit." As the plaintiffs had made this drain so that their quarry might be rid of the surface water for the more profitable working of the land, the Queen's Bench were wrong in holding that it was not constructed for the profit of the owners, and in his opinion the drain did not vest in the local authority.—Lords Justices Collins and Romer concurred, the latter holding that if the decision of the Divisional Court had stood the result would have been that all agricultural drains throughout the land would have become vested in the local authorities.—Judgment accordingly.

Engineering Notes.

The new line of the City and South London Electric Railway to Moorgate Street was opened for traffic on Monday last.

Mr. Peter Schuyler Bruff, who was for many years one of the best-known civil engineers in the eastern counties, died on Saturday last at Ipswich.

"Portable Pneumatic Tools" was the title of Mr. Ewart C. Amos' lecture before the Institution of Mechanical Engineers last Thursday. Valveless hammers have essentially a short stroke, and, although economical in air consumption in relation to the number of blows given, they will not compare with valve hammers in giving powerful blows, which is necessary in heavy chipping or riveting. Owing, however, to their simple construction, they have probably a longer life than the valve hammers, and for such purposes as beading flues, light caulking and chipping, and especially carving in stone, they compare very favourably with their rivals. Riveters, drills, hoists, jacks and shears were also dealt with in the lecture.

Proposed Central Water Board.—At the recent half-yearly meeting of the British Association of Waterworks Engineers (Mr. W. Watts, of Sheffield, presiding), Mr. C. E. Jones, of Leyton, Essex, read a paper in the course of which he advocated the creation of an independent National Water Board, which should include representatives of law, geology, hydraulic engineering, chemistry and meteorology, and possess wide-reaching controlling powers. The coupling-up of distributing mains and other apparatus in contiguous towns or systems should, he said, wherever practicable, be made compulsory; but it seemed hopeless to expect that this combined action would ever be attained except by the intervention of some duly constituted central authority. It took the London water companies half a century to recognise the value of intercommunication, and ultimately a State department had to enforce its adoption. He suggested that the London companies might be advantageously amalgamated. He submitted that the monopolization of gathering grounds by powerful and wealthy corporations was a growing evil, fraught with peril to smaller communities, and requiring the immediate attention of the legislature. As to the scheme for "tapping" Wales for the benefit of London, he contended that the provision of additional storage capacity in the present watersheds would relegate schemes of this character to the dim and distant future.

Masters and Men.

The Dundee Plumbers have determined to resist the proposed reduction of their wages from 9d. to 8½d. per hour.

Reduction of Wages at Stirling.—The master builders have resolved to reduce the wages of masons and joiners by 1d. per hour, and the plasterers, plumbers and slaters by ½d.

The Dundee Masons struck last week on account of the masters holding to their determination to reduce the wages of hewers from 9d. to 8½d. per hour and of builders from 9½d. to 9d. About 400 men are out, although eight non-associated masters have agreed to continue the wages.

Plumbers' Strike in Bradford.—Some 200 plumbers came out on strike last Saturday week at Bradford, for an advance in wages from 8d. to 9d. per hour. The masters have intimated that they are prepared to pay 8½d. per hour, provided the men agree to the stipulations that they shall start on the job or at the shop at the discretion of the employer; that work shall cease at 4.30 p.m. for three weeks before and three weeks after Christmas, and at five p.m. for the three weeks before and three after the six weeks mentioned; the men taking an hour instead of half-an-hour for dinner.

The Aberdeen Building Trade Dispute.—In view of the present depression in the building trade of this town the masons have agreed to a reduction of ½d. per hour in their wages. With regard to the painters the masters have intimated to the men that they are prepared to terminate the dispute on the following terms:—(1) The option on their part to pay the journeymen in their first year, and the old men 1d. or ½d. less per hour than the standard wage; (2) the deletion of the by-law referring to the payment of wages for suburban work.

The Recent Stormy Weather put a complete stop throughout the country to building operations, but has provided the small tradesman with an almost endless list of small jobs. Meantime the more regular class of builder is affected by the high prices of materials, and is postponing his works to a more favourable season, when he reckons upon seeing prices fall. The brickmaker and the timber merchant, on the other hand, are not so confident that a fall will take place. In the latter trade, it is true, some of the younger firms at the Humber ports have been selling "to arrive" at low prices, but in doing so they are speculating upon a fall which has not yet been established. Timber orders, meanwhile, are increasing, and, although the stocks at the ports are large, all the spring consumption is to come, and a good demand is inevitable, so that prices may even harden.

Trade and Craft.

Welsbach Gas Lighting.

Everybody knows of the revolution in gas lighting which has been caused by the introduction of the incandescent mantle, and there can be "no possible doubt whatever" as to the improvement effected. When Auer von Welsbach first made his discovery that it was possible to construct a mantle with the rare earths that would give a light ten times as great as that obtainable with the old gas burners, he little thought perhaps of the magnitude which his invention would attain. Comparing the two, we find that while the ordinary open flame burner gives about two or three candle-power per cubic foot of gas consumed, with the latest type of Welsbach burner it is possible to have a light of more than twenty-five candle-power for the same gas consumption. This point need not, however, be emphasised, for, whatever may be the opinion held with regard to other factors, it is now universally admitted that, as a gas light, the Welsbach has no equal. What people have argued about is the mantle itself. There is no use disputing the fact that this is still a fragile article and requires careful handling; yet, when it is looked after properly, it will stand for a considerably longer period than the opponents of the Welsbach system are prepared to admit. It is interesting to note at this juncture, in view of the litigation which has arisen in connection with the mantle (in which, however, the Welsbach Company have been successful all along the line), that there are three principal patents—the 1885 patent, which expired in December last; the 1886 patent, which expires next March; and the 1893 patent, which will expire in January, 1907. The last patent is, at the present time, of the most consequence, as it was in 1893 the discovery was made that by adding a small percentage of ceria to the thorium (the use of which constituted the 1886 patent) a greatly improved light was obtainable. With regard to the Company's new "Kern" burner, this is much more efficient than the old "C" type, which gave a lower candle-power, was only made in one size, was detrimentally affected by an increase in the gas pressure, and required a chimney. It has already been shown that, as a light, the Welsbach is much better than the old form. Now as to cost, which in the majority of cases is the consideration. As an example, take a house having twenty ordinary gas-burners, each using five cubic feet of gas per hour and giving a 16 candle-power light. With these burners in use for 1,000 hours and with gas at 2s. 6d. per 1,000 cubic feet, you get a total of

£12 10s. If No. 0 Welsbach burners (consuming ¾ ft. of gas an hour) were substituted, the cost would drop down to £1 17s. 6d., besides which 25 per cent. more light would be obtained. When we come to compare it with electric light, it is found that with electricity at the low rate of 2d. per unit it would be nearly six times as expensive as a Welsbach light with gas at 2s. 6d. per 1,000 cubic feet. As a light, we do not think it equal in all respects to the electric light; but it is decidedly cheaper at the present moment. Whether it will be a decade hence is, of course, another matter. A great deal of attention has latterly been drawn to the increased application of the Welsbach incandescent light to public lighting, and when an actual examination is made it is surprising to note the extent to which it has been adopted. The burner best adapted for public lighting is the No. 4 new burner, which, with a gas consumption of four cubic feet an hour, gives a light of 100 candle-power. Without going into figures it may be mentioned that the same difference is found between the cost of street lighting by the Welsbach system and by electricity as when these two systems were compared with regard to indoor lighting. The electric arc lamp is at present in a state of imperfection, and may possibly be wholly supplanted in the future by something less complicated and spasmodic. The arc lights in the district of St. Pancras cost about £30 a year to maintain. It was first thought that the mantle was too fragile for outdoor use, but, where proper lanterns fitted with anti-vibrators are employed, this fear has proved groundless. Even in most exposed places, and where vibration is excessive, six mantles a year have been found to be ample, which (for the No. 4 burner) would amount to 4s. 6d. only. Our esteemed contemporary the "Lancet" says of the Welsbach system, after having made a special enquiry, that "the heat and carbonic acid produced by the combustion of this burner is one-half that of an ordinary gas burner, though the light given is more than three times as great." Enough has been said to show, and prove, the superiority on all sides of the Welsbach over the old systems, and its lower cost as compared with the electric light, and it would need no further proof that these merits were appreciated than the fact that the number of private and public users of the Welsbach mantles and burners increases daily.

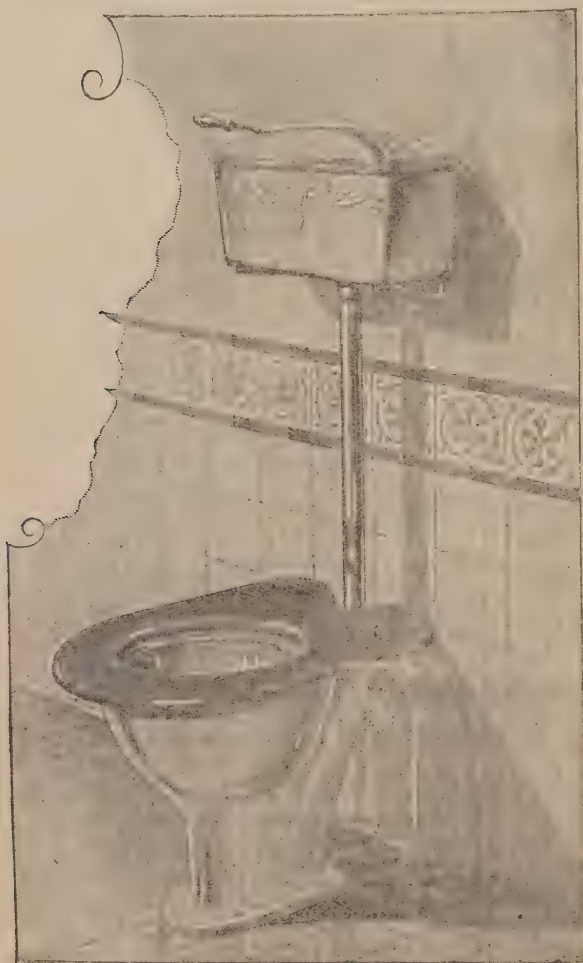
The Bricklayers and Carpenters of Taunton have sent in a demand for an increase of a 1d. per hour in their wages, with the intimation that if their request is not complied with they will cease work on April 1st. The wages they now receive are 6d. per hour, and they ask for 7d.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—				
March	2	Daventry—Alterations...	Co-operative Society ...	Secretary, Co-operative Society, High-street, Daventry.
"	2	Derby—Stabling ...	Midland Railway Company ...	The Architect, Cavendish House, Derby.
"	2	Great Horton, near Bradford—Baler House ...	Industrial Society, Limited ...	J. Drake and Son, Architects, Queensbury.
"	2	Leeds—Heating House ...	.....	Engineer, Municipal-buildings, Leeds.
"	3	Wolverhampton—Markets ...	Market Committee ...	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
"	3	Hendon—Schools ...	School Board ...	G. E. T. Lawrence, 22, Buckingham-street, W.C.
"	3	Howorth, Durham—Classrooms ...	School Board ...	H. Miller, School Board Offices, Felling.
"	3	Aboyne, Scotland—Hall ...	.....	Jenkins and Marr, 16, Bridge-street, Aberdeen.
"	5	Leyton—School ...	School Board ...	W. Jacques, 2, Fen-court, E.C.
"	5	Coventry—Buildings ...	Corporation ...	J. E. Swindlehurst, Engineer, St. Mary's Hall, Coventry.
"	5	Belfast—Store ...	Great Northern Railway Company ...	Engineer, G.N.R. Terminus, Amiens-street, Dublin.
"	5	Bristol—Alterations ...	Guardians ...	W. S. Skinner, Edinburgh Chambers, Baldwin-st., Bristol.
"	5	Clowne, near Sheffield—School ...	School Board ...	Rollinson and Son, 13, Corporation-street, Chesterfield.
"	5	Plymouth—Chapel ...	.....	W. J. Snell, 13, Courtenay-street, Plymouth.
"	5	Wheatley, Halifax—Villas ...	.....	W. H. D. Horsfall, Tower Chambers, Silver-street, Halifax.
"	6	Acton—Stables, &c. ...	District Council ...	D. J. Ebbetts, 242, High-street, Acton.
"	6	Craigdam, Scotland—Alterations ...	United Presbyterians ...	Jenkins and Marr, 16, Bridge-street, Aberdeen.
"	7	Llanrhyddlad, Anglesey—Schools ...	.....	J. Owen, Architect and Surveyor, Menai Bridge.
"	8	Charlwood, Horley, Surrey—Alterations ..	London County Council ...	C. J. Stewart, Council Offices, Spring Gardens, S.W.
"	10	Newport, I. of W.—Repairs ...	.....	J. B. Colson, 45, Jewry-street, Winchester.
"	12	South Normanton—School ...	School Board ...	R. C. & E. R. Sutton, Bromley Ho., Angel-row, Nottingham.
"	12	Ilford—Pavilion ...	Urban District Council ...	H. Shaw, 7, Cranbrook-road, Ilford.
"	13	Dartford—School ...	School Board ...	H. Hall, 19, Doughty-street, Mecklenburgh-square.
"	13	Mortlake—Dwellings ...	Urban District Council ...	G. B. Tomes, Surveyor, High-street, Mortlake, S.W.
"	14	Dartford—Hospital ...	Metropolitan Asylums Board ...	A. and G. Harston, 15, Leadenhall-street, E.C.
"	14	London, W.C.—Cupboards ...	Metropolitan Asylums Board ...	Clerk to Board, Norfolk House, Norfolk-street, Strand.
"	14	Hoyleake, Cheshire—Chimney ...	Urban District Council ...	T. Foster, District Council Offices, Hoyleake.
"	15	Luton—Depot ...	Town Council ...	Engineer, Town Hall, Luton.
"	19	Wrexham—Baths ...	Town Council ...	Borough Surveyor, Guildhall, Wrexham.
"	19	Wrexham—Shed ...	Town Council ...	Borough Surveyor, Guildhall, Wrexham.
"	25	Thorndon, Suffolk—Shed	F. C. Foster, Thorndon.

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MARCH 7, 1900.
No. CCLXV.

EFFINGHAM HOUSE,
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An Architectural Causerie.

"Primarily an Architect."

In a recent article on the work of Mr. C. F. A. Voysey in "The Furnisher," the writer—in a description of certain designs for decorative fabrics, wall-coverings and furniture—reminds his readers that Mr. Voysey is "primarily an architect." In the next sentence, however, he hastens to explain the views which this architect holds upon the scope of his calling, and those of us who are familiar with Mr. Voysey's work know how conscientiously he carries out these views down to the smallest detail in the smallest house. The fact, however, that it seems necessary to have to explain the particular opinions of a particular architect on the legitimate provinces of his art, is suggestive of thought and consideration. The dictionary definition of an architect is "one who plans and designs buildings and superintends their erection," whilst a decorator is described as "one who adorns or embellishes"; and this may fairly be considered to be the opinion of the "man in the street," should he trouble himself to express one on a subject of such little general interest. It is only upon the very special occasion when the "man in the street" wishes to build himself a house, or for his exceptional qualifications is hoisted into a position of trust and judgment on the building committee of some municipal building, that he begins to busy himself upon the duties of an architect and the limitations of the profession. The architect is naturally expected to be an omnipresent being, always on the work in progress, yet at the same time never away from his office—designing, drawing, and superintending the plans of the particular building in which the client is interested. It is also quite expected that for the munificent commission of five per cent. the architect shall be a sanitary specialist, a quantity surveyor, an engineer, electrician, and legal adviser. It is, however, absolutely outside an architect's province to suggest a scheme of decoration for the building he has built, or to design the furniture which is to be placed in it. Should such a suggestion be made, the client displays a feeling of intense distrust in the practical qualifications of the architect he has employed, and is dismayed to perceive the cloven hoof of the artist appearing beneath the inevitable frock-coat of the professional man. It is not the object of this article to lay down any particular code of rules setting forth what an architect should or should not undertake, but rather to suggest that it is as undesirable as it is difficult to draw any particular line of demarcation, such as a dictionary definition, between architecture and decoration.

Whilst one cannot agree with those who contend that an architect should invariably hand over his building to the decorator and furnisher to embellish, it is a mistake to insist upon an architect designing everything relative to the house. If he can do this—and one is delighted to find some architects who can—a homogeneity is arrived at between the architecture, decoration and furnishing which can be obtained in no other

way—it is the "ideal," but often it is not possible. There are many—far too many—good architects who are quite unable to furnish a colour scheme or design a sideboard, and it would be narrowing the circle indeed were we to exclude these from practicing their calling. Whilst, therefore, it is impossible to say where an architect should end (so much depends upon the individuality of the man himself), it is possible to say where the decorative artist—for there must be decorative artists—should begin. One need only glance down a few of the names which have animated decorative life in the last decade alone to recognise the primary importance of an architectural training before attempting decoration. Over such names as William Morris, J. D. Sedding, Philip Webb, H. Wilson, Baillie Scott and

form and treatment in the building which has to be decorated. The conclusion which a thoughtful study of the kindred nature of architecture and decoration brings us to is, that every architect should decorate and furnish his building, seeing that in this way one obtains the impression of one mind throughout the entire work. But whilst architects are year by year realising the necessity of studying decoration more than they have done in the past, we regret to notice no sign of a corresponding desire towards the study of architecture on the part of the decorative artist. This, in a very great measure, is the fault of the training the student receives in the great art schools, such as South Kensington and elsewhere. Hundreds of students, covered with diplomas and prizes, yearly proceed from these (presumably) centres of art



R.I.B.A. PUGIN STUDENTSHIP: MEDAL OF MERIT. STE. GILLES À CAEN.
DRAWN BY J. A. WOORE.

C. F. A. Voysey, to mention only a few, could be written "Primarily an Architect." The reason for the insistence of a knowledge of architecture is not difficult to understand. The simple laws of construction upon which all true building is based, the gradual development of "style" which from time to time fashions and forms such building to express the particular requirements of a particular period, form the alphabet of decoration. The artist who would lightly undertake to embellish an interior without being conversant with the simple laws of construction which animates the building is surely more than likely to introduce an entirely foreign element into the decorative scheme. Again, should the artist affect to despise a knowledge of "style," how is it possible for him to finish satisfactorily, for example, a "Georgian" building? It is useless to ignore the dominating influence of architectural

education utterly unfit to undertake the decoration of an ordinary drawingroom. Their complaint is, when they get no employment, that the architect has overstepped the rightful limits of his profession and intruded on their domain; but as a matter of fact architects are realising that the only satisfactory manner to finish a building is to do so themselves, and not to employ incompetent dreamers. It is not given to one man in a thousand to design a "Trocadero" frieze, but there is a real demand for decorators who have studied architectural style and are in sympathy with the building that needs embellishing. Such an one will always find encouragement and help from the architectural profession, but in proportion as this type ceases to exist, in the same proportion will the list be extended of those decorative artists who "primarily are architects."

H. S. M.

The Wayfarer on his Discovery.

AFTER paying several visits to architects of the younger generation, and making two or three secret calls at the Arts and Crafts in Regent Street, the Wayfarer came to the pleasant conclusion that there might really be something in this new discovery of his; that he had often thought the same thing about other discoveries seemed in no way to damp his present enthusiasm. It is true that he found the followers of this New Art movement were not so much bound together by ideas in common as by a wish to outdo one another in originality. A spirit of emulation was a strong characteristic of the school, and if the results at times seemed inadequate to the amount of thought and feeling given out in the production of some article for daily use, this detracted but little from his belief that here was a new school, quite unique in its peculiar way. It was always an easy matter to pick out an individual member of this band from among a crowd of architects, designers, and craftsmen, not because they wore soft hats or Liberty ties, but because a general air of intelligence, alertness, and enthusiasm distinguished them from their steady, sober, and perhaps rather more serious brothers in art. Mixing with the men belonging to this school revealed to the Wayfarer that they make use of the same terms, although their work is so different. A common phrase, often heard, is "The legitimate use of material"; they will also tell you that a wood moulding should be condemned if it is the least bit like a metal one, and so on. In referring to a building, you would be told that it was a simple, broad treatment, or that it was a trifle "Arty," or "not Arty," as the case might be. Peaky mouldings, filletless mouldings, columns with bases but without caps, hearts, diamonds, ellipses, darts, scoopings, trees, green paint, birds, beasts, fishes, potatoes on sticks stuck on ridges, and curiously wrought plates on the top of iron finials—these are a few of the amusing forms used in this New Art Movement. A heart shape is sometimes used the right way up and sometimes the wrong way up, the latter being thought a trifle more out of the common. Some favour diamonds, some circles, others again pin their faith to various treatments of the tree. Adverse criticism of all kinds, from the serious to the ridiculous, has been hurled at the heads of those who have been sarcastically described as "Nature architects," but, curiously enough, they still persist in designing hearts and other wonderful shapes which have not yet found a place in the architectural dictionaries. I am told, said the Wayfarer, that there is a remarkable example of a New Art building in one of the Glasgow thoroughfares. Across the façade and placed at certain intervals are groups of trees, birds, and fishes labelled "trees grow," "birds fly," and "fish swim." Could architecture be more graphic? cried the Wayfarer with enthusiasm, and what an object lesson for the city man in the street, who will soon forget if he is not careful that there are such things as trees, birds, fish, and that they grow, fly, and swim. A local paper, commenting on the architecture, suggested in a manner more frivolous than clever that another panel might be added with a group of donkeys labelled "donkeys bray." This, said the Wayfarer, with one of his rare and beautiful smiles, is a sample of the wit meted out to this New Art Movement, which, whatever its faults and shortcomings, seems to be an honest desire that "new design shall be founded on a strict consideration of the exact purpose to be fulfilled by the proposed object."

G. Ll. M.

On Reflection.

Strengthening the Housing Bill.

IN time of war domestic reform is apt to be neglected. It is therefore particularly gratifying that, in spite of the nation's preoccupation in South African affairs, there are increasing signs of a general desire to grapple with at least one old-standing and widespread evil, the utterly inadequate housing accommodation for the working classes. We make no apology for recurring to a question we have often discussed in these columns, for it is one in the solution of which builders and architects must necessarily take an important share. The Government has made some attempt—though a very feeble and inadequate attempt—to deal with the problem, and the immediate business before those who recognise its gravity and urgency is to strengthen the Government Bill so as to make it a real engine of reform. We note with satisfaction that the important conference held last week at the Memorial Hall, has come to precisely this conclusion; it accepts the Government Bill as an instalment, puts on record the reforms it considers represent the barest minimum of immediate requirements, and forthwith constitutes itself into a national committee to watch the Housing Bill, and to impress the need for the proposed reforms upon Parliament. A valuable object lesson in the powerlessness of local authorities in the present state of the law to cope effectively with the evils of overcrowding and insanitary housing is afforded by the great housing scheme of the L.C.C., the completion of which was celebrated last Saturday, when the Prince of Wales opened the last of the model blocks on the Boundary Street area. With the congratulations bestowed upon those who have engineered this great municipal enterprise we heartily agree. One of the worst slum areas in London has been completely swept away, clean and substantial dwellings, with ample breathing spaces, replace the filthy dilapidated hovels and narrow alleys of the old "Jago." But the old slum dwellers, where are they? Adding to the congestion of some neighbouring district, forming new slums, perhaps, but not to any considerable extent inhabiting the new blocks. When the old houses were destroyed their occupants had to shift for themselves; the Council had no power to build them homes in a suburban district and secure for them the advantages of cheap means of travel to and from their work; nor could they, when the new dwellings were completed, let them at rentals which the former inhabitants of the district could afford. The necessity for compensating the former owners, and for repaying the building loan within a period of sixty years made this impossible.

The Garden City Project.

ONE means of securing improved conditions of housing, of which more is likely to be heard in the near future, is the method advocated by the Garden City Association. From articles and correspondence which have already appeared in our columns most of our readers will be familiar with the general features of this project. It is proposed to establish a township on a suitable site which at present has no other than agricultural value; the community would be its own landlord, and obviously it would be possible under such conditions to supply healthy and ample dwellings at very low rentals. The scheme is one which, its promoters claim, is capable of being put into immediate operation and which involves no interference of any kind with "vested interests." If these are justifiable claims, and we think they are, is it too much to hope that it will not be long before there are found

a sufficient number of manufacturers and others bold enough and public spirited enough to establish the first "Garden City," and so prove by actual experiment whether or not this most attractive project (even its critics do not deny its attractiveness) is indeed capable of solving the problem of the housing of the working classes, as well as other scarcely less important social problems? The Association, which has been gradually and quietly increasing in numbers and influence since its inauguration last June, now makes an appeal for funds to enable it to obtain suitable offices and regular secretarial assistance, and to enlarge the scope of its work with a view to early practical steps in the work of building a "city of homes." The hon. treasurer is Mr. Alex. W. Payne, F.C.A., 70, Finsbury Pavement, London, E.C., and any of our readers who are interested in the project may obtain full information regarding it from Mr. E. Howard, 11, New Court, Carey Street, W.C., whose little book "To-morrow" first suggested the possibility of effective action on these lines.

Cheap Electricity.

WE announced some time ago that a company had been promoted for supplying electrical energy at a cheap rate throughout a great portion of South Wales. The Bill dealing with the scheme was, together with three other similar Bills relating to Lancashire, Tyneside, and Durham, read a second time in the House of Commons on Thursday. The House has thus changed its attitude towards private electrical corporations, for last session it refused, by a considerable majority, to read for a second time a similar Bill affecting a large manufacturing area in Nottingham and South Yorkshire. The main objection raised has been that the wholesale distribution of current by private companies was "a direct attack upon the rights, privileges, and duties of municipal corporations," and "would practically set aside the existing law which adequately protects corporations in the exercise of the duties which they have to perform." These duties have not, however, been fully performed, and this is one reason why our adaptation of electricity to commercial ends has been so lamentably behind foreign countries. To show that these new Bills are tending to a right end—the supply of current at a rate cheap enough to allow it to be extensively and largely used—let us consider the scheme for South Wales. To put the matter briefly, it is proposed that generating stations shall be erected practically at the mouth of the coal pits at Neath, Pontypridd and Pontypool, and that mains shall be laid at the side of the railways over the whole county of Glamorgan and the industrial part of Monmouthshire. The area so covered would be more than a thousand square miles, and is crowded with collieries, works, and factories. At the present moment only sixteen and a half square miles of this area have a public electric supply, and the average charge is about 5d. per unit; whereas the new company would not be allowed to charge more than 2d., and "it is probable the actual charge will be much less." Putting another comparison, the promoters say they will supply current at between £4 and £10 per horse-power per annum; the present cost ranges between £15 and £30. No exclusive powers are sought, and the Bill provides that no retail consumer shall be supplied without the consent of the local authority; and, in addition, the local authority may, at the end of forty-two years, purchase so much of the undertaking as is in its district at a fair market value. It is to be hoped that the Bills will be passed and a new era started, bringing down the price of electrical energy so that its use may be something akin to that which obtains in America, where the existence of large electric power plants alone makes cheap electricity possible.

JOHANNESBURG: BEFORE AND AFTER THE WAR.*

From an Architect's Point of View.

By JOHN BEGG.

THERE is a large amount of glamour connected with the idea of being in a new country, but I may say I needed it all to reconcile me to settling down in Johannesburg. I was not so foolish as to expect things to be done as well as at home, but at the same time I was scarcely so wise or so well-informed as to expect things to be quite as bad as I found them in the building trade. Take ordinary construction alone. I found it was the universal practice to use "imported" Swedish and American doors and windows in even the better class of houses. I found that plaster ceilings were almost non-existent and that the never-failing substitute was matchboarding—wretched spruce matchboarding 3 in. thick, full of cracks and shakes, and knots that did not stop short of being both "large" and "loose." I found that in timber generally the best the market could provide was inferior to our seconds or even thirds, and was all very expensive. Bricklayers' materials provided a case nearly as bad. The ordinary brick, called "stock"—but inaptly named if compared with that excellent article the average London stock—was a miserable ill-shaped lump that you could generally break with your fingers. And they actually had an inferior quality, well named "slops," which was a positive outrage on the unfortunate buyer. Very good facing bricks were to be obtained, but at what a cost, and it was one chance to ten that they would bond in with any other brick, so little did brickmakers understand the use of a uniform gauge. The price of cement was almost prohibitive. Lime was to be got in any quantity, but whether it was owing to the grinding, or to any adulteration, it could seldom be relied upon to set really well. As a substitute, a substance called by the Dutch name of "dagga" was much used in brick buildings of one storey. This is really nothing more than mud, the ordinary clayey soil of the country, screened from pebbles and large lumps and mixed with water to the desired consistency. This same "dagga" was the universal material for internal plastering in all except the very best work, and a wonderfully good plaster it makes. It can be put on with extraordinary rapidity, and is quite durable if you protect it with a good stout wallpaper and keep damp away from it. Then when one comes to the roof the architect has no choice, except between one gauge of corrugated galvanised iron and another. This material, which only a few years back was the one material for our walls as well, though it has been almost entirely ousted by brick, still retained its place on the roofs of Johannesburg. You may do what you will with corrugated iron, you may paint it red or green, or in stripes, or leave it for the dust to settle on and tone down its rawness a little, still it remains the emblem *par excellence* of naked and unashamed gimcracking. All this will give you some idea of what the architect has to depend on in the shape of materials. There is one material among so many that are bad to which I must give a tribute of unqualified praise; that is the excellent building stone which is quarried near Boksburg, at Pretoria, and just across the border of the Free State. But, as with everything else in that land of many limitations, the use of this is limited on account of the almost prohibitive cost of working it and bringing it to town by rail. An interesting experiment has recently been made in the manufacture of "Owen's Artificial Stone," such as is being made in the neighbourhood of Bathgate, Edinburgh. When this experiment was mooted, I was in hopes that a material was about to be produced that would enable one to discard plaster as a means of external adornment (and that at little more

than the cost of plaster), for Owen's stone, when properly used, is not an artificial stone in the ordinary sense, but a composition which can be cut, dressed and carved while comparatively soft, hardening afterwards on exposure. I cannot say that my hopes were fulfilled, for the manufacture never progressed much beyond the experimental stage, and the stone had never been produced in sufficient quantity to enable the makers to place it on the market at a sufficiently low price. So much for materials; I will now tell you something of

Johannesburg Building Construction,

and to do this I think I cannot do better than describe the erection from the foundations upwards, as if I were conducting an elementary construction class, of an average cottage—which, by the way, would be called a house out there, and would realise for its owner the rent of a mansion in Edinburgh. When the positions of the various walls have been set

this is a luxury only to be thought of in the best class of building. When the sills are set (they consist generally of one course of brick on edge) and the window-frames are placed, away we go up towards the wall-head, with perhaps one more course of hoop-iron in the partitions. The wall-plate will consist of a timber 1½ in. by 4½ in., tied down to the brick-work with hoop-iron straps; and then we are ready for the roof. In the meantime the carpenters will have been getting ready the roof trusses, of 4½ in. by 1½ in. timbers, halved at the apex, and secured to collars, ties and struts of the same scantlings fixed with 4 in. French nails clinched. These trusses are placed about 5 ft. 6 in. apart; on them are nailed the purlins (say about 4 ft. apart), of 3 in. by 2½ in. scantlings, and then the galvanised corrugated iron (24 gauge) goes on wholesale, with a din as of boiler-making. The ridges are finished with 18 in. galvanised ridging, the valleys with the same inverted, and the eaves with a piece of



THE MARKET SQUARE, JOHANNESBURG. DRAWN BY F. L. EMANUEL.

out on the ground, the bottoms are not dug out or trenched, but merely levelled and rammed. Then the masons start, and build what are called the foundations. These consist of rough rubble walls, 15 in. to 18 in. thick, in mud mortar, and they carry the structure up to the underside of the ground floor wall-plates. Sleeper walls of the same material are also built. Next follows a perfunctory damp-course of tar mixed with sand, and down goes a noble plate of 3 in. by 1½ in. A base course of one course flat and one on edge being run round the outside, you have the floor line marked. Ground floor joists 4½ in. by 1½ in., 15 in. to 18 in. apart, are considered sufficient to span 5 ft. 6 in. or thereabouts. Now, having placed the door-frames in position on their slate thresholds, we proceed gaily up to the level of the underside of the window sills with 9 in. brickwork (in mud mortar) for the external walls, and 4½ in. brickwork for partitions. We now treat ourselves to a course of hoop-iron all round, in external walls and partitions alike, and

6 in. skirting board turned upside down as a fascia, to which is fixed a 5 in. zinc ogee-moulded gutter. Now, while the plasterer is slushing on mud inside by the square rood, the bricklayer will take the opportunity of covering multitudes of his deficiencies outside with a coat of red distemper, after raking back the mud from the joints and pointing with lime mortar, finishing by sticking on neat lines of black and white pointing, according to the taste of the architect. The effect is wonderfully smart, and, to the Philistine soul at any rate, satisfactory—until the first shower of rain comes. But by that time the house is probably let on lease or sold; so why should it retain its freshness any longer?

Our house is now ready for the flooring, and this in no way differs from that dear to the heart of the jerry-builder at home—6 in. by 3 in. grooved and tongued flooring, not secret nailed. The skirtings present no difficulty, for no one would think of specifying them to be grooved to the floor; nor do the ceilings present any difficulty, except that you must place inter-

* A paper read before the Edinburgh Architectural Society on February 28th, 1900.

mediate ceiling joists between the ties of 3in. by 2in. to bring down to 2ft. 9in. the spaces which the matchboarding must bridge. The cornices will possibly be of 4in. wood mouldings, or 6in. for very important rooms, mitred and nailed to the ceiling boarding. If the house is desired to be really something superior, the dining and drawing rooms will have the ceiling boards covered with calico, well stretched and tacked, and this again covered with a ceiling paper, or with Anaglypta, or Lignomur, or some such material; or, possibly, in the case of very superior work indeed, instead of boards, calico and paper, with sheets of stamped steel of the thickness of brown paper, imported from America and much admired.

Now, after a few days spent on sawing up and planting on stock mouldings, such as architraves, &c., fitting window sashes, doors, locks, and windows, the work is handed over to the paperhangers and painters, who effect on it their customary marvel of transformation.

That is how a house was built in Johannesburg before the war. An ingenious architect might show his individuality by boldly refusing to colour and tuck-point the brickwork by flying in the face of public opinion and substituting plain colour for good, sensible, handsome graining by his selection of wallpapers, &c., and thereby might secure some satisfaction to himself; but his clients would have been better pleased had he spent his time in discovering how to squeeze in another room, so enabling a couple of pounds per month to be added to the rent. In short, there was no architect in Johannesburg who would think of worrying his head about whether his calling was a profession or an art, knowing well that it was *neither*, though he might admit it is open to question whether it were a *business* or a *trade*. There can be no doubt that the average quality of an architect's practice in Johannesburg was very low indeed, and the reasons for this are not far to seek. In setting these before you I hope to give you some idea of the

Adverse Conditions

with which we have had to contend. As these reasons are all more or less connected with the unsettled state of the country—apart merely from its being a *new* country—I am afraid I shall have a hard task to avoid entering the field of political controversy.

I would classify these adverse conditions thus:—(1) The unsatisfactory political state of the country; (2) the enormous cost of labour and materials; (3) the climate; (4) the want of culture on the part of the people; and (5) the unsatisfactory sanitary conditions.

I am aware that this classification is imperfect, for four of the above conditions are more or less referable to the first; but I want, as far as possible, and as soon as possible, by attacking and dismissing the first condition, to eliminate the political element from this paper. The Uitlanders of Johannesburg found little or no inducements to regard the place as their home. They were debarred from having any voice in the management of the country; they were treated with incivility by officials, alike in the Government, railway, post-office and police services, and by the latter even with violence. They found it next to impossible to obtain justice in the Courts. They were taxed exorbitantly. They could hardly get decent education for their children. Moreover, all these grievances showed signs of steadily becoming aggravated, instead of diminishing, as years went on, all attempts to obtain reform from the Government being met with refusal and increased burdens and disabilities. What wonder is it that they should all look forward to leaving a country where they were so unwelcome? Though few in these later days could hope to make a fortune on which to retire, or even a modest competency, still there was hardly an Uitlander who did not secretly desire to go home some day for good, and who did not inwardly cherish a vague undefined hope of being able to do so. Hence few cared what sort of house they lived in. Even the very wealthy would seldom spend money on building themselves houses any better than just good enough

to "rub along" in. Again, all this led to an entire lack of public spirit. There were few public men to endow public institutions or enrich the town with public gifts. I know of no building in Johannesburg that could be called in any sense a public building, with the single exception, perhaps, of the hospital. The very town council hired its premises from an enterprising speculative builder. So that the town became one of rent-producing buildings entirely. Finance, and often most sordid cheese-paring finance, dragged its slimy tail over every building from one end of the town to the other. Just think what the architectural traditions of Edinburgh would be if the city were robbed of her public buildings—her university, her free library, her churches, her galleries and museums, her monuments, and the sumptuous homes of her wealthier citizens—and were left in the hands of her speculative builders! Then how much worse was Johannesburg's case when to have money in house property was regarded as such an insecure investment that men were seldom satisfied with a less return for capital invested than from twelve to twenty per cent., and frequently could get very much more. So uncertain was the future of the country, its prosperity so subject to unexpected checks, that they must needs require the return of their money within a correspondingly small number of years. Thus the speculative builder—that is, practically, the only builder—did not care to give his productions even the small modicum of substantiality to which he condescends here, and Johannesburg jerry-building was such as to give points to jerry-building anywhere in the whole world. You must admit that the case seems pretty hopeless for good architecture. In a country whose commercial history is one of sudden wild "booms," alternating with acute panic "slumps," you can hardly expect to find much in the way of lasting memorials to human industry. It has been boom and slump, slump and boom, ever since Johannesburg grew up out of the veldt, some thirteen or fourteen years ago; and the majority of these crisis times are mainly traceable to the political conditions. Of course, this is not entirely so. You cannot prevent booms and slumps in new countries; the case of Melbourne shows that; so we could hardly have escaped Johannesburg's first big boom soon after it began to attract the attention of European investors and the inevitable reaction which followed. But the exceedingly unstable, passionately retrogressive policy of the Pretoria Government has prevented the Transvaal from settling down, and its markets from, as it were, finding their own level. I maintain that nowhere have the conditions been such as to justify a more steady level of prosperity than on the Witwatersrand—certainly on no goldfield in the whole world. The Rand reefs have this enviable peculiarity that they are so even in quality, and follow with so little deviation definite ascertained laws, that, given a certain area of gold-bearing property to be worked, you can, after a trial bore or two and an assay or two, estimate both the yield from the entire area and the cost of production, with such accuracy as to be able to approximate actual working and the estimates, to within a very narrow margin of error. So we should have had a right to expect and find long before this that the markets would have found their level, and the only thing that has prevented this happening, and which has occasioned the distressing see-saw that ever kept one from knowing for more than a few months at a stretch "where he are," the only thing has been that policy on the part of the Boer Government arising from the now frankly-avowed Dutch ambition to drive the British out of South Africa, the same that has directly led to the present deplorable war.

But to this unsavoury subject there is no end. I have said as much as is excusable by its application to architecture, and so will pass on to the second of my adverse conditions—the enormous cost of labour and materials. Here, again, we are confronted with the reactionary policy of the Government. It is only to be expected that materials would be dear, but they need not be so dear; Government need not have created a monopoly in

pressed bricks, or in cement; but, most of all, the exorbitant freights which are due to the railway monopoly need not have been such a ruinous item in the cost of materials. Again, had the country been such as a white man could live in contentedly, skilled labour would not have been so dear, for we should not have had to depend on mere birds of passage, and a regular working-class would have settled down in the country. And once more it is directly chargeable to the Boers' hostile attitude towards the Kaffirs that native or unskilled labour cost in the Transvaal double what it did in any other part of South Africa.

A comparison between the prices of a few leading "lines" there and at home will be interesting. I shall give you the Johannesburg prices, and you can supply what would be those to correspond in Edinburgh:—9in. by 3in. deals cost 7d. to 8d. per running foot, all smaller timber in proportion, plus sawing; stock bricks cost about £3 to £4 per 1,000; pressed bricks, about £5 to £7 per 1,000; freestone, ashlar, dressed and delivered ready for building, cost 10s. to 10s. 6d. per cubic foot; ½in. flooring cost 4d. to 4½d. per square foot, and 12s. 6d. per square for labour in laying was an ordinary piecework price; bricklayers' wages were 22s. 6d. per day; carpenters, painters, and plumbers' wages were 20s. per day; Kaffir labourers earned about £1 per week.

To show you how the cost of goods ordered from home was affected—such goods as grates, pavement lights, door and window furniture, locks, &c.—I have before me an instance; and in no way an abnormal one. The goods, packed and delivered free on board at the home port of embarkation, cost £76 13s. 3d. Shipping freight, dock dues, railway rates, duty and other charges, had brought the price up to £158 10s. 3d. by the time the goods reached Johannesburg; and to this has to be added the agent's commission, so that the increase in the price of goods imported from home is very greatly more than 100 per cent. of the original cost. Roughly speaking, building in Johannesburg costs twice what it does in London for the same class of work. But perhaps you will say that that is no hardship to an architect, and will ask me to think of the consolation of five per cent. on the larger amount. But an architect has to live, and living also costs double—so there is that argument disposed of. And as a matter of fact people did not spend double on their buildings. The greater cost of building only served to accentuate what I have mentioned before, the tendency of people to build in as gimerack a manner as they could. As the price of work goes up, the cost of the building does not. But the quality of work goes down, leaving the cost of the building about the same. Buildings per cubic foot cost much what they do at home, only if you were to examine them you would find the walls thinner, the timbers lighter and wider apart, all the dainty et ceteras that go to make our buildings complete left out wholesale, and an infinitely poorer quality of work employed generally.

I have set down the climate as the third of my adverse conditions with which architects have to contend, and you will no doubt be surprised. That what is so widely acknowledged to be the finest climate in the world should have anything but a good influence on architecture does seem a far-fetched theory. I may remark in passing that, having experienced several climates, I think it quite an argumental point whether the finest climate in the world may not be found on our own Islands; but that, by the way. I will admit that the climate of the Transvaal may truly be considered as constituting a negative condition, which only becomes unfavourable in conjunction with other unfavourable conditions. It might be quite the reverse—and who knows but in the future it may be—but of that more anon, when I come to the part of my paper dealing with the future. As things have been in the past, the very fineness of the climate has aided and abetted the building of rickety houses, which in this country would have been blown down, or washed away, or shattered by frost ere they had stood a couple of years. There are none of our

soaking, wearing rains out there; none of our combinations of heat and frost so destructive to buildings—for frost occurs only at night, and that in the dry season of the year when you may not see a cloud in the sky for six months at a stretch.

The fourth drawback is what I have called the want of culture on the part of the people. This is inevitable in a new country, and still more inevitable in an unsettled one. Therefore, I must not be misunderstood to cast any slur on the Uitlanders of the Transvaal. Culture proceeds, as a rule, from the leisured and moneyed classes, and thence spreads downwards in the social scale. In the case of Johannesburg there was no leisured class. Those who had leisure and money preferred to spend both in Europe. Then the cultured professional classes—except, perhaps, in the case of the engineering professions—necessarily bore a much smaller proportion to the bulk of the community who were drawn mainly from the busy commercial classes. Had these any inclination to spend what time they could snatch from the cares of business in improving themselves intellectually, there were no examples to study, no museums or galleries, and but few books and lectures. So unless an architect found himself the happy possessor of a most exceptional client, to translate his client's ideas into even ordinary grammatical building was like that old problem in the earliest known examination in building construction—to make bricks without straw.

As to my fifth drawback, I suffered from the want of drains. When you hear anyone say we should be perfectly healthy if we had no drains, don't believe him. I have lived three years beside the so-called "bucket system," and I think I know. The necessity of providing that loathsome alley—called a "sanitary" passage, but, in fact, both insanitary and unsavoury—opening on to the street-front of every building was only a minor disability. The want of drains ruled with harsh unbending sway over all planning, and stultified the best efforts of the architect to bring his house, club, hotel, or chambers-block up to modern ideas of comfort.

I must here close my sketch of Johannesburg before the war. What am I to say of Johannesburg after the war? I confess I allowed myself, in composing the title of this paper, to indulge in somewhat of the spirit that animates the ingenious authors of the catch-halfpenny headlines to the evening papers when I put down the words "and after." I knew that many would be keen to have a hint of what is likely to follow the war, and that many young architects would be so from their desire to know what Johannesburg is likely to be as a field for the modestly aspiring in our profession. Well, I of all people find it to my interest to know that—yet I candidly confess I do not know. I do not by any means regret my past experience out there, but I have no idea whether I shall go out again myself or not. Uncertainty has become the acknowledged characteristic of all South African ventures, and so I cannot say to one who might go out to push his fortune, "Go, and you will never regret it." I can only give a few pros and cons for you to weigh in your own minds, a few heads and tails to toss up, each enquirer for himself, and see which comes down uppermost.

Architectural Practice after the War: Pros and Cons.

Pro No. 1.—There can be no doubt we mean to push this war to a successful issue (and that is equivalent to saying that we will push it to a successful issue) and to give the Trans-

vaal a just and a settled government. Under this most of the drawbacks I have mentioned are certain to disappear. Public spirit will be fostered, and, as a natural consequence, all manner of public buildings will fall to the lot of architects. Culture will increase, and with it the desire for good work. Security will be so vastly improved as to warrant the spending of money on more substantial buildings. Johannesburg will speedily have a proper drainage system. The climate under improved conditions will become an incentive rather than a hindrance to good architecture, and many individual treatments (signs of which are seen in the verandah or "stoeps," colonnades, heavy eaves,

new buildings they will not rather have to content themselves with patching the old garments. *Pro No. 2.*—I have felt for a year back that the country has been spoiling for a boom. A boom is bound to follow the successful finish of this war. *Con. No. 2.*—But booms are always followed by slumps. *Pro No. 3.*—Granted. Nevertheless, apart from that there is bound to be such an influx of fresh European capital that hundreds of fresh enterprises will be set on foot, and hundreds of new buildings required. And I spoke of "patching the old garment." This in many cases will mean much work for architects. The greater part of Johannesburg and Pretoria may need rebuilding



THE CASTLE BREWERY, JOHANNESBURG. DRAWN BY F. L. EMANUEL

and cornices, and such sun-protecting features) will develop from the open-air life of the people. In short, the war may be expected to remove all that has been keeping not only the Transvaal but all South Africa back for years. *Con. No. 1.*—But the country will have to bear the enormous expense of this war, and of maintaining for an indefinite number of years an army of occupation of, perhaps, 40,000 men. Exorbitant taxation has been one of the Uitlander's greatest grievances; but it will be safe to say this can at least be no less for many years to come. And for years to come trade will feel the effects of the dislocation that this war has caused. It is a question whether instead of the towns clothing themselves with

at the end of the war. *Con. No. 3.*—But there will be plenty of architects to do the work. The profession was far more overcrowded in Johannesburg before the war than it is even in Edinburgh, and the fresh inrush of population that will follow a settlement may be fairly expected to bring with it its own proportion of architects. *Pro No. 4.*—A young man has always a better chance in a new country which is going ahead. *Con. No. 4.*—Yes, a young man, but not a young man without influence. The young have chances in a young country that they have not in an old; but old or young, influence is even more necessary than at home. This is a circumstance which is often lost sight



HOUSING.

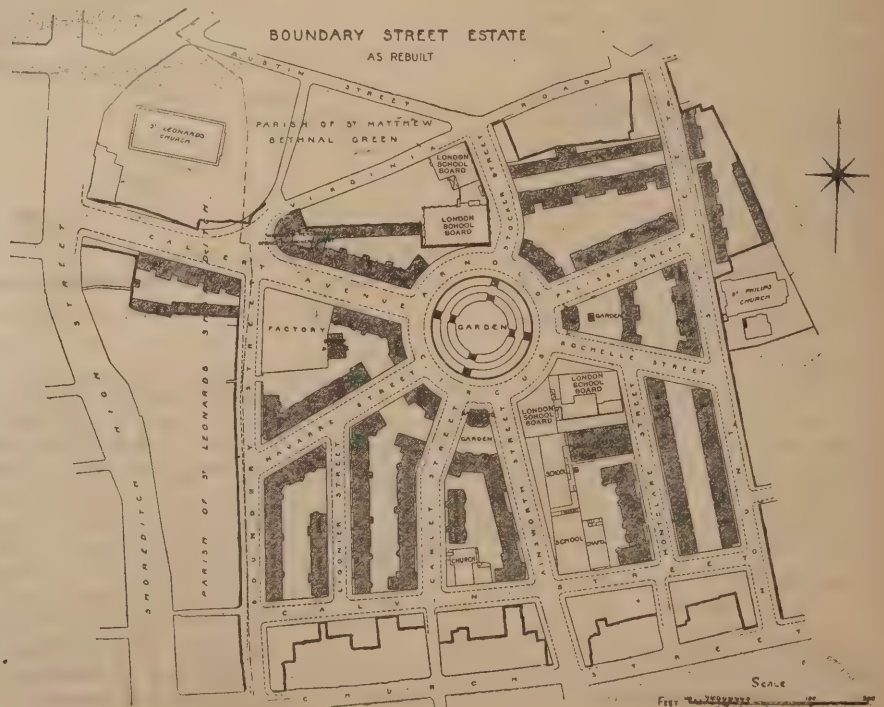
Completion of a Great Scheme.

of, but it is certainly the case, and the reason for it is easy to understand. In Johannesburg, in common, I suppose, with most mushroom places, the population contains such a large proportion of adventurers, black-legs, failures, and refugees from elsewhere, that the business principle of distrusting everybody is carried to excess. This principle inculcates that every man whom you know nothing about is a blackleg; hence the unknown man, however charming his manners or taking his address, finds it difficult to make a beginning. The mere ordinary letter of introduction is not enough. These, from however influential a source, are almost useless. The introduction that is to be of any practical service to a man going to Johannesburg must have something special about it. It must arise from some particular circumstances or it counts for little. *Pro No. 5.*—There is every reason to expect that Johannesburg in the future will contain sufficient inducements to lead people in prosperous circumstances to make their homes there. The climate is splendid; the country beautiful. The causes that led such people to make their homes in England, namely, the unsettled state of the country and the scarcity of means of education for their children, will be removed. These people will want good houses to live in—hence plenty of work for architects. *Con. No. 5.*—But it is only reasonable to expect in the future that, though the rank and file will be more prosperous, there will be no such crop of millionaires raised as of old. Under the flag that is likely to wave at Pretoria it is the greatest good to the greatest number that is always fostered, not the rapid enriching of the few. Moreover, Johannesburg's rich men have already all become domiciled in Europe, and it is a question whether they will not continue to live there, contenting themselves with being represented as heretofore by agents. *Pro No. 6.*—The Transvaal's glorious climate is a prime inducement to anyone to take up his abode in Johannesburg. The exhilaration of breathing that champagne-like mountain air must be experienced to be understood. To wake up morning after morning for half a year to days of unbroken sunshine; to smoke the pipe of peace of an afternoon on a cool, shady verandah and look at the sparkling landscape; to smoke the pipe of peace of an evening on the same verandah and look out on the African moonlight, so bright that you can read by it; to know that however hot the noon the night that follows will be cool and one's sleep refreshing; all these things give a zest to existence that even the Boer's hostility and trickery are powerless to destroy. I will not weaken that pro by a single contra.

ON Saturday last H.R.H. the Prince of Wales opened the last block of dwellings on the Boundary Street Area, Bethnal Green, N.E., the reconstruction of which was the first large scheme undertaken by the London County Council under part 1 of the Housing of the Working Classes Act, 1890. The royal visitors were received by Lord Welby, chairman of the Council, and the Prince expressed his great satisfaction with the work that had been done, giving in the course of his speech several personal reminiscences of the Royal Commission of 1884 on the housing of the working classes.

The Boundary Street area lies to the east of High Street, Shoreditch, and north of the Bethnal Green Road, and is about fifteen acres in extent. It is square in shape, and is bounded on the north by Virginia Road (see plans), on the east by Mount Street, on the south by Old Nichol Street (since renamed

Calvin Street), and on the west by Boundary Street, from which its name is taken. To go no further back in the history of London than some 300 years, the whole of the site of this area formed part of the garden of the nunnery of St. John the Baptist, Holywell. Upon the maps of London of two hundred years ago we still find the area unbuilt upon, but between that time and the beginning of the present century the land began to be covered with buildings. It is about this time that Old Nichol Street makes its appearance, followed almost immediately by the streets parallel to it—New Nichol Street, Half Nichol Street, Vincent Street, and Mead Street. These latter streets are said to have been constructed about the time of Nelson's great victories, and to have been named after his admirals. That certainly seems probable; but, at any rate, the great majority of the houses and streets upon the area appear to have been constructed at or about that time. The houses, therefore, were at the time of their demolition in 1893-5 somewhat less than a century old. Besides the streets already mentioned, however, there existed all over the area, but more especially off Old Nichol Street (which, together with its parallel streets up to Mead Street, was known as "the Nichol") small courts, entered under the houses and built generally over what had been the gardens or yards of the original houses. It may here be remarked that "the Nichol" is identical with "the Jago" so vividly and ably described by Mr. Arthur Morrison in his book "A Child of the Jago." Whatever might have been the original character of the occupiers of these narrow streets and courts, there is no doubt that by the eighties "the Nichol" had become one of the worst areas in the east of London. In Old Nichol Street alone there dwelt at one time no fewer than sixty-four ticket-of-leave men; while morality was literally at its lowest ebb. The work done by the present vicar of Holy Trinity, the Rev. A. O. Jay, ought at this juncture to be noted with praise and admiration, for he did much to ameliorate the existing conditions. In the building of these wretched hovels, speaking generally, no mortar was used, but in lieu thereof a curious substance known as "billy-sweet." It is one of the properties of this substance that it never dries. Add to this that the houses were, in the majority of instances, so constructed that the ground floors were from 12in. to 18in. below the street level; that the widest street was barely 28ft. across; that no house possessed such a thing as a front door; that no repairs were ever done to the houses; that what back yards had ever existed had nearly all been roofed in and occupied as



further houses; and you may have a bare idea of the state of things which caused the death-rate in this particular neighbourhood to mount up to over 40 per 1,000 in 1889, a rate nearly twice as great as that in the parish of Bethnal Green, and the practical meaning of which is, that out of every twenty-five living persons on the area one at least was sure of death within the year.

It was this state of things that the Council, advised by its medical officer, Mr. Shirley F. Murphy, and acting on the representations of the medical officers of the parishes of Bethnal Green and Shoreditch (Dr. G. Paddock Bate and Dr. W. H. Sutton), decided in 1890 to step in and remedy by an exercise of its powers under the Housing Act, then just passed.

Shortly, the scheme, which was commenced towards the end of 1891, was to demolish the old houses bit by bit; to form wide new streets on the area upon an entirely new principle, and to construct new blocks of flats for the reaccommodation of as many persons as was consistent with a due regard to health and sanitation. The net cost of acquiring and clearing away all the old insanitary houses and constructing the new streets, paving them with asphalt, will probably amount to £270,000. The area is approached by an avenue 60ft. wide, leading direct from Shoreditch High Street to a central open space, as shown on the plan. Streets 50ft. wide, planted with trees, radiate from this centre to the limits of the area, and these are also connected with the streets bounding the area by branch streets 40ft. wide. The four streets bounding the area have been widened to 40ft. The cost of forming, paving, and sewerage these streets amounted to nearly £50,000. In addition to a church, there existed two board schools, a ragged school, and a large tin factory. These are left untouched. Upon the building sites formed by these streets, blocks of dwellings have been so arranged that the living room of every tenement receives the benefit of sunlight at some time during the day. In all, twenty-three blocks of dwellings have been erected. Of these, twenty-one are from designs prepared by the council's staff under the direction of Mr. T. Blashill, the late superintending architect to the Council, and approved by the Housing Committee, and the remaining two are from designs prepared by Mr. Rowland Plumbé. These provide accommodation for 5,380 persons in fifteen flats of one room, 533 of two rooms, 388 of three rooms, ninety-eight of four rooms, seven of five rooms, and three of six rooms. There are thus 925 tenements now in lieu of the 730 houses formerly existing on the area. The cost of the buildings amounts to nearly £270,000, in addition to the cost of purchasing the properties and the value of the land, amounting to about £333,000. These figures include the provision of cottage dwellings for some 144 persons at Goldsmith Row, a little distance from the actual area, built in order to afford house-room for some of those displaced while the other new dwellings were being erected. Besides the actual dwellings, the estate comprises a central laundry (see inset sheet) fitted with all the latest mechanical conveniences for washing and drying clothes, and containing baths and two good-sized club-rooms, which latter are available for the use of the tenants of the estate for social meetings, concerts, &c. Baths fitted with hot and cold supply of water are also provided in one of the blocks of dwellings. Between the various blocks of buildings are provided large paved yards, which form playgrounds for the children, and one of these is laid out as an ornamental garden. The central open space is circular in shape, and is formed in terraces and provided with seats, shrubs being planted on its slopes. Seventy-seven workshops and eighteen shops have also been built, the former for the use of the occupants of the buildings, the latter including all buildings necessary for a baker's establishment. In order that the estate may be completely managed, and repairs immediately necessary looked to on the spot, a central workshop is also provided, fitted for the execution of all such works. The buildings have been named in a series, after the various towns to be met with in a journey up the Thames, so that

there are, on the north-eastern portion of the area, Streatley, Sunbury, Chertsey, Taplow, Hurley, Culham, and Sonning Buildings; on the south-eastern portion, Henley, Walton, Cookham, Sandford, Molesey, and Clifton Buildings; on the south-western portion, Ilfley, Hedsor, Laleham, Benson, and Abingdon Buildings; and on the north-western portion, Wargrave, Shiplake, Marlow, and Cleeve Buildings. The Falcon Brass Works, Limited, of Holland Street, S.E., supplied their "Flood" pattern syphon waste-preventing cisterns to the tenements.

In this scheme, as in others promoted by the Council, the aim has been that the dwellings, while let at rents not exceeding those ruling in the neighbourhood, shall be so designed as to be self-supporting (the average rent works out at about 3s. per room per week, two rooms 5s. 6d. to 8s., three rooms 7s. 6d. to 9s. 6d., four rooms 9s. to 12s. 6d.). That is to say the rents fixed on that basis shall be sufficient to pay all outgoings, including interest on the capital expended on land (at its value for housing purposes) and buildings, and the provision of a sinking fund for the repayment of such capital within a period of sixty years.

It may also be of interest to briefly set forth what the Council has done and is doing for the better housing of the working classes of London generally. In the clearance only of insanitary areas it is spending £1,114,800. For this sum thirty-five acres of old, dilapidated and insanitary dwellings will be demolished, and 16,160 persons will be displaced; 1,908 tenements, affording accommodation for 10,060 persons, are already completed and occupied; 1,190 tenements, affording accommodation for 5,900 persons, are in course of construction; and in addition plans are being prepared by the superintending architect of the Council, Mr. W. E. Riley, for 3,718 tenements. These will afford accommodation for 19,990 persons, and the total cost, including the value of the land, is estimated at £1,008,799. It will thus be seen that the Council has provided and is providing accommodation in 6,816 tenements for 35,950 persons, at a total outlay of £1,945,277. Of these, 145 tenements will contain one room, 3,271 two rooms, 3,160 three rooms, 229 four rooms, 8 five rooms, and 3 six rooms. Further, 5,251 persons will be accommodated on areas about to be cleared, but the cost of this work has not yet been estimated.

It is of course hard to realise from a bare statement of the figures what is meant by the work that they indicate, but some idea of its extent may be gathered from the fact that the Council is engaged in building operations which, if conducted at one spot, would result in the formation of a town of nearly 36,000 inhabitants; that is, of the size of Macclesfield, the well-known manufacturing town in Cheshire. This result will be achieved at the expenditure of a sum of nearly two millions sterling.

Additions to the Drill Hall, Dundee, have now been completed. The buildings occupy the full width of Parker Square. On the first floor is a largely extended armoury, three officers' rooms and the adjutant's headquarters, and on the second floor are several large rooms and the sergeants' headquarters.

The late Mr. John Wade, of Barnsley.—The funeral of Mr. John Wade, architect and surveyor, of Barnsley, took place on February 28th. Mr. Wade came to Barnsley as assistant to the late Mr. George Senior, with whom, after two years, he became partner, the firm continuing until 1862, when it was dissolved by mutual consent, and deceased carried on the practice. In 1854 he became surveyor to the local board, and he held that office at the incorporation, and defined the boundaries of the wards as they at present exist. In September, 1868, he entered into partnership with Mr. Benjamin Turner, but continued to act as surveyor to the Corporation until about 1872, when he resigned on the Council wishing him to devote the whole of his time to the duties of the office.

WORKMEN'S COMPENSATION.

THE case of *Cass v. Butler* was heard by the Court of Appeal on February 24th last. This was an appeal from the decision of Judge Greenhow, the Leeds County Court judge, in proceedings to assess compensation under the Workmen's Compensation Act, 1897. The respondent was the widow of Henry Cass, who at the time of the accident was a painter in the employment of the appellant. It appeared that a builder and contractor named Isaac Gould had entered into a contract to build and complete an electrical station. Gould then entered into a sub-contract with the appellant, who was a painter, that the latter should do the whole of the painting work of the building. The building was being constructed by means of a scaffolding, and was over 30ft. in height. On June 17th, 1899, Cass was engaged in painting the iron girders of the roof, and was standing on the scaffolding belonging to Gould, which was used in the erection of the building. While Cass and another man named Crowther, also in the employment of the appellant, were so engaged, a plank broke and they fell and were killed. It was admitted that this new building was being painted for the first time. The County Court judge held that the appellant was an "undertaker" within the meaning of the Act, and that the painting of the new building was "construction," and he made an award of £235 6s. in favour of the respondent. It was contended for the appellant that he was not an "undertaker" within the meaning of the Act. The contractor, Gould, was the undertaker, as he was "undertaking the construction" of the building within the definition of "undertakers" in section 7, sub-section 2. A sub-contractor was not an undertaker. Section 4 clearly showed that the contractor was liable as the undertaker, though he might be entitled to be indemnified by the sub-contractor. This was not like the case of *Mason v. A. R. Dean, Limited* (see page 63 of last week's issue), where different contractors agreed with the building owner to do separate parts of the construction, and in that case the court held that each contractor was an undertaker. In the present case one contractor agreed with the building owner to do the whole of the work, and he sub-contracted with the appellant for the painting work. The appellant was therefore not liable. Secondly, painting was not "construction." In *Wood v. Walsh and Sons* (1899, 1 Q. B. 1009) it was held that painting the outside of an old house was not "repair." There was no distinction between that case and the present. The decision of the County Court judge was therefore wrong. Mr. Temple Franks, for the respondent, contended that there was nothing in the Act to show that a sub-contractor could not be an "undertaker." In *Mason v. A. R. Dean, Limited*, it was decided that there could be several undertakers in respect of the construction of one building. If that were so, a sub-contractor could be an undertaker, and whether he was so or not was a question of fact in each case. The County Court judge found that in this case the appellant was an undertaker, and no appeal lay from his finding. Section 4 was not against the respondent. That section merely provided a remedy against the contractor in addition to that against the sub-contractor. If the sub-contractor was a man of straw, then the applicant could proceed against the contractor. That was the object of section 4.—The Court allowed the appeal.—Lord Justice A. L. Smith said that in his opinion the County Court judge was wrong. Though the judge's notes were very meagre, he understood the facts to be these:—Gould was a builder and contractor, and he contracted with the building owner to construct the building. Gould then entered into a sub-contract with the appellant, who was a painter, by which the appellant contracted with Gould to do the whole of the painting of the building. The appellant employed a man named Cass as a painter upon the painting work of the building. The building was a new one, and had never been painted before, and one point taken

was that the painting was "construction" within the meaning of section 7. That point it was not necessary to determine, because the other point taken was sufficient to decide the case. It was said that the appellant was not an "undertaker" within the Act; that Gould was the undertaker, and that if anyone was liable Gould was liable. The question, in other words, was whether a sub-contractor was an "undertaker" within the Act. It was said, on the other hand, that the respondent had the option of suing either the contractor or the sub-contractor, as they were both "undertakers." To his Lordship's mind this latter contention was not correct. That was not the meaning of the Act. "Undertakers" were defined in section 7, sub-section 2, so far as material, as meaning persons undertaking the construction, repair, or demolition of a building. In the present case, who had undertaken the construction of this building? The answer must be, Gould. In *Mason v. A. R. Dean, Limited*, a firm named Messrs. Moore and Sons had contracted with the building owner for the construction of a theatre, but under powers reserved in Messrs. Moore and Sons' contract the building owner entered into a contract with A. R. Dean Limited for the latter to do the decorative work. The deceased man was in the employment of the latter firm, and he was killed while at work on the theatre. This court held that, as A. R. Dean Limited had entered into a contract direct with the building owner to construct part of the building, they were "undertakers" within the Act, and liable as such. That was an entirely different case from the present where a contractor had agreed with the building owner to construct the whole building, and had let out part by a sub-contract to a sub-contractor. Section 4 was strong to show that a sub-contractor was not an "undertaker" within the Act.—Lord Justice Collins and Lord Justice Romer agreed.

HERALDRY.—V.

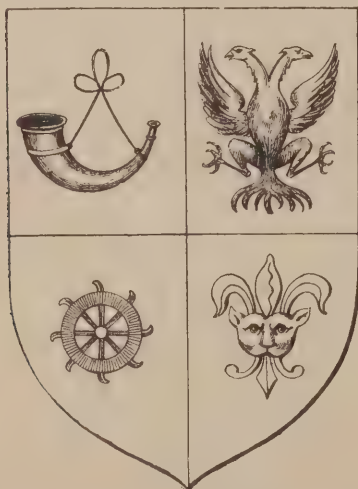
By GUY CADOGAN ROTHERY.

(Concluded from page 37, No. CCLXIII.)

Common Charges.

THE common charges used in heraldry are innumerable, and it is impossible to do more than give a brief résumé of the most important or curious objects employed.

As stated, the human body is borne either



HORN, STAINED.

DOUBLE-HEADED
EAGLE DISPLAYED.

ST. CATHERINE'S
WHEEL.

LEOPARD'S HEAD,
JESSANT-DE-LIS.

nude, clothed, or in armour; a *chevalier* is a knight armed at all points. But besides emblazoning the human frame in its entirety, limbs and other portions of the body are often borne as charges. An arm is borne *vambraced*

in armour, *manched*, clothed; or naked and *embowed*, or bent; the hand also appears either *enpommée*, open with the palm showing; or as a closed fist. A heart is a very common charge; it is often *distilling* drops of blood. Heads of savages, Saracens, and negroes are charges of frequent occurrence. Limbs are either borne *couped*, cut off with a smooth edge, or *eradicated*, or torn off, the leg being cut off at the hip or knee, and the arm from the shoulder or elbow. There are also *skulls*, *shinbones*, and *thighbones*. Priests, angels, and cherubs are sometimes borne, and one most singular charge called a *Prestor John* represents a bishop in full canonicals, seated on a throne, holding a naked sword between his teeth. A *virgin* is a young girl, for a *girl* in heraldry is a young stag.

The wardrobe has also contributed its share of heraldic emblems. We have shirts of mail, surcoats, hats and helmets, *murrions* (small steel caps), sleeves, technically called *manches*, and even shoes and hose.

Weapons of war are frequently used—the sword, axes, cross-bows, arrows, lances, and hand grenades; the sword is said to be *hilted* of such a tincture when the hilt differs from the blade. There are also *broad arrow head* and the *phœon*, *calthrop*: a four spiked implement so arranged that when thrown on the ground one spike always stood upright to keep off cavalry.

Hunting has furnished us with the *fetlock*, an implement placed on the leg of a horse in order to fasten it in a padlock; *barnacles*, or withers, instruments used by farriers to curb horses; and the hunting horn, which is frequently ornamented with a rim round the top and mouthpiece of a different tincture to the horn and is then said to be *enguché*. *Bird-bolts* are blind arrows, used to bring down birds without injuring their plumage.

Sometimes traders and craftsmen, or their children, were ennobled or raised to knightly rank, and these not infrequently ornamented their escutcheons with the implements of their late occupations. And thus we have *mallets*, *hammers*, *nails*, *spades*, and the *millrind*.

The celestial charges are the sun; the moon, in full or as a crescent; the stars; and the thunderbolt, which is represented as a straight bar, placed over two arrows in saltire, with wings and flames issuing from both ends. The quarter moon with its horns turned upwards is called a *crescent*, but with the horns turned to the dexter side it is said to be *in-crescent*, and with the horns turned to sinister side *de-crescent*.

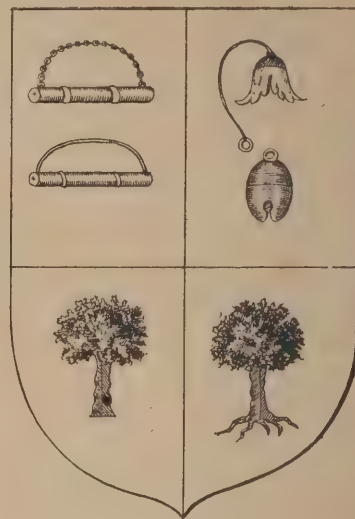
Of vegetable charges the most common are *fleur-de-lis*, roses, lilies, *garbs*, or sheaths of corn, *trefoils*, *quatrefoils*, and *cinquefoils*. Leaves may be borne *pendant* or *erect*. The *fleur-de-lis*, or heraldic lily, differs very much from the lily of natural history, and indeed many heralds maintain that it was intended to represent the iris and not the lily. The terms *fleury*, *flory*, or *flowery*, are used to indicate that certain charges are ornamented with *fleur-de-lis*; thus we have a cross *fleury*, a border *flory-counter flory*. It is a common charge in English and Scotch heraldry, for the English kings were in the habit of granting permission to officers who had been successful against the French to add *fleur-de-lis* on their escutcheons, as marks of honour.

Trees are borne either *eradicated*, *couped*, or *fructured*; the first term being applied to a tree pulled up by the roots, the second to a tree cut off smoothly just above the roots, and the last to a tree bearing fruit. A group of trees growing on a mound is called a *hurst*.

Wreaths of flowers are frequently placed round the heads and loins of nude figures; besides this there are crowns of oak leaves and acorns, of laurel leaves, and roses. A charge is said to be *englanté* when ornamented with oak leaves and acorns; a charge is often said to be *verdoy* of some foliage, which means to say ornamented with leaves. A branch or leaf torn from the trunk, and thus appearing with a ragged edge, is said to be *slipped*.

The *castle* is generally formed of two towers, broad at the base and tapering towards the top, and a part of the castle is shown between each tower; there are three arched doors, one

in each tower and one in the centre building, and four oval windows. The *triple castle* has three towers, the middle one being higher than the other two, all three being joined together by a narrow piece of castle wall; the whole



FETTERLOCKS.

HAWK'S LURE AND
BELL.

TREE COUPED.

TREE ERADICATED.

length of the castle should be embattled; each tower has one arched doorway and one oval window. The charge of one single tower is constantly borne, but this charge should not be emblazoned a *castle*, but a *tower*. Castles were originally only given to warriors who had captured a stronghold, or to those who had successfully resisted a siege. Many charges are blazoned in differently *crénelé*, *castellated*, or *embattled*, when their outline is shaped of embattlements.

The *portcullis* is an iron gate, the upright bars of which, generally five in number, are armed with barbed spikes; at the ends of the horizontal bars are rings from which hang chains.

Of musical instruments we have, besides the hunting-horn, clarions (sometimes styled *rests*), organ pipes, hautboys, harps, fiddles, flutes, Pan's pipes, and the military bugle.

Books are emblazoned both open and shut. Rolls, and charters, with seals, &c., are also constantly seen. There is a curious charge consisting of little oblong objects, frequently borne strewn all over the field, which some heralds say were intended to represent letters, and others say bricks; they are called *billets*.

An *annulet* is a ring.

Mullets, or rowels of spurs, have five spikes and are pierced in the centre. *Stars* do not have holes and are sometimes borne wavy; stars, generally, have six or more points.

Masoned is a term applied to describe the lines formed by the junction of the stones in a building.

A *mound* is an imperial globe generally borne with a cross; a *mount*, or hill, is generally placed in base.

There are several terms applied to an escutcheon according to the manner in which its surface is divided. *Lozengy* is employed when the shield is covered with lozenges, alternately of two different tinctures. *Mascally* when the field is divided by diagonal lines into lozenge-shaped compartments of alternate tinctures, each being voided of a different tincture. *Lozengy-mascally* is a shield composed of lozenges and mascles. A shield may be *gutté de larmes* or *gutté de sang*, that is, covered with drops of blue colour, representing tears, or drops of red, representing blood.

Every trade and profession has provided heraldry with its own set of symbols. We have arches, bridges, capitals, carpenters' and bricklayers' tools, mathematical instruments, and so on. The cross has been ornamented with several architectural features, such as the crosses corniced, capitalled, banister, millrind, and carpenter's rule.

An Architect's Experiences in the Development of Design.

By EDGAR WOOD, A.R.I.B.A.

AS there are in landscapes certain expressions and effects which can only be fully realised by turning round and looking back, so there are, in our experiences certain times and periods of our past which can only be fully realised in importance when seen through a vista of years; and so now I know better than I did how important and fateful are the times in which our early impressions are to be formed, how important to our future will be the surroundings of our first five architectural years, and how they may determine for our unconscious youth whether we are to be inventors, creators, or copyists. I know better now how responsible is the work of the office head, and how much depends on the kind of support and assistance to which the architectural sapling is bound. My experience, though not by any means a large one, has been sufficient to show me that anything like an architectural and artistic office atmosphere, if not a rare one, is certainly one of a small minority, which to me means that the great majority of those practicing architecture are more fully and better equipped for a commercial success than an architectural and artistic one. Into which of these atmospheres chance may drop the enthusiastic student, is most vital to his future realisation; he comes at one of the most impressionable periods of his life either to disappointment, which often converts or drives him into the office hack, or to continuous encouragement and endeavour, which allows what is in him full and free development. My earliest architectural years were passed in an atmosphere where beautiful creative power as applied to building, and life in design generally, were drowned in the solemnity of commerce, tracing paper, and the checking of quantities; and so it is with some as it was with me, that real architectural education only begins with the advent of responsibility after the years of pupilage have passed or been survived.

I think every architect must have at some time or other attempted serious conclusions upon the relationship of the place to the elevation. In common with most others it was always my desire, but never my accomplishment, to give to a work its possible beautiful side, and I was in my early years led into the common error of approaching any building as an opportunity of producing an exterior architectural success. My plans, if not made through elevations, were certainly influenced by a possible exterior effect more than I now think was justifiable. I worked too often from some or for some particular result, some interior, but more often some exterior, effect or treatment, and attempted to produce the same by arrangement of plan in a somewhat similar manner. This method, which I am led to believe is not by any means an uncommon one among the unexperienced, I have long since discarded as being totally wrong; it is putting the cart before the horse, and it brings about subsequent evils, not the least of which is mind stultification, which is difficult to eradicate. It is a process of working which has its original source in a too strong tendency to artistic superficialism, and is undoubtedly due to an unequally balanced judgment.

I have found it much more satisfactory to start from the plan entirely, making it thoroughly useful and fit to the extent of almost ignoring the elevation, so far as your mental vision will allow you to ignore it. After having thoroughly satisfied yourself of the arrangement of your rooms and requirements, then make your elevations, letting them grow, letting them suggest and almost make themselves in the first instance, which I find paves the way for modifications in the plans as the elevations may require for their improvement in balance and construction, always, of

course, being on the guard of endangering the utility of the plan. This is the total opposite of my early efforts; it means changing the concentration of thought from the elevation to the plan, from the æsthetic to the utilitarian, from the picturesque to the constructional, all of which not only considerably improve the working and useful portion, but also improve the æsthetic and architectural result, as nothing satisfies the balanced and cultured vision so well as the really useful dignified with proportion and refinement.

I know it is often stated that elevation and plan should be worked together, that they are in themselves inseparable. That in the completed design of the building they should appear inseparable I quite admit; one should account for the other from the bottom to the top; but in working the plan I question if it is possible, in buildings other than those devoted to merely monumental purposes, to carry in your mind more than a vague idea of the general tumble of your elevation. You may at the very first, and perhaps ought to, have decided that your building shall be either long and low, or narrow and tall, or even square. But much beyond that I think it almost becomes impossible to have in your vision, and I question if it would be advisable if it were possible, because you can even in buildings have such a thing as a too laboured result. Take a house. There are some men who work not only with the idea of producing a good working plan, but are not content until they have arranged and provided for every piece of furniture that has to go into the house, and they do not consider the drawings are complete until this is done. The desire of these architects to control the fittings, the furniture, the drapery, and all the furnishings of a house, both inside and out, is to me perfectly correct, and generally imperatively justifiable, subject to the condition that they have made themselves competent to do so. I rather question, however, the advisability of their method of procedure, of planning every detail of finishing before the completion of the drawings. In theory it sounds all right, but in practice my experience tells me it is very likely to destroy the beautiful results of accident in effect. You cannot realise or make the work suggest on paper quite in the same way that the building will do for you. In working your plan an eye need only be kept upon the place for the principle pieces of furniture for which the rooms are intended, such as the bed for the bedroom, the table and sideboard for the dining-room, and the books for the library; you are then left free to devise the particular details and arrangements at some subsequent and more opportune time. Enough evil for the day thereof I think applies. Try to remember the reflections deduced from the analysis of the picturesqueness of old buildings, and more especially of old towns. Some of the features that appeal so strongly to the artistic mind are these continuous surprises, resulting from beautiful accident, which one instinctively feels could never have been designed with such pleasurable results. They are the beauties and delights that belong to accident only, and one realises their charm perhaps stronger if we compare them with the studied results of carefully planned estates for suburban and residential property; how they suffer from the absence of that quality of accident. They are barely suggestive of humanity in their stiffness and regularity, they rather repel than invite, and make one long for an error in their setting out, or a blunder in their levels which has annihilated the original intentions beyond recall.

Then when we design, do we never question ourselves from what source should we start? From what stock should our ideals be formed? What are the seeds from which we wish to produce the fruit? My thoughts have often led me to wonder if the advice so widely and so often given to students to lose no opportunity of sketching and particularly measuring old work has not been given too literally and without caution and qualification. Measuring can be made indispensable if done with object and reason, but blindly performed can produce evil with little benefit. I feel its value when followed after appreciation or

admiration; it is then the only way to discover and realise the hidden and subtle beauties of work in existence. Sketching such parts, though of a certain value in itself, is doubly valuable in conjunction with measurement and scale, as it then becomes the practical and recorded analysis of cause and effect. But I have found that sketching, though it may stock your memory and increase your resources to a great extent, may by that very process of storage have crowded out and diminished another equally important faculty, that of invention. I have been surprised, almost overwhelmed, by the sight of buildings which to me were exceedingly beautiful, which I have afterwards discovered were the works of men who from old work, or even any work, have comparatively measured little and sketched little. From the human figure and from nature I find they have studied deeply, very deeply, and they, having strong artistic tendencies and strong natures, have started, so to say, from the bed-rock of construction, and by sheer inventiveness of their own produced works and results which to me have the charms and beauties of the old with the very greatly added quality of freedom and beautiful originality or personality. No academic composition seems to have cobwebbed their minds. They have not fallen back on the traditionally beautiful or produced a result out of old and beautiful features in a rather different form. This, to me, is absolutely the type of mind of the ideal, because it implies that they have been able, without leaning continuously upon the crutch of research and reference, to produce exceedingly satisfactory results. I do not by any means say there should be no reference and no research or training required but the kind and type I allude to. Too much imbibing of old work may make you a scholar, but it may be at the expense of invention. What we want is that that training and material ought to be absorbed which will enable one to come through a problem alone, and it is the men who have done this that we call original.

Mr. William Morris once said that when we sit down to design we have before us, and we cannot help it, some example in our mind, however visionary, of something, some composition which we have seen and admired before, and which is our ideal for the moment of the work we have in hand. I believe it is so, and I suppose it is only the very strong ones or the very bad ones amongst us that either have this vision in a very misty form or are able to obliterate it from their memory to make way for their own. I do not want to leave the impression that I think originality the only quality to be aimed at; rather let us have beautiful individuality tested by example of recognised beautiful result.

Originality for the sake of originality is artificial. It is one of the most vicious, affected, and conceited ideals that can clog the mind of the designer. Natural originality is the outcome of effort in search of higher ideals. Up to a certain period, if not to the end, all must be influenced by the work of others. It is bound to be so, and cannot be otherwise, and it is right that it should be so. Nothing comes out of nothing. One man can add but very little to what has already been done, and it is the natural and unconscious selection that we may make as to what shall influence us that largely determines the level of work which we do. The reason of the bulk of bad work in design and everything else is that so many minds are incapable of being influenced by the presence and existence of work of the very highest type. They may be prevented by want of intelligence, by commercial considerations, by timidity—but whatever the cause it is some force which is stronger than the power of their appreciation can surmount and overthrow. And one of the very characteristics of the artist is that you have the man who sacrifices everything and everybody, himself included, to the perfection of his work, to the passion for efficiency, which is the true master-passion of the artist.

I have already alluded to some men having trained themselves in design largely from the influence of drawing the human figure, and from the drawing and deep study of

* A paper read before the Birmingham Architectural Association on February 23rd, 1900.

natural life. The work of these men has been of that type which has, perhaps, made the greatest impression upon me. I have found it the work which, perhaps, I have admired the most; it possesses a character of directness, of subtlety or refined life and vigour, which I have felt to be most refreshing. But perhaps the most impressive side which their work has is that of range and completeness. To the ordinary mediocre mind, the wide scope of their efforts appears almost incredible. They have not been content, like many of us, to consider their labours complete when the building is swept out, but all the carving has been designed and modelled by their own hands, the leaded lights, the decoration, and even to the figured fresco has not only been suggested but even painted by them, and painted well. Personally I have drawn comparatively little from the nude, but from flowers and tree growth I have made, and still make, a fairly large number of studies, and my experience is that they count amongst the most valuable results, both directly and indirectly, that I have ever spent time upon. Ruskin in his "Two Paths" writes: "Architects who have no knowledge of sculpture, or any other mode of expressing natural beauty, endeavour to substitute mathematical proportions for the knowledge of life they do not possess and the representation of life of which they are incapable. How this substitution of obedience to mathematical law for sympathy with observed life is the first characteristic of the hopeless work of all ages—for which no future was possible but extinction."

Although anything approaching to definite rules is, as Ruskin says, "fatal to all good art," there are, I feel assured, certain qualities (and some of them by no means abstract ones) which no good architecture can be without, and it is the analytical discovery of these rather elementary qualities which, unfortunately, sometimes come rather late, and which have certainly almost accounted to periods in experience. It is the presence of these shortcomings that causes the disagreeable side to almost all of our past efforts. That these regrets are all to be entirely avoided, of course is impossible; they are the barometer of our improvement, registering the progress of visionary education, and it is in these particulars that the collective capacity of architects can be so valuable to one another in the detailing of their honest and open experiences and criticism. As I look back and see what a great change some of the most simple discoveries make in effect, I cannot but be surprised that so elementary an item was not more easily and earlier effected. For instance, the attention to harmonious texture and quality of surface in materials. I suppose it is not a very deep discovery or study, but what a surprisingly large number of our modern buildings are anything but satisfactory on account of the neglect of this particular. It shows itself to me in many ways in the almost blind worship and continuous use of large masses of Ruabon and similar types of facing bricks in preference to the beautiful walling results to be obtained with common bricks. Then the fatal effect of combining in close proximity polished marble and polished granite with the dull materials of stone and brick. The too often lavish use of polished ashlar stone in preference to the more simple and more refined of what are known as common outsides in walling. The very common, coarse, and vulgar result known as parpoint finish in masonry, intensified in vulgarity by its combination with finished stone dressings. The fatal mixing of glazed and coloured bricks in interior corridors, &c., will dull plaster and sometimes stone. The combination of tiles having highly-glazed surfaces with a framing of wood and metal in fireplaces, &c. The incongruous companionship of highly-polished or heavily-varnished woodwork with the comparative refined and dull surface of wall paper or drapery, and, generally, the overwhelming use of varnish and of glittering surfaces everywhere. The avoidance of polished and reflecting surfaces in mass, I feel convinced, is quite the right aim. In nature you seldom find it otherwise; the sparkling and reflecting portions with her are always in small quantities or in

passing effects; the normal condition of landscape, of flowers, of flesh, is one in which the surfaces are almost entirely dull and dry. Reflecting surfaces invariably destroy all repose and rest by their violent contrasts, and they destroy the solidity of materials, giving everything the effect of surface treatment only; whilst, if sparingly used, or, perhaps better still, allowed by themselves to develop by normal and natural usage or wear, they will add to all interiors that little glitter of which so little is required. That the public should do these things in buildings where they think no control or advice is better than their own is perhaps not very surprising; but when architects are so greatly guilty, why have doctors at all?

Another qualification to which a name can be given, and one which I have realised is so essential to interesting design, is that of accent. To a great extent it goes hand in hand with the quality of interest. I find it very difficult to say anything about it, as it is so very largely a question of sight; but accent in design is the opposite of what I understand by the term "all-overish." When not recognised by a name I think we all try to produce it, but perhaps do not always succeed, or perhaps produce the accent in the wrong place as some people do with their h's. At one time I had an almost infallible opinion that accent or richness should for some reason or other be somewhere at the top of the composition, wherever that might be. I now have somewhat different views and, in consequence, cannot say where I think it should be represented, except that it should be somewhere. I also had the opinion that all accent could have no other legitimate expression in any form other than ornament of some type or other. I have now also somewhat expanded and feel I cannot express an opinion as to what form it should have as long as it is beautifully and comfortably expressed, all of which means that while one can be fully alive to its value one is content to take advantage of what may suggest itself, or even reason out the same from the natural growth of the design and plan. It may be a gable or a group of gables, a projection of plan, a central feature, a tower, a door, or a bay; it may be a piece of ornament or a statue; but it must be something.

You enrich and emphasise what you individually feel should be important and to which the eye should naturally travel and be focussed, and it is the selection of what should have the accent on your composition, upon what the concentration should be, that shows the respective power and skill of the architect. I often think that it is in this direction that the difference between the architect who is an artist and the architect who is not somewhat strongly asserts itself. The inartistic man invariably squanders his features and his ornaments equally over the whole; he is lavish without selection, which produces an equality that denies distinction; and the resulting monotony, though often costly, fails to arrest permanent attention.

Time prevents me alluding to many other directions, but, generally speaking, design development in my experience has meant coming from the ornate to the simple, from the use of ornament to almost the avoidance of it, as being not only in itself largely unjustified, for one must never forget that ornament has no justification for its existence except that it be beautiful, and therefore it must be always difficult to produce it. I cannot now look upon it as of such little importance that it can be frivolously or carelessly employed, but rather that it demands the serious attention and strain of the designer as the jewels of the composition. Much of my time of later years has been taken up with an attempt to gain some knowledge and some even superficial familiarity with colour. As one's idea of completeness expand as years go by (which is almost inevitable) we find ourselves unsatisfied until we have equally controlled the work to its last touch, and it is the last stages which, though so often the superficial ones, are also those which cover the greatest area; therefore becoming of such importance that they cannot be ignored or left to the independent treatment of others.

We have all had the depressing experience of seeing our work, if not retarded, certainly not assisted by the result of the co-operative efforts of decorator and client, a proceeding which alone makes me realise the absolute necessity of controlling by the same mind the aesthetic to the end; for how wide and important to an interior is the very superficial treatment of the plaster walls, the colour and treatment of the woodwork, the carpets and the hangings; the great difference it makes in the way you use that colour and even in the way the painter technically puts it on; how an interior can be made pleasurable and comfortable when only two colours (or even one if it be good) are used, and how the same can be hideous with a legion of bad colours.

Finally, I wish to mention another quality which I feel to be imperatively important—that of variety or interest. I think we could safely say that, if this quality were never absent in the whole of our architectural results, we should have arrived nearer perfection than ever has been reached before. To give that judicious quantity of variety or interest to all we do reads pretty well the same as "Act is long and life is short."

The full value of subtle variety can, I think, only be even partially realised by the earnest student of nature. It is here that he recognises the power and beauty of it to the full, the entire absence of anything approaching monotony, not only in what the naked eye tells him, but even with the help of the most powerful magnifiers, how the interest and variety in all her parts never fail. Yet with this lesson continuously before us the great majority of our architectural works are strongly characterised by monotony. Our modern towns, our modern streets are made disagreeable by monotony. The materials we use the most and the reason of their being used is because they are monotonous, and those materials which have in bulk beautiful variety and interest are so carefully sorted and arranged that when used they shall be monotonous. Manufacture and material are scientifically studied that all properties and processes making for broken colour and texture shall be eradicated or controlled in order to produce monotony.

It is often deemed almost the ideal of "correct taste," whatever that may be, always to design our building by halves; one proportion, one type of window, of chimney, of door, are often thought sufficient for a whole floor, or even a frontal façade. These materials, and the world is full of them, which are beautiful and lovely by their variety and interest, lovely beyond the capacity of man to excel, are vanished for inferior work and degrading service. Hence it is why so often the buildings of no importance—those too poor to pay, those which have not been honoured by the architect—have no disagreeable side. That is the reason why so often the backs of our houses which have been considered worthy of but little attention, and have escaped our academic corrections of style and professionalism, have been allowed largely to do their own and become comparatively interesting. It is also the reason that the picture painter in search for material and subject so seldom is found where the modern architect has been; he may precede, but he seldom follows us.

To our clients we apologise for every stain in stone and every twisted brick, and often our entire efforts are concentrated to produce a whole which nature contradicts with the full force of her example and teaching. We deny our buildings the one quality without which our architecture can never be beautiful, and we expend no end of time and money in producing the hideous artificial when the lovely and natural is lying at our feet. If we will persist in banishing all materials which yield a surface interesting in colour, and will persist in giving to materials a surface and treatment which are foreign to their nature, our buildings, however rich they may be in every other respect, however skilful in the arrangement of masses, however cleverly accented, however beautifully grouped, however refinedly detailed, must be in the full aesthetic sense, in the full enjoyment of what

beautiful building can yield, only a partial success. If we would only use those materials which have been made beautiful by their natural formation and growth, and use them well, there would be even less necessity than ever for the acres of features with which we crowd and distort our designs, architecturally untreated walls would lose their terrors, plain surfaces would take their place and prove their value as against enriched ones; and proportion and mass would gain the attention and value they so richly deserve and repay.

From what I have said it may have occurred to some that this is all right so far as it goes, but it does not represent that phase of architecture which is the beau ideal of so many and is termed the "monumental." It may be in the direction of the picturesque and perhaps the romantic, but it leaves almost untouched the styles, the orders, and the whole paraphernalia of architecture with which we are accustomed to clothe our work, and so gain it that distinction which we consider exalts it above mere building. If such thoughts and conclusions should have arisen I should acknowledge that in one sense they would be correct. Any attempt at clothing with super-added features has never had any great attraction for me, and I cannot consider that the use of them, even however great their scale, is the only interpretation of the quality of "monumental." I may be mistaken, but I have the impression that the word monumental with a great many means the use of the orders, the pilasters, shafts, cornices, columns, and the host of features which one sees so lavishly employed in our architectural exteriors. If this is so I can only say again it is an interpretation of the word which attracts me but comparatively very little.

To me that which is monumental is that which is a monument, in the very broadest and highest sense of the word. In nature to me it is represented by the sensations produced in the contemplation of mountains, of cliffs, of clouds, not necessarily of great size, but always features of distinction, works of grandeur and exalted nobility. And I have never felt that the characteristic of these, as we see them in bulk, that the chief power of their attraction is one of superadded or surface treatment; it is more often their sublime simplicity, their strong lines of bone, of formation and construction, which I feel so impressive; their suggested element of reserve power and hidden force in contrast with their surroundings and environments; it is the echo of these qualities when they appear in architecture or building which makes one feel that the work is monumental. I admit, if it is an admission, that the buildings both ancient and modern which appeal to me the strongest, which revive or produce enthusiasm, which enforce effort, and which make me realise the greatness and the justification of architecture, are those where orders, &c., of whatever period, whether of classic or Gothic influence, have no place; or, if they be present, it is in such a way, in such form, and such quantities as to only count or impress as trifles in the whole. Those buildings to me are monumental which, though ingenious, are never clever. They are beyond the reach of the merely clever. They are beyond the reach because they are great and big by their echo of human reserve and simplicity, great and big by reason that, however frequently and continuously contemplated, their noble influence never diminishes, and their power of appeal to our highest emotions is never exhausted.

The C. and S.L. Electric Railway Extension to Moorgate.—The Moorgate Street station and general offices of the company have been built by Messrs. Mowlem and Co., under the superintendence of Mr. T. Phillips Figgis, A.R.I.B.A., of 28, Martin's Lane, Cannon Street. The building is of brick with stone dressings. On the ground floor is the booking hall, just beyond which are the two immense double lifts, each of which will take over fifty people. The company's offices are on two floors, and the remaining floors are to be let as offices.

OUR SHILLING FUND.

PROGRESS OF THE SCHEME.

THE chief feature of our Shilling Fund during the past few days has been the number of applications we have received for our collecting forms. This is gratifying (as far as it goes), the special object of our fund being to gather in the small subscriptions which would otherwise be lost. We have plenty more forms which we shall be pleased to send to anyone who will make good use of them. We would point out, however, to architects and others who have not yet subscribed that though ours is "a shilling fund," we are not less willing to accept guineas. Our offer to send a copy of "Specification" as a slight acknowledgment of their efforts in the good cause to every collector or contributor of twenty shillings or more still remains good. We shall publish a further list of subscriptions next week.

With regard to the progress of the general scheme for the erection of the proposed Homes of Rest for discharged soldiers, we are informed that by the end of February the value of the gifts of materials promised amounted to over £12,500, and that nearly £1,000 in cash contributions had been received. The value of the buildings and works as proposed by the scheme may be taken at nearly £25,000, including the drainage system, furnishing and electrical equipment. There is thus still another £12,000 to make up. The material principally required is timber; as yet scarcely any timber has been given, the timber trade being the only one of the building trades that has not come up to the scratch. Further supplies of lime and cement, red facing bricks and joinery, are also required. As regards cash, about £6,000 is still required.

It is hardly necessary to point out the urgency of this matter; the number of the wounded is constantly increasing, and it is surely desirable that the Homes which are to form the Building Trades' Gift should be prepared for their reception with the least possible delay.

The following additional gifts have been received by the executive of the gift:—

Messrs. Graeves, Bull, and Lakin.—Selenitic lime for six homes and service block.
Messrs. Matthew T. Shaw and Co. Limited.—Light iron joists for concrete floors.
The Albion Clay Co.—The intercepting traps and necessary stoneware gullies with iron gratings.
Messrs. William Oliver and Sons.—The wood for 2,500 ft. super of cupboard fronting.
Messrs. John Grover and Sons.—Forty doors.
The Fireproof Partition Syndicate Limited.—200 yds. "Cunah-Wright" Partition.
Messrs. Jacobs, Brothers, and Co.—50 tons Portland cement.
Messrs. Hawkins and Son.—One truck load grey stone lime.
Messrs. Thomas Turner and Son (Lightcliffe, near Halifax).—Steps for one of the Homes.
Messrs. Peace and Norquoy (Manchester).—One Patent Folding Partition.
Mr. W. S. Norman.—Six Outside Green Blinds.
Messrs. Kemp, Collier and Co.—Scaffolding Poles and Putlogs for two Homes.
Messrs. Shanks and Co. (Barrhead, near Glasgow), per Mayor of Windsor (second gift).—One Bath.
Messrs. Crogan and Co.—Three 450-gallon Cisterns.
The London Drawing and Tracing Offices.—Sun Prints and Photo-copies of the Working Drawings.
The International Electric Co., Ltd.—Electric Light Fittings.
Messrs. Johnson and Phillips Electric Cable Works, Ltd.—Three coils of 600 megohms vulcanised and braided cable.
The Worthington Pumping Engine Co.—Feed-water pumps required.

ADDITIONAL SUBSCRIPTIONS.

The Proprietors of the "BUILDERS' JOURNAL"	£	s.	d.
Messrs. Higgs and Hill	50	0	0
The Editor and Proprietors of the "Electrical Review"	26	5	0
The Proprietor of the "Clayworker"	25	0	0
Messrs. Northcroft, Son, and Neighbour	21	0	0
The Provident Institute of Builders' Foremen and Clerks of Works (Camberwell), collected at their annual dinner	17	10	0
Mr. Charles Cox (Hackney)	10	10	0
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Hooper's Telegraph and I. R. Works, Ltd., per Mr. Max Byng	10	10	0
Mr. Thos. W. Jones (Beckenham)	5	5	0
Mrs. S. Marsland (Camberwell)	5	5	0
Mr. Fredk. Wright (Renter Warden Tylers' and Bricklayers' Company)	5	5	0
Workmen of Messrs. Degrelle, Houdret and Co.	4	12	6

Mr. Sidney Marshland (Ladywell)	2	2	0
Workmen of Messrs. Humphreys Ltd.	2	1	0
Workmen of Messrs. Rider and Son, per Mr. Gerring	1	4	6
Workmen of Messrs. Rider and Son, per Mr. H. P. Collier	1	4	6
Miss Marsland (Camberwell)	1	1	0
H. R. and H. J. R. (Feneriffe)	1	1	0
The Bridgewater Master Builders' Association	1	1	0
Workmen of Mr. A. Jamieson (Hawell)	0	13	0

Correspondence.

The Architectural Museum, Westminster.

To the Editor of THE BUILDERS' JOURNAL.

PALL MALL, S.W.

SIR,—The state of the Architectural Museum in Tufton Street, Westminster, is one that requires some attention. When John Ruskin joined the Council in 1877 he presented to the museum an extensive collection of casts from France and Venice, the classification of which takes up two or three pages of the catalogue. To-day the whole of the room devoted to these casts is partitioned off from the rest of the museum, and marked "private." Inside it is almost hopeless to make anything of the existing fragments. They are unlabelled, unclassified, with the numbers mostly gone or undecipherable. Such things as the capitals from the Ducal Palace, which Ruskin wanted to be within the reach of all, are not to be found.

It is the same with the rest of the museum. The casts from the English Cathedrals, which might be so valuable a series and such an aid to the study of Gothic architecture, are in hopeless confusion, especially in connection with the tattered copy of the catalogue in the hall, dated 1877; even of this no copies can be obtained, and an attendant once told me that a number of copies might have been sold were they to be had. The Architectural Museum should be to Gothic what the British Museum is to classic architecture. At present the building seems to be handed over to an art school, and the study of its contents, even if they were in a less confused condition, is almost out of the question. One meets with "private" at every few steps, and many of the casts must be inaccessible to visitors. Much as we may desire to see a memorial to Ruskin in Westminster Abbey or the National Gallery, it would be more to the point to try and rescue some of his work. It seems sad to think that his labours should be wasted and destroyed when they might be of so great an aid to the study of Gothic architecture.—Yours faithfully,
MAX JUDGE.

The Sanitary Institute.

To the Editor of THE BUILDERS' JOURNAL.

PARKES MUSEUM, MARGARET STREET, W.

SIR,—Now that it is becoming the general practice of local authorities to require some certificate of competency from newly appointed sanitary officers, the Council desire again to direct your attention to the examinations for inspectors of nuisances under the Public Health Act, 1875, which have been conducted by the Sanitary Institute for the past twenty-two years. The certificates granted by the Institute are accepted by over two hundred local authorities, including most of the principal towns of England, and the certificate is one of the most reliable testimonials that a candidate can produce for this appointment. Since the public work of the Institute was commenced in 1876, it has examined 5,400 candidates, and the Council are glad to note the general improvement in the status and capability of these officers throughout the country, which has followed its efforts. Examinations have also been recently established by the Institute for inspectors of meat and other foods, so as to give practical effect to the order issued by the Local Government Board upon the report of the Royal Commission on tuberculosis.—Yours faithfully,
E. WHITE WALLIS, Secretary.

[A pamphlet relating to their examinations (which, for the convenience of candidates, are held at various centres) is issued by the Sanitary Institute at 6d. net.—Ed.]

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Architecture is frozen music."—MADAME DE STAËL.

Our Inset Plates. On page 70 of the present issue particulars will be found of the tenements on the Boundary Street Area, Bethnal Green, N.E. The plans for these buildings were prepared by the London County Council. The Romford Public Baths are now being erected for the urban district council. The accommodation comprises a swimming bath, six private slipper baths, with waiting and committee rooms and establishment laundry. On the first floor are rooms intended to be used for technical instruction, and on the second floor are the rooms of the superintendent. The swimming bath will be provided with a movable floor, so that it can be used as an entertainment hall. Space is provided in the basement for storing as well as for the necessary boiler house. The front portion of the building is faced with red bricks and Bath stone dressings, and the rear portion is faced with stock bricks. The building is being erected from the designs and under the superintendence of Messrs. Harrington and Ley, of 108, Fenchurch Street, E.C., by Messrs. Thomas Bruty, builders, of Hornchurch, Essex. The accommodation of the house at Sampford Peverell, Tiverton, comprises a large hall, dining room, drawing room, study, kitchen and offices on the ground floor, with six bedrooms and bathroom, &c., on the first floor. The materials proposed to be used are local stone for the ground storey, with half-timbering and green slates above. The large overhanging cornice is of wood, and the bay windows near the angles of the building, which have deep ornamental lead aprons between the ground- and first-floor windows, will also be constructed of wood. The design is by Mr. Cyril E. Power.

The Alexandra Palace.

A SPECIAL emergency meeting of the Hornsey District Council was held last Wednesday to discuss the proposed purchase of the Alexandra Palace and Park as a permanent open space. Seven years ago an attempt was made by Mr. Littler and Mr. H. R. Williams to effect a purchase for something like £260,000, but at that time the County Council had no power to contribute. The present scheme is more modest, though it includes all the essential features of the larger undertaking. It includes the building, which cost £350,000 to erect, and consists of a large central hall capable of seating about 20,000 persons; a magnificent organ put up at an expense of £20,000; a completely fitted theatre, concert room, picture galleries, courts, covered winter gardens, and range of dining rooms and kitchens, covering in all eighteen acres of ground, with an under-floor having entrances from the sloping terraces. The area of the land is 134 acres of freehold (which can never be built upon), and twenty-eight acres of long leasehold at a moderate ground rent. It is also proposed to purchase The Grove, consisting of ten acres of splendid woodland, situated on the west side of the Palace, for which £11,000 is asked. The Grove is interesting as a favourite resort of Dr. Johnson. It may be noted that twenty acres of land in the immediate vicinity of the Palace recently realised from £1,500 to £2,000 per acre. The Alexandra Palace has had an unfortunate career. The original building was part of the Exhibition of 1862, and was moved to Muswell Hill. It was opened on the Queen's Birthday in 1873, and was burned down on the 9th of the following month, the ruins remaining an object of public interest for some time. Ultimately the Palace was rebuilt, and was opened under the management of Mr. (now Sir) Edward Lee, who was knighted for his efforts in connection with the Dublin Exhibition. For a while the undertaking was a great success, one Bank Holiday seeing the record attendance of 105,000 people. In 1876 the Palace went into liquidation, and it reverted to the

London Financial Association, who then leased it to Mr. Jones, formerly associated with the Crystal Palace. Afterwards Mr. Willing took over the responsibility. For the last two years the lessee has been Mr. T. J. Hawkins, but again the speculation was a disastrous one, and the property was taken over by the London and Middlesex Freehold Land Company, Limited. At the meeting referred to above it was resolved to raise £120,000 as a Middlesex county fund, so that there is every prospect of the scheme being brought to a successful conclusion.

A New Westminster Building.

On the east side of the Roman Catholic Westminster Cathedral is the new "Archbishop's House," which is to be ready for occupation next July. It is built of red brick and stone, materials similar to those used in the construction of the Cathedral. The right wing will form the library. There is on the ground floor a large entrance hall, dining room, committee rooms, and secretarial offices, with a corridor of 105ft. in length; on the first floor are three reception rooms, leading one into the other, of a total length of 101ft., with a width of 35ft. The Cardinal's private suite of rooms and chapel are also on this floor. Adjoining the house, and connected with it, is the Diocesan Hall, 104ft. by 35ft. The Cathedral, the Hall, and the house will form one continuous block of imposing buildings of about 550ft., and occupying the whole length of Ambrosden Avenue. At the back of the hall and house, space has been reserved for the Cathedral Clergy House and a Benedictine Monastery.

Separation of Design and Craftsmanship.

IN his address to the students of the Royal Female School of Art, on the occasion of the distribution of prizes, Mr. Hugh Stannus commented on the manner in which of late years design and craftsmanship have been separated. He has certainly hit upon a curious anomaly in our system of art education, upon a working paradox in accordance with which teachers who have no experience of handicrafts train students to make designs that must be carried out by workmen who have no knowledge of art. The results of this disjointed arrangement have certainly not been happy. A tentative and unpractical type of design has been created; something that is more showy than useful; and the real object of decorative work has been forgotten. It would certainly be better if students could be taught to put their ideas into permanent shape instead of being obliged by the insufficiency of their technical education always to depend upon a mechanical executant. It is in this respect that the present movement towards a revival of the arts and crafts has special interest, as no man can expect to execute another man's design with the spirit of the designer himself—that is not transferable.

Ancient Monuments Protection.

A BILL has been introduced into the House of Commons by Lord Balcarras, M.P., and supported by Sir John Brunner, Mr. Carson, Mr. Jebb, Sir John Stirling Maxwell, and Mr. Bryce, to amend the Ancient Monuments Protection Acts by extending the provisions of the Ancient Monuments Protection (Ireland) Act, 1892, to this country. The Bill proposes to give power to county councils to purchase and preserve any monument situated in any administrative county or in any adjacent county, or to undertake or contribute towards the cost of preserving, maintaining, or managing any such monument. It is also proposed to empower the Commissioners of works and county councils to receive voluntary contributions towards the cost of maintenance and preservation of any monument of which they may become the guardians or purchasers. Any monument placed in charge of the commissioners or of a county council is proposed to be exempted from rates, taxes, and duties, including what are known as death duties. There is very little chance of this measure becoming law unless it is supported by the Government, or of its effecting much good

even if it should become law, considering the indifference of local authorities with regard to works of art. The title of the Bill is misleading, the word monuments in this country being understood to apply to sepulchral monuments only and not to buildings, as in France; but this is probably necessitated by the circumstance that the Bill is an amending Act, and it is incumbent to repeat the title of the principal Act.

Paris' Leviathan.

FRANCE has now her temple of waste paper. The huge building at the corner of the Rue Cambon and Rue Mont-Thabor has been completed and will be filled with the records of the Cour des Comptes. Each of the twelve storeys, two which are in the basement, has fourteen windows facing on the Rue Cambon and eleven on the Rue Mont-Thabor, and each comprises seventy-two rooms, making a total of 864. There is space for storing 60,000 *dossiers* in 60,000 compartments; every compartment is of cement, so that only one *dossier* may burn at a time, if needed. This is perhaps a pity.

The English Cottage of To-day.

IN the late Charles Kingsley's book "Yeast," the existing degradation of the English agricultural labourer is the theme. Mr. Archibald Marshall, in this month's issue of "Macmillan's Magazine," laments "The Destruction of English Villages." He says: "When a new church or new buildings are erected we all have something to say as to whether the architect has been successful or not, and houses for the occupation of the wealthier classes are being built all over England with taste and understanding. What about the cottages? For every church and school or big house there must be a hundred cottages built in the country every year, and it is no exaggeration to say that ninety-nine of them, so far from adding to the beauty of an English village, do something towards destroying the beauty that already exists. Go through any half-dozen villages in England, and see whether I am not right. The only exceptions are when a landowner has the taste and the will to save or to add to the beauty of his property, for the occasions on which the local speculative builder, who is responsible for the great majority of these modern eyesores, has the taste and the will to do something better are so few that they may be left out of account. It cannot be too much insisted on that wherever a new cottage or group of cottages is built in the country to-day, it is as a rule so hideous, so out of sympathy with all its surroundings, as definitely to destroy the charm of the spot where it is built, from whatever point of view it may be seen. And these brick boxes with slate lids, as they have been well called, are being built all over the country day after day, year after year. Is it not a monstrous thing that the beauty of rural England should be destroyed in this way, destroyed so quickly and so unfailingly, while we are boasting that the ugly, tasteless architecture of the immediate past is becoming more and more rare in buildings of greater pretensions? The remedy the author suggests, is the formation of a society to supply the small country builder with working drawings for his erections."

A City Improvement.

Thirteen years ago it was decided that the Cheapside end of Newgate Street should be widened. The work has now begun. The block of houses between Panyer Alley and Paternoster Row is being demolished so that the line of frontage at this point may be set back. It will not be a heroic remedy for the congestion of traffic at the junction of Cheapside, Newgate Street, St. Martin's-le Grand, and St. Paul's Churchyard, but it will afford some measure of relief for the 100,000 vehicles and the 30,000 pedestrians passing here daily. The cost of the improvement will be close upon £156,000, half being borne by the City Corporation and half by the London County Council. As a result, Newgate Street at this spot will be widened from 44ft. to 70ft. and the junction of Cheapside with St. Paul's Churchyard from 45ft. to 65ft.

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HOUSE AT SAMPFORD PEVERILL, TIVERTON. CYRIL E. POWER, ARCHITECT.

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COOKHAM BUILDINGS.



MOLESEY AND CLIFTON BUILDINGS.

BUILDINGS ON THE BOUNDARY STREET AREA, BETHNAL GREEN, ERECTED BY THE LO



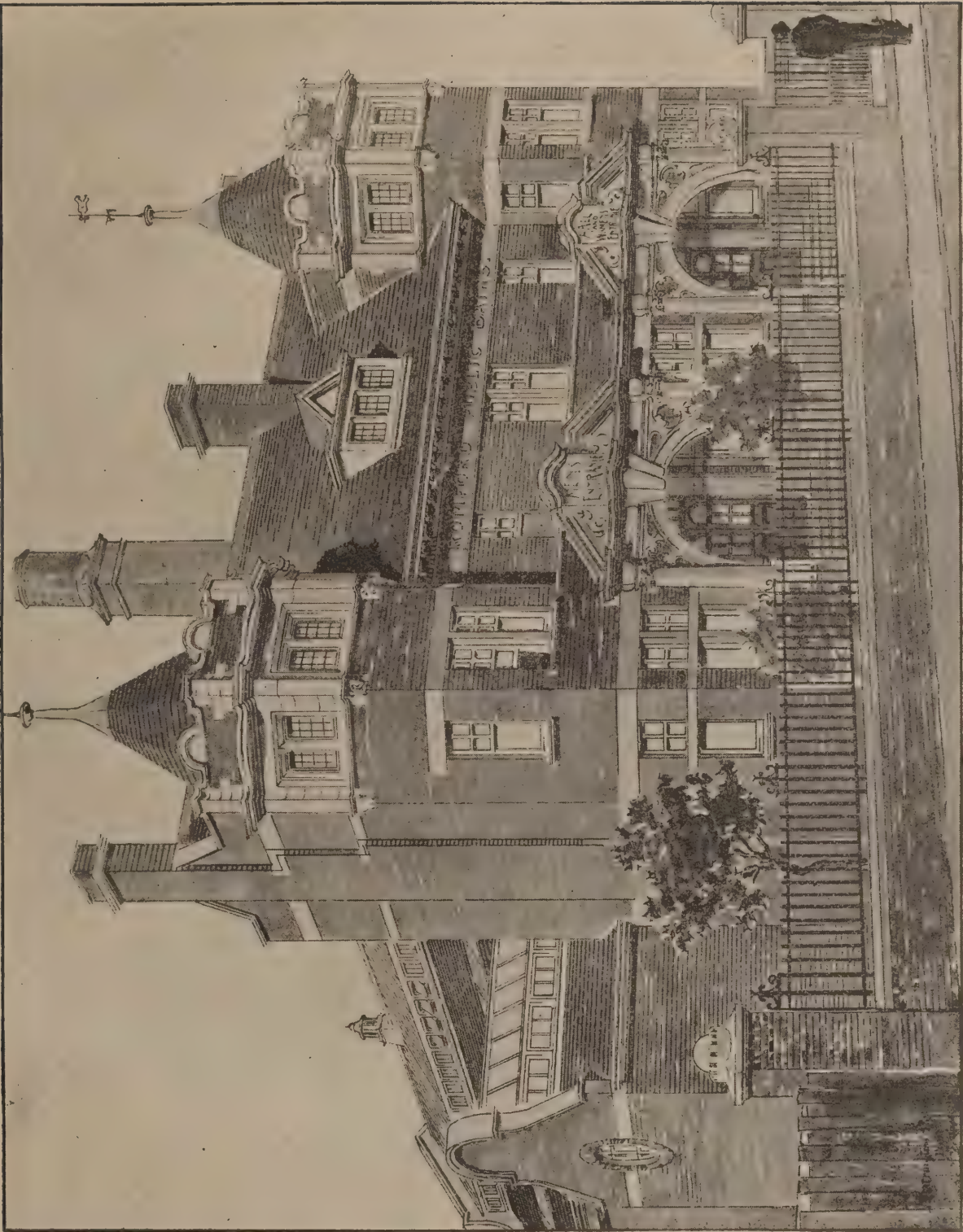
LAUNDRY.



TAPLOW AND CHERTSEY BUILDINGS.

COUNTY COUNCIL. THE LAST BLOCK WAS OPENED BY H.R.H. THE PRINCE OF WALES ON SATURDAY.

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PUBLIC BATHS, ROMFORD. HARRINGTON AND LEY, ARCHITECTS.

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Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Initials L.S.A.M.

CARMARTHEN.—W. V. M. writes: "What is the meaning of the initials L.S.A.M.? I find them after the name of an architect who advertises in the local papers."

The initials are unknown to us and have no recognised significance.

Book on Fitting-up Offices.

HORNSEY, N.—J. J. C. writes: "Are there any works published that deal with the arrangement and fitting-up of offices for clerical staffs of large manufactories?"

There are no books of this description in existence.

A Book on Drawing Columns.

LIVERPOOL.—D. W. writes: "What book can I get giving all dimensions for drawing out columns?"

The best small book for the drawing of columns is, "The Student's Instructor in Drawing and Working the Five Orders of Architecture," by Peter Nicholson (dated 1839, post free for 4s. from B. T. Batsford, 94, High Holborn, W.C.).

Book on Book-keeping for Builders and Contractors.

GLASTONBURY.—AVALON writes: "I should feel obliged if you could give me particulars of any good book on book-keeping for builders and contractors."

The best book is "Builders' Book-keeping: a Perfected System." By Sidney Saker. Price 3s. 6d. net. Mr. Batsford, of 94, High Holborn, W.C., will supply it.

Merits of Iron and Wooden Bungalows.

LONDON, W.—R. A. J. writes: "What are the relative advantages and disadvantages of iron and wooden bungalows? Which is the better? Is an iron building on an eminence specially likely to be struck by lightning?"

An iron bungalow would most certainly be ugly, and would be hot in summer and cold in winter, while one built of wood could be made exceedingly picturesque and would be cool in summer and warm in winter. Either, if built on an eminence, would be liable to be struck by lightning, but would be perfectly safe if properly protected by a lightning conductor connected to all external metal work and carried down to damp earth. G. A. T. M.

Drawings Required from Probationers R.I.B.A.

TAUNTON.—P.R.I.B.A. writes: "The R.I.B.A. kalendar says as follows: (a) Sheet 7. One sheet containing diagram of timber-framed roof truss not less than 30ft. span, with the nature of the strain on the several parts marked thereon, &c. What is meant by the nature of strain on several parts marked thereon, and how would they be shown? (b) Sheet 9. A sheet of details of joiner's work in doors, windows, and fittings shown in plan, elevation, and section, &c. Does this mean a sheet of details of a door or of a window; or does it mean a sheet of details of both doors and windows? (c) May the sheets of drawings be elaborately coloured as is sometimes done in offices, or are the drawings to be left in black and white?"

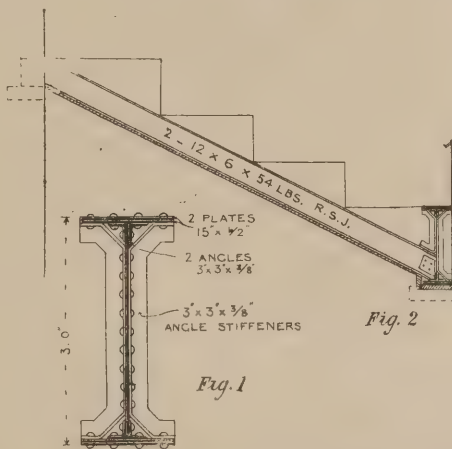
(a) The stresses would be either "tension" or "compression," which words should be written upon the members subject to these stresses. The word "strains" is here improperly used. (b) Use your own judgment. Measure good, sound work in preference to

copying, and fill your sheet. If you have room for both door and window, insert both. (c) Finish as working drawings, using a thick line and strong distinctive colouring to differentiate unmistakably between the various materials used, and figure all dimensions. G. A. T. M.

Girder to Support Gallery.

LEVENSHULME.—CLIMAX writes: "Would a church gallery of about 39ft. span by about 16ft. deep be safe without pillars, provided there were two iron girders across the span? If so, what size of girders would be required? If not, could the pillars be under the second girder, as they would be most awkward in front; and should the front girder be cantilevered from the second?"

The gallery could be carried by one girder supported on the wall at each end, and two rolled joists 12 x 6. The load on this girder would be about 32 tons, allowing 2 cwt. per ft. sup. as the load on gallery. The maximum stress in flanges would be $\frac{Wl}{8d}$ and, taking the depth at 3ft., this would equal 52 tons. Allowing 4 tons stress per square inch in compression, the top flange would require 13 sq. in. sectional area; say two plates each 15 x $\frac{1}{2}$ in. Allowing 5 tons per square



SUPPORTING A GALLERY.

inch in tension, the net sectional area of bottom flange would be 11 sq. in.; deduct four $\frac{3}{4}$ in. rivets from width of flange, $15 - 3 = 12$ in. wide. Therefore, thickness equals $\frac{11}{12}$. Therefore, say two $\frac{1}{2}$ in. plates 15 in. wide. Web $\frac{3}{4}$ in. thick. The section of girder would be as shown in Fig. 1; the general arrangement as Fig. 2; Fig. 3 is the elevation. HENRY ADAMS.

Deductions from and Payment of Rates, &c.

MASHAM, YORKS.—COLLECTOR writes: "(1) Where owners pay the rates of cottages valued under £8, can they claim 15 per cent. deduction from highway rate and 20 per cent. from rates for general district and lighting purposes? For instance, fifty cottages have altogether a gross ratable value of £250, and a net value of £208 6s. 8d., which at 1s. in £ is £20 16s. 4d. Am I only entitled to collect £17 13s. 8d. highway rate, and £16 13s. 1d. general district rate? (2) For general district purposes, where the occupier of plantations is also owner, are such plantations liable to be assessed at only a quarter ratable value? (3) If I meet a ratepayer in the street or on the highway and I suggest to him or ask him for a certain rate or rates due from him, and he refuses to pay; and on such refusal I offer him a demand note for the rate or rates there and then, which he refuses to take; does such an offer and refusal constitute a legal demand for such rate or rates?"

(1) It appears that the deductions which you specify must be made. See section 211 of the Public Health Act, 1875. (2) Yes. See the above-quoted section. (3) It appears to do so, but you should be able to prove having made the demand. G. H. B.

Utility of Becoming an A.R.I.B.A. or M.S.A.

EDINBURGH.—T. G. J. writes: "I have just completed my fourth year as pupil to an architect here, but have not as yet sat for any examination, such as the A.R.I.B.A. From enquiries made, I am led to understand that the possession of this qualification does not carry so much weight with architects in Scotland as it does in England, where, to practice successfully, I am told it is almost indispensable to hold it. Circumstances make it rather uncertain where I might eventually start business for myself. Do you think it would repay me to commence studying even now for this examination, considering that I am through my apprenticeship? Also, are there any other qualifications besides the A.R.I.B.A. which an architect may take with advantage, and how long would the courses of study involved occupy?"

Whatever detractors may say to the contrary, it is well worth the necessary effort to take up Associateship of the R.I.B.A. The course of training is lengthy and severe, but the gain to every man who conscientiously goes through it is commensurately great. It is not the value of the qualification in the eyes of the public which is of most importance, but your own enhanced knowledge and the feeling and

actuality of strength which this gives. Membership of the Society of Architects can be obtained after passing a single examination, which is in most ways equal to that for Associateship of the R.I.B.A., and in some respects superior. The secretaries of each of these bodies should be written to for details. Address: Secretary R.I.B.A., 9, Conduit Street, W.; and Secretary Society of Architects, St. James's Hall, Piccadilly, W. G. A. T. M.

Damage to Highway by Overflow of Beck.

MASHAM, YORKS.—SURVEYOR writes: "On two distinct occasions during the last three months a district highway has been damaged to the extent of about £25 by the overflow of the beck when in flood. The water leaves the beck whilst in fields occupied by various tenants and owned by one landlord, who is also lord of the manor, and from the fields it flows on to the road, washing off the metal, &c. (1) Can my Council (urban district) on the report of the surveyor recover from the landlord the damage done? (2) Are the tenants liable for such recovery, if the landlord by agreement has let the said fields for tenants to repair watercourses? (3) Where no written agreement exists, is landlord liable? (4) Can the Council compel either the landlord or tenant, as the case may be, to widen to a prescribed width, and embank to a certain prescribed depth, the bed of the beck in question? (5) In cases where accommodation bridges over the beck are too small to allow the uninterrupted flow of the water, can the Council enforce either the removal or enlarging of these bridges, when such interruption causes the water to flow over the fields on to the highway? (6) Where water rails are a source of interruption, can the Council compel

that they shall be so hung that the water can flow without interruption from them in flood time?"

(1) Yes, except in the case of an extraordinary flood, which might be held to be an "act of God." (2) It appears that the landlord is primarily liable to the local authority; but it has been held that, for purposes of the Highway Acts, the term "owner" includes the occupier, even if a yearly tenant (see *Woodward v. Billericay Highway Board*, 11 Chan. Div. 214). (3) Yes. (4), (5), (6) Yes, apparently. G. H. B.

R.I.B.A.

AT a special general meeting of the Royal Institute of British Architects held last Monday evening at eight p.m., Mr. William Emerson, president, in the chair, Professor the Commendatore Rodolfo Lanciani, Correspondent de l'Institut de France, D.C.L. Oxon., Hon. Corr. M. of the R.I.B.A. at Rome, was elected the Royal Gold Medallist for the current year. At the conclusion of this special general meeting a general meeting (business and special) was held. The minutes of the previous meeting having been read and confirmed, the following were elected members of the Institute:—As Fellows: Messrs. David Barclay Niven, William Edward Riley and Herbert Hardy Wigglesworth, all of London. As Associates: Messrs. Francis Henry Allen, of Northampton; William Henry Ansell, of London; Spencer Ellwood Barrow, of Lancaster; Francis William Ashton-Buckell, of London; Thomas Joseph Byrne, of London; Miss Bessie Ada Charles, of London; Messrs. David McLeod Craik, of London; Alfred Herbert Foster, of London; Frank Foster, of London; Stanley Hinge Hamp, of London; John Harry Woodall Hickton, of Walsall; Mathew Honan, of Liverpool; Herbert Edward Illingworth, of Leeds; Alfred Ralph Keighley, of Liverpool; Thomas Anderson Moodie, of London; James Edward Coleman Shield, of London; John Edward Spain, of Wragby; Reginald Henry Spalding, of London; Frederick Taylor, of Aylesbury; Ramsey Traquair, of London; Thomas Tyrwhitt, of London; and Harold Watts, of Plymouth. As Honorary Fellow: The Right Honourable Sir Richard Temple, Bart., G.C.S.I., C.I.E., D.C.L., LL.D., F.R.S.

A further special general meeting was then held, and adopted the following recommendations of the Council, moved by the chairman: "(1) That in By-law 25 the words 'thirty-six' in the first line be altered to 'thirty-eight,' and that the word 'two' in the second line of section (a) be altered to 'four.' (2) That in By-law 29 the second sentence be altered so as to read, 'Any Associate shall be eligible to serve as an Associate-Member of Council.' (3) That in By-law 30 the word 'three' in the seventh line be altered to 'six,' and further that the words 'but the names of members of the existing Council shall be distinguished by an asterisk,' be omitted from the same By-law." The meeting then terminated.

Mr. G. F. Watts, R.A., who recently reached his eighty-third birthday, though one of the oldest of living painters, is fourteen years the junior of Mr. T. Sidney Cooper, who was elected to full membership of the Royal Academy in the same year, 1867. Mr. Watts is of Welsh descent and was born in Herefordshire. He first exhibited at the Royal Academy in 1837.

A Proposed Liverpool Improvement.—Since the demolition of St. John's Church a proposal has been made and found much favour that the site should be utilised for the erection of the statue of Mr. William Rathbone, and a further suggestion is that St. John's Churchyard should also be ornamented with the statues of Mr. Gladstone and Sir A. B. Forwood. Mr. George Frampton, R.A., sculptor, who has been commissioned to execute the statue of Mr. Rathbone, has also prepared a model for the laying out of St. John's Churchyard.

Professional Practice.

Bulwell, Nottingham.—A new reredos has been erected in the parish church of Bulwell. It is executed in alabaster, in the Gothic style. The higher central portion contains a representation of the Crucifixion boldly sculptured within a richly traceried, crocketed, and ogee-shaped arch. Underneath, in raised gilded letters, are the words "God so Loved the World." On each side of the central arch are traceried niches, one containing a figure of St. Paul and the other St. Peter. The arches are divided by moulded buttresses, terminated with carved pinnacles. The wall on each side of the reredos is covered with polished alabaster low panelling, arched and traceried, and surrounded with carved cornices. On the south wall is an alabaster tablet, bearing the following inscription:—"To the glory of God, and in affectionate memory of Thomas Hardy, of Bulwell Hall, esquire, the reredos was placed in this church of St. Mary the Virgin, by his widow and children, in the year of our Lord 1900." The work has been executed by Messrs. Farmer and Brindley, of London, from the design and under the direction of Messrs. Heazell and Son, architects, of Nottingham.

Wakefield.—The opening ceremony will soon take place of the new acute hospital in connection with the West Riding Asylum at Wakefield. It has cost £90,000. The buildings have been in course of erection for the past three years, and, including the grounds connected with them, cover about seven acres of ground. The West Riding Asylums have for some time past been in a congested state, and at the present moment the County Council is engaged in providing a retreat for private cases of insanity at Scalebor Park, and is about to erect an asylum at Storthes Hall, near Huddersfield, to provide accommodation for 2,000 inmates. Mr. Vickers Edwards, the West Riding architect and surveyor, is making good progress with the plans for the Storthes Hall Asylum, and the building at Scalebor Park is at present in course of erection. The plans for the new acute hospital were prepared by Mr. Vickers Edwards, and the work has been carried out under that gentleman's superintendence by Mr. Isaac Gould, of Hartshead Works, Hunslet, with Mr. John Maclaren as clerk of the works. The buildings, which are of red brick, with stone facings, occupy a commanding position at Field Head, a short distance from the Wakefield Asylum, with which they are connected and which they overlook. They are also in close proximity to Stanley Hall, which was recently purchased by the County Council and is at present being repaired and altered in accordance with plans prepared by the county surveyor, and at an additional cost of £2,000, for the purpose of providing accommodation for about sixty male idiots under eighteen years of age. One end of the new building is divided from Stanley Hall by the Wakefield and Aberford Road; the other end adjoins the private road leading from Field Head to the old Asylum, and is fenced in with a substantial brick boundary wall with stone coping. Externally, the buildings are not very ornamental. In regard to the cost, it may be stated that (not including the land) it will be equal to about £335 per bed. This, to some persons, may appear a large sum, but in several ordinary asylums in this country the cost has exceeded £400 per bed. At the rear of the hospital are two cottage homes, one for thirty-six females, and the other for a like number of male patients. These will be occupied by patients who are considered fit to engage in domestic work. There are certain other small and detached erections at the rear to be utilised for various purposes. In the course of a few years these will be screened from view, as a plantation has been formed, and a thick belt of trees will be seen later. The extensive grounds in front of the buildings are being tastefully laid out and planted with suitable trees and shrubs. A fine, broad carriageway

is being formed between the asylum and the new buildings.

York.—The new electric light works erected by the York Corporation at Foss Island have been opened. The total cost of the installation up to the present has been £20,000. The site of the works is well adapted for the purpose, being close to the river Foss, whence it is possible to obtain a good supply of water for condensing and steaming purposes. The land around the works is also the property of the corporation and will permit of large extensions of the buildings. The design and erection of the buildings and chimney have been superintended by Mr. A. Creer, the city engineer, and the mechanical and electrical equipment has been built and erected to the specifications of Dr. Kennedy, the well-known consulting electrical engineer. The buildings include a boiler house 55ft. by 35ft., containing two boilers, each 28ft. long and of 8ft. diameter. The chimney is 180ft. high, with an internal diameter of 7ft. 6in. at the top. It is capable of serving four times as many boilers as are at present installed. The chimney will also be used for the refuse destructor, on which a start has already been made. It is expected that the heat generated by the burning of the refuse will in its turn generate sufficient steam to take the day load of the electric light station, if the steam is not required for other purposes. The engine room contains four engines and dynamos, and the number of 8 candle-power lamps which can be supplied with current from the dynamos at any one time is about 6,600. The storage battery consists of 250 cells, and is situate in a room 47ft. by 16ft. The original scheme provided for distributing cables being laid in Coney Street, Spurrier Gate, High and Low Ouse Gate, Lendal, Museum Street, Blake Street, New Street, Market Street, Fease Gate, Clifford Street, St. Leonard's, Goodram Gate, and Parliament Street; but it has been found desirable to extend the mains owing to the number of applications received, and already extensions have been run down Pavement and Foss Gate, and up Mickle Gate to the Mount. The price at which the current is supplied is arranged on what is known as the rebate system—that is to say, the consumer is charged 7d. per unit on the first 182 hours' consumption, and 3d. per unit on all the remaining consumption per half-year. The contractors for the station were as follows:—Messrs. Parker and Sharp, York, for the buildings and chimney; Messrs. Crompton and Co., London, for the whole of the machinery; and Messrs. Callender and Co., London, for the mains.

Stainland Wesleyan Chapel has been renovated at a cost of £2,000. With the exception of the entrances and staircases, the interior has been entirely remodelled, and seating accommodation is provided for 550 persons. The architect was Mr. J. Berry, of Huddersfield. A new organ has been supplied by Messrs. A. Young, of Manchester, at a cost of £450.

Proposed new Fire Station at Birmingham.—At a meeting of the Birmingham Watch Committee on February 27th the report of a sub-committee recommending the erection of a sub-fire station at Saltley at a cost of £7,300 was adopted. The land for the station is at the corner of Lingard Street and Saltley Road, and the plans provide accommodation for a machine room, 31ft. by 36ft., stables for four horses, and usual offices. Quarters are provided for an engineer, eight married men and their wives and families and a number of single men, and sliding poles are provided to facilitate access to the engine house.

WERE YOU EXCITED when the news of the relief of Ladysmith was received? At any rate you no doubt shared in the general rejoicing, and in case you wish to make a thank-offering, we would point out that the **B.J. Shilling Fund** is still open.

New Patents.

These patents are open to opposition until April 7th.

1898. — Cement Manufacture. — 27,431. J. HASTIE and J. GILL; both of Edinburgh. The raw materials are ground in a mill to pass through a $\frac{3}{16}$ in. mesh. They then fall automatically into a drum containing a heavy edge-runner and a series of elevators or mixers; here the materials are thoroughly mixed and reduced to pass through a mesh of 2,500 holes to the square inch. In this ground state they are next sucked out by air into a collector having the form of an inverted cone, from which they are conveyed by chain buckets to a machine to be pressed into blocks for burning. Any degree of fineness can be obtained by varying the air suction.

1899. — Sewage Filtration. — 2,461. D. CAMERON, F. J. COMMIN, and A. J. MARTIN; all of Exeter. This invention is designed for the purpose of introducing air into sewage, or, preferably, into the effluent from a septic tank. The sewage is passed through a chamber into which water, or wholly or partly clarified sewage, is showered. Air is taken down in this way. Frays of coke and partition walls built of perforated bricks may be used to hold the air. An improved junction between the distributing and main channels forms the subject of another part of the invention.

Cork Flooring or Paving. — 2,800. F. BARTLETT, Bury. Powdered cork is made into a composition with an adhesive; for instance, $\frac{1}{2}$ lbs. of shellac, dissolved with $\frac{1}{2}$ lb. borax and $\frac{1}{2}$ gals. of water, are added to every 1 cwt. of granulated cork. The composition is then dried, and afterwards moulded. It is next pressed and heated to between 200 deg. F. and 300 deg. F. It is then cooled.

Blind Rollers. — 3,988. J. S. SMITH, Sale. — In a dovetail groove in the roller fit two lips, which clamp and hold the blind in place.

Facing Walls. — 6,217. D. SWANSON, London, W. Screwed studs are built in the wall with their ends projecting slightly. Facing sheets of, say, plaster of Paris, having a backing of hair felt, are placed against the ends of the studs, and held there by boards that are secured by means of ferrules screwing in the studs. The space between the back of the facing sheet and the wall is then filled with coarse stuff. The work is done in sections, and, when finished with, the boards, &c., are removed and the holes filled up. The plastering can thus be completed in one operation.

Exhaust Steam Heating Apparatus. — 714. T. J. CODD, Leytonstone. The exhaust steam is conveyed in a main leading to the atmosphere, a balanced non-return or flux valve being arranged at a convenient point. Branches are taken off to the radiators. This arrangement minimises back pressure.

Partition Walls. — 6,924. J. CHAPMAN, Cambridge-on-Tyne. The walls are formed of plaster slabs having cores through them and being interlaced with wire netting, which are supported by vertical and longitudinal wires or bars.

Casting Cement Pipes. — 18,353. C. J. MELBERG, Copenhagen. This invention is characterised by a drum, placed in the mould and forming the core. On the outside it has spiral projections by means of which it is screwed up, compressing the pipe and making it smoother.

Ceilings. — 24,948. R. B. RANSFORD, London, (The Basel Mission Tile Works, India). Solid hollow slabs of burnt clay are supported on ceiling rafters by means of mouldings of burnt clay that are slid over battens on the rafters, and held in place by nails.

The following specifications were published on Tuesday last, and are open to opposition until April 14th. A summary of the more important items will be given next week. The names in italics within parentheses are those of communicators of inventions.

1898. — 25,917, BEGGS and FIELDING, apparatus for the manufacture of acetylene gas.

1899. — 873, REDMAN, atmospheric gas burners. 2,441, THOMPSON and THOMPSON, valves for stopping or controlling the passage of steam or water. 2,506, JAMES (American Stoker Co.), method of and apparatus for making gas for heating purposes. 2,598, FREW-WEST, back rests for chairs and other seats. 3,023 HAWKINS, acetylene gas generators. 4,255, WINDHAM, acetylene lamps. 4,636, EVANS, acetylene gas generators. 5,107, SUGG, radiators for heating buildings. 5,210, DEFRIES, door bolting mechanism. 5,211, MILLER, electric incandescent lamps. 5,415, NOTON, filters used for the purification and filtration of sewage and for treating water for domestic purposes. 5,867, TALBOT, lanterns for incandescent gas lighting. 6,174, BURTON, locks and latches. 6,185, HECKFORD and BAGNALL, latch bolts. 6,799, MILLAR, combination tools. 6,905, HUGHES, intercepting or disconnecting traps for drains and sewers. 6,968, EDMONDSON, securing door handles or knobs on their spindles. 7,217, SMITH, hot-water boilers. 7,318, GRAYSON, fire extinguishing apparatus applicable as a fire escape. 7,403, HAWKIN, device for cleaning windows. 7,452, BENSON, bracket for window-blind rollers. 8,383, BANKS and BANKS, manufacture of door bolts. 10,416, MENGARINI, incandescent electric lamps. 10,505, MOTT, blowers and draught regulating appliances for open stoves. 12,340, RAU, steam heating apparatus and condensing or cooling apparatus. 13,095, LOVELAND, window blinds. 20,211, NOAD, method of preparing decorative surfaces. 20,323, MARKS (Murphy), gas engines. 21,589, LORME (Decayaux), door, or other locks. 21,615, BRITISH THOMSON-HOUSTON CO. LIMITED (Fleming), electric arc lamps. 23,714, SCHULZ, screw lifting-jacks. 23,760, DE REDON, nut-lock. 24,824, HOWARD, electric incandescent lamps. 24,828, LINCKE, adjustable device for suspending and fixing lamps. 24,878, THOMPSON (Gallassi and Dossani), vapour lamps for incandescent lighting. 25,140, EDWARDS, fixing and connecting railings in panels and to standards. 25,459, BREMNER, self-sustaining device applicable to elevating machines and cranes.

Under Discussion.

Workmen and Workshops.

A paper on "Health in the Workshop" was recently read by Mr. J. D. Sutcliffe before the Manchester Association of Engineers. The lecturer explained particulars gained in the last eighteen years, during which period he had inspected workshops and factories in all parts of Europe. He condemned the attitude of firms who were content to plod along in the unsuitable workshops of fifty years ago, and maintained that we had to-day in this country workmen who could not be excelled in the whole world when their energy and skill were properly directed. He instanced the work at the Rylands Library. In Canada and America much more attention was paid than with us to the cleanliness and healthfulness of the factory. The principal difficulty in getting good ventilation and warmth was the cost. In America it was not uncommon to pay 20 to 25 per cent. of the total cost of a building for adequate warmth and fresh air. How different was this from the allowance of an English architect of £5 for a "cow" to be fixed on the roof by the builder where the cost of the building had been £5,000! Good ventilation and warmth in the long run would actually pay better than many other things considered essential in all well-designed workshops. With regard to "natural ventilation," he said that on factories and workshops the best outlet was the louvred wooden turret. Many difficulties disappeared if fans were used. The amount of air required was obtained simply by choosing the right size of fan and driving it at the proper speed, and then the only problem lay in the proper distribution of the air. The difficulty with air currents was in controlling their direction. Mr. Sutcliffe commended the double duct system of combined warming and ventilating — one that was in use at the Salford Technical

School. He showed illustrations of a factory in Dayton, Ohio, where there is not only a wage list of £200,000 a year, but each year "a sum of £50,000 is appropriated for the realisation of what are called Utopian ideas." The proprietor was described as "neither a poet nor a prophet," but a manufacturer who looks with contempt on philanthropy and values only what is practical. He had said: "Everything that makes my employee a better man gives me through him a better piece of work. It is never a question therefore whether to spend money for his benefit, but only how to spend it to increase his knowledge, his happiness, or his health. Money spent to produce such results will bring as quick and sure a return as that invested in any other of the more customary ways of developing a business."

Scotch Ecclesiastical Architecture.

Mr. Thomas Ross delivered a lecture on the "Ecclesiastical Architecture of Scotland from the Twelfth to the Sixteenth Century" in the hall of the National Portrait Gallery, Edinburgh, on February 26th. Mr. Ross pointed out that the earlier developments of the Gothic style of architecture coincided with the period of the Norman invasion of England, while the new era began in Scotland with the marriage of Margaret, sister of Edgar Atheling, to Malcolm Canmore. The Celtic Church gradually disappeared, and the Roman Church took its place and became the great power in the country for the next five centuries. Religious establishments on a scale of size and grandeur not hitherto dreamt of in Scotland arose on all sides — cathedrals, abbeys, and parish churches, whose ruins constituted what we now called the Norman ecclesiastical architecture of Scotland. It was under David, however, that the enthusiasm for church work reached a height which was probably not surpassed by any contemporary sovereign. After dealing in detail with some of the architectural remains of the earlier period, Mr. Ross expressed his scepticism in the general belief that the existing nave at Dunfermline was part of the church built by Margaret. Most advanced and most perfect preparations, he said, were made for ribbed vaulting, such as had been made nowhere else in Europe in the year 1074, and this consideration alone would convince any archaeologist that the nave was not a part of Margaret's church. There were at least seventy-five places in Scotland which had indications remaining of having had churches in the Norman style. Apart from abbeys, churches, or cathedrals, they were aisleless structures, the church of Rutherglen being an exception. It was quite possible and probable that the ancient rivalry between Rutherglen and Glasgow, which existed in the twelfth century, might have found expression in the erection of a church in the King's burgh to rival in architectural splendour that of the bishop's burgh, or it might have been the opposite way — the church at Rutherglen might have incited the bishops to outdo it. Be this as it may, the church at Rutherglen was a building of considerable importance.

Recent Excavations in Greece.

Mr. Charles Waldstein, Litt.D., Ph.D., L.H.D., Slade Professor of Fine Art at Cambridge, gave last Thursday the first of a series of three lectures on "Recent Excavations at the Argive Heraeum, in Greece." The site of the sanctuary of Argive Hera (Juno) he described as lying on the north-eastern side of the beautiful Argive plain, between the ancient cities of Mycenae and Tiryns, and opposite the city of Argos. This sanctuary was one of the most famous in ancient Greece, and was specially notable as containing the great gold and ivory statue of Hera (Juno), a work of the great sculptor Polykleitos, of Argos, second only to Phidias, whose contemporary he was. This splendid sanctuary was classed by the ancient authors with the two greatest sanctuaries in Attica and Elis, namely, the Parthenon and the Temple of Zeus at Olympia. The sanctuary was discovered accidentally, in 1831, by General Gordon, of Cairness, who made some tentative excavations in 1836, which were followed by further tenta-

tive excavations by Rhangabé in 1854. The whole of the site was finally excavated by the American Archaeological Institute and School of Athens, under the direction of the lecturer, from 1892 to 1895. From a description of Pausanias they were led to expect remains of the great temple, built in the fifth century B.C., and traces of the destroyed earlier temple, built before the "Homeric Age" and burnt by the negligence of the priestess Chrysis in 423 B.C. Not only did they have the good fortune in the excavations to come upon the whole of the second great temple of the fifth century B.C., but to reveal traces, on the upper slope, of the earlier temple, spoken of by Homer as the temple of Hera. Traces of the conflagration were found and the whole pavement of this early temple was unearthed. Below the foundations and in various regions of this site were indicated traces of a civilisation which preceded the erection of this temple, leading back by facts, not by mere inferences, to a period 2,000 years or more before Christ. From these early beginnings there was an uninterrupted chain of evidence through the greatest Hellenic periods down to Roman times and later, the examination of which would convince anyone that the study of archaeology and antiquity, sometimes regarded as a dry-as-dust sort of study, was full of supreme poetry, and could bring back to us the past more vividly than any other study could do. Dr. Waldstein then proceeded to describe and explain a series of lantern slides illustrating the various stages in the excavations. He stated that of the second temple, built by Eupolemus about 420 B.C., considerable remains were found—sufficient to enable a complete architectural restoration to be made—while higher up the hill, which before excavations were commenced looked like an ordinary hillside sloping down to the plain in an unbroken roll, the polygonal pavement of the upper temple was discovered, together with portions of the wall, so that the outline of its plan could be determined and even a fair restoration of the structure itself made possible. Views were also shown of the Cyclopean foundation walls on the upper platform, with their huge stones 18ft. long; of a building, probably a gymnasium, dating from the end of the sixth century, the ground plan of which was clear on the south-west of the site; of a colonnade, with the remains of some columns still existing, from which a long marble staircase led up to the second temple; of a kind of propylæum of the Mycenaean period, and of several other buildings. Altogether, nine buildings belonging to various periods, in addition to the later temple, were found within the sanctuary.

Messrs. R. Waygood and Co. have been commanded to provide the royal yacht Victoria and Albert with a passenger lift for the exclusive use of her Majesty the Queen.

Mr. John Giles, senior partner in the firm of Giles, Gough and Trollope, architects, of 28, Craven Street, Strand, died on February 20th in his sixty-fifth year. Mr. Gough joined the firm in 1872, and Mr. Trollope in 1886.

Enlargement of Wakefield Cathedral.—At a meeting of the Walsham How Memorial Committee on Friday last, the contract of Messrs. Armitage and Hodgson, of Leeds, for the enlargement of the Wakefield Cathedral was again considered, and it was decided to ask them to execute the work throughout in Netherton stone. Their estimate for building the crypt and two vestries under a separate contract was approved. The estimate for the crypt works out at £8,842, whilst that for the whole of the building stands at £25,100. The contractors will enter upon their work on the 19th inst., and they undertake to complete the first portion (the crypt and vestries) in about eighteen months. The second portion (the whole of the work, if continued under one contract) will be completed in September, 1902. A sub-committee recommended that a design by Mr. Forsyth, of London, the eminent sculptor, of a recumbent effigy of the late Bishop Walsham How, should be accepted, and their recommendation was adopted. The cost of the effigy will be £750.

Keystones.

Artists' War Fund.—The proceeds of sale of the pictures recently on exhibition at the Guildhall amount to £9,120 8s.

St. Dunstan's Church, Stepney, is being restored by Messrs. J. E. and J. P. Cutts, architects, of Southampton Street, Strand.

Ruskin's Description of Giotto's Frescoes at Padua has been republished by Mr. Allen. The original book appeared in 1854.

At St. Peter's Church, Eastbourne, a new side chapel has been erected at a cost of £1,500. A new altar, costing £200, has also been provided.

The Death is announced of Mr. Andrew White Tuer, the well-known Fellow of the Society of Antiquaries and manager of the Leadenhall Press.

Mr. William Stott, of Oldham, the well-known artist, died recently at sea in the course of a short voyage undertaken for the benefit of his health.

St. Mary's Church, Plaistow, Bromley, is about to be enlarged according to the designs of Messrs. Wadmore and Mallett, architects, Chancery Lane, W.C.

The Grand Theatre, Islington, was almost entirely destroyed by fire last week. The fire was due to the "avalanche" in "Hearts are Trumps" being scattered by a slight gas explosion and set alight.

Hanover Square Rooms, W., once so fashionable, will soon cease to exist, as the building in which they are situated is to be taken down or converted into shops. The concert room recalls somewhat the glories of its former self.

Blocks of Industrial Schools at Bishopbriggs, Glasgow, are proposed to be built on the Kenmure estate. A site of about seventy acres has been purchased, and it is proposed to erect five blocks, each providing accommodation for twenty children.

New Gates at Kidderminster Parish Church have been erected by Messrs. Hill and Smith, of Brierley Hill; they are of the best Staffordshire wrought iron, hand hammered. There are two central gates and two foot gates, carried by four new massive stone pillars.

Patriotic Archaeologists.—At a meeting last week of the Alcoa Society of Natural Science and Archaeology, the lecturer (Dr. Currie) thought before proceeding to business that three cheers ought to be given for Lord Roberts. This met with an enthusiastic response.

Memorial to the late Duchess of Rutland.—A stained-glass window has been erected in Ilkeston parish church to the memory of the late Duchess of Rutland. It is of three lights and has been placed in the ancient chantry, supposed to have been erected by Joan de Cantilupe about 1360.

Housing Problem.—An international congress on the housing problem is to be held in Paris from June 18th to 21st next. The subscription for a member is 10 francs. Mr. Paul Langer, of 40, Gledstones Road, West Kensington, W., will be pleased to forward a programme to any applicant.

The Official Architects of Paris have been nominated by the Prefect of the Seine as follows:—Chief Superintending Architect, M. Sauger; Superintending Architect for the Eastern District, M. Dardouze; Superintending Architect for the Western District, M. Vigneulle; Superintending Architect (4th class), M. Longfils.

New Chemical Works for Cheshire.—The construction of extensive new chemical works at Cledford Bridge, near Middlewich, has been commenced by the contractor, Mr. Wilson, of Runcorn. The works are for the Electrolytic Alkali Company, whose present offices are at St. Helens. Orders have been given for engines and dynamos, and the total cost is estimated at £100,000. The new works will provide employment for a large number of men.

New Church Schools at Filey have been built in Murray Street at a cost of £1,909.

Statue of the Queen at St. Peter Port, Guernsey.—The bronze statue of the Queen which has been erected in the Candie Ground by public subscription was unveiled on March 1st by the Lieutenant-Governor (Major General M. H. Seward) in honour of the relief of Ladysmith.

"The Undercroft," Southampton.—The Town Council of Southampton have decided to preserve as a memorial of antiquity a fine example of early fourteenth century work known as The Undercroft, which had been threatened with destruction by street improvements under the clearance of one of the older parts of the town.

Home Arts and Industries Association Exhibition.—The sixteenth annual exhibition of the work done in the classes of the Home Arts and Industries Association will be held from May 24th to 28th in the gallery of the Royal Albert Hall. The exhibition will include wood-carving, inlay, metal repoussé, embossed leather, baskets, spinning and weaving, toy making, and many other applied arts. The percentage on sales will be given to one of the war funds for the wounded soldiers.

New Companies.

Great Yarmouth Brick and Tile Co., Ltd.

This company was registered without articles of association on February 13th, with a capital of £1000 in £1 shares.

Acme Brick Company, Limited.

This company was registered on February 21st with a capital of £3,005 in £1 shares to carry on the business of brick, tile, and cement manufacturers, &c.

John H. Hackman, Limited.

This company was registered on February 13th with a capital of £2000 in £5 shares to acquire and carry on the business of a builder, decorator, sanitary engineer, and contractor, carried on at Brighton by J. H. Hackman.

S. T. Hervey, Limited.

This company was registered on February 14th with a capital of £500 in £1 shares to carry on at Brockley, Kent, or elsewhere, the business of builders, contractors, decorators, brick makers, &c. Registered office: 1A, T. Pavement, Crofton-park, Brockley, Kent.

Sandwith Quarries Company Limited

This company was registered on February 9th with a capital of £20,000 in £4 shares to acquire the Sandwith Quarries, St. Bees Head, near Whitehaven, Cumberland, belonging to A. H. Herbertson and Whitaker, and to carry on the business of quarry masters, quarriers and sellers of stone, &c. The first directors (to number not less than three nor more than seven) are: A. H. Herbertson, S. Whitaker, B. Whitaker and J. Herbertson. Qualification, £22. Remuneration as fixed by the company. Registered office: Sandwith Quarries, St. Bees Head, Whitehaven, Cumberland.

Hawley Smokeless Economiser Furnace Company, Limited.

This company was registered on February 12th with a capital of £50,000 in £4 shares to acquire certain patents (French) relating to a system of smokeless furnaces, stoves and grates, known as Foyers Fumivores Hawley, to develop and turn to account the same, to manufacture and supply the same to artisans or others who may obtain them by periodical payments. The first directors (whom there shall be not less than three nor more than five) are to be elected by the shareholders, Messrs. H. Heaton, G. J. Dickens, C. Kiendi, W. N. Lewis, H. A. Appleton, G. Page and P. Howarth. Qualification, £2. No remuneration specified.

COMING EVENTS.

Wednesday, March 7.
SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. George Reid, M.D., D.P.H., on "Sanitary Appliances," 8 p.m. Inspection and Demonstration at the East London Water Works, Lea Bridge, Clapton, at 3 p.m., conducted by Mr. W. B. Bryan, M.I.C.E.
SOCIETY OF ARTS.—Dr. Carl Peters on "Macombe Country: Its Ancient Gold Fields and Industrial Resources," 8 p.m.
BRITISH ARCHEOLOGICAL ASSOCIATION.—Meeting at 8 p.m.
EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. J. A. R. Inglis, A.R.I.B.A., on "Colour in Architecture," 8 p.m.
NORTHERN ARCHITECTURAL ASSOCIATION.—Discussion on questions of Professional Practice, introduced by Mr. J. W. Taylor, F.R.I.B.A. 7.30 p.m.

Thursday, March 8
INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.
SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8 p.m.
CARPENTERS' HALL.—Mr. William Henman, F.R.I.B.A., on "The Modern Hospital," 8 p.m.
ROYAL INSTITUTION.—Mr. Charles Waldstein, Litt.D., Ph.D., L.H.D., on "Recent Excavations at the Argive Heraeum (in Greece),"—II. 3 p.m.
ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Connection of the Head with the Trunk: the Structures which Determine the Form of the Neck," 6.15 p.m.
SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. E. Doran Webb, F.S.A., on "Salisbury Cathedral, and How it Came to be Built."

Friday, March 9.
ARCHITECTURAL ASSOCIATION.—Mr. C. E. Bateman on "Small Houses," 7.30 p.m.
ROYAL INSTITUTION.—Professor Frank Clowes, D.Sc., F.C.S., on "Bacteria and Sewage."
BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. A. Harrison on "B.A.A. Excursion to Cirencester," illustrated by John Ward and others. 6.45 p.m.
SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. J. Wright Clarke on "Details of Plumbers' Work," 8 p.m.
ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design,"—X. 11.30 p.m.
GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. John Fairweather, A.R.I.B.A., on "Points in Practice," 8 p.m.
INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Messrs. John Duncan, B.Sc., W. A. Wales and G. J. Day on "The Distribution of Stress in the Walls of a Thick Cylinder," 8 p.m.

Saturday, March 10.
ARCHITECTURAL ASSOCIATION.—Third Spring visit.
DUNDEE INSTITUTE OF ARCHITECTURE.—Visit to Mathers' Hotel and surrounding buildings and Park U.P. Church, at 2 p.m.
SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Inspection and Demonstration at Beddington Sewage Farm, at 3 p.m., conducted by Mr. Thomas Walker, M.I.C.E.
Sunday, March 12.
SOCIETY OF ARTS.—(Cantor Lectures III.)—Mr. E. Sanger Shepherd on "The Photography of Colour,"—II.

BRISTOL SOCIETY OF ARCHITECTS.—Mr. Peter Addie, F.S.I., on "The Removal of Insanitary Areas and the Management of Improvement Schemes under the Housing of the Working Classes Act," 8 p.m.
INSTITUTION OF MECHANICAL ENGINEERS.—(Graduates Meetings.)—Mr. Brees van Homan on "Steel Skeleton Construction as Applied to Buildings on the American System," 7.30 p.m.
PHILOSOPHICAL SOCIETY OF GLASGOW (Architectural Section).—Mr. James A. Morris, F.R.I.B.A., on "Good Breeding in Art," Annual Business Meeting to elect Office Bearers, &c. 8 p.m.
SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.
ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XVIII.—Renaissance Christian Art," 6 p.m.
SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. W. C. Tyndale, M.I.C.E., on "House Drainage."
Tuesday, March 13.
SOCIETY OF ARTS (Applied Art Section).—Mr. Lasenby Liberty on "English Furniture," 8 p.m.
SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—Mr. C. M. Hadfield, A.R.I.B.A., on "The Architecture of the Fifteenth Century and Early Tudor Period."

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Hay, best	per load	8 10 0		4 0 0	
Sainfoin mixture	do.	8 15 0		4 5 0	
Clover, best	do.	4 5 0		5 0 0	
Beans	per qr.	1 7 0		—	
Straw	per load	1 4 0		1 16 0	

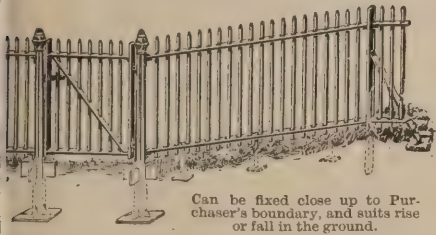
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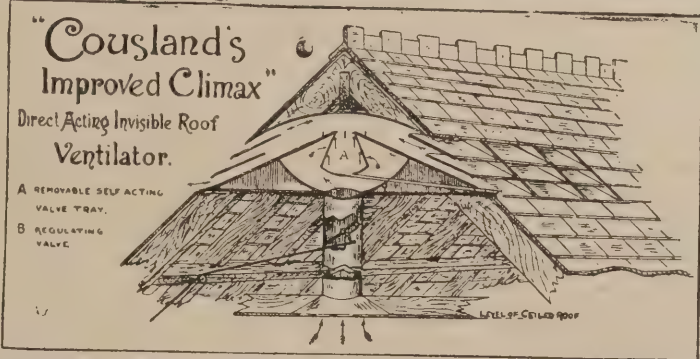
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		£ s. d.	£ s. d.
Castor Oil, French	per cwt.	1 8 0	1 10 4
Colza Oil, English	per cwt.	1 6 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 13 0	—
Linseed Oil	per cwt.	1 4 10 1/2	1 5 0
Petroleum, American	per gal.	0 0 7 5/8	0 0 7 1/2
Do., Russian	per gal.	0 0 6 7/8	—
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 8 0	1 11 3
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 0 0	2 0 1 1/2
Lead, white, ground, carbonate	per cwt.	1 3 0	1 4 0
Do. red	per cwt.	1 0 4 1/2	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	8 0 0	—

METALS.

Copper, sheet, strong	per ton	86 0 0	—
Iron, Staffs, bar	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 10 0	16 11 3
Do. do. English common	do.	16 17 6	—
Do. sheet, English, 6lb. per sq. ft. and upwards	do.	18 10 0	19 0 0
Do. pipe	do.	19 10 0	—
Nails, cut clasp, sin. to 6in.	do.	10 0 0	11 0 0
Do. floor brads	do.	9 15 0	10 15 0
Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 7 6	9 12 6
Tin, Foreign	do.	143 0 0	143 10 0
Do. English ingots	do.	152 0 0	152 10 0
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne	do.	27 7 6	—
Do. Spelter	do.	22 0 0	22 2 6

TIMBER.

Soft Woods.			
Fir, Dantzic and Memel	per load.	8 0 0	4 0 0
Pine, Quebec Yellow	per load.	4 7 6	6 5 0
Do. Pitch	do.	8 12 0	8 15 0
Larch, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4 1/2	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	12 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	15 5 0	21 10 0
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	10 15 0	11 0 0
Do. do. White	do.	7 15 0	11 5 0
Do. Swedish	per P. Std.	11 5 0	13 5 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	21 5 0	24 5 0
Do. do. 2nd	do.	10 5 0	12 0 0
Do. do. 3rd & 4th	do.	8 10 0	8 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 2nd	do.	10 0 0	—
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	8 15 0

Flooring Boards, 1 in.

	per square	£ s. d.	£ s. d.
prepared, 1st	do.	0 12 0	—
Do. 2nd	do.	0 11 0	—
Do. 3rd & 4th	do.	0 10 0	0 10 9

HARD WOODS.

Ash, Quebec	per load	8 17 6	4 10 0
Birch, Quebec	do.	8 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4 1/2	—
Do. Honduras	do.	0 0 3 1/2	20/32
Do. Tobasco	do.	0 0 3 1/2	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 13/16	—
Do. African	do.	0 0 3 3/8	—
Do. St. Domingo	do.	0 0 3 3/8	—
Do. Tobasco	do.	0 0 4 1/2	—
Do. Cuba	do.	0 0 2 1/2	21/32
Oak, Dantzic and Memel	per load	4 0 0	6 5 0
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0 0	16 10 0
Wainscot, Riga (Baulk)	do.	8 15 0	5 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BIRMINGHAM.—For the erection of new Board Schools to accommodate 620 boys, for the St. Thomas the Apostle School Board. Messrs. A. E. McKewan and A. J. Dunn, joint architects, Birmingham. Quantities by the architects—
 Stephens and Bastow £8,991 Hain and Passmore £28,641
 W. Gibson £9,600 Chas. Braeley £8,156
 Wakeham Bros. £9,525 W. H. Oliver £8,008
 Stephens and Son £8,887 Wm. Braeley, St.
 Geo. Setter £8,790 Thomas* £7,772
 * Accepted subject to the approval of the Education Department.

FOLKESTONE.—For new wing at the Victoria Hospital, Folkestone. Mr. H. Percy Adams, architect, 28, Woburn place, W.C. :—

Hayward and Paramor	£26,666	£129
Adcock	6,625	125
Dennie	6,375	134
Gregory and Co.	6,195	138
Prestige and Co.	5,987	125
Castle and Son	5,962	110
Gough and Co., Hendon*	5,874	118
Fearon (Informal)	5,680	114

* Accepted.
 (Architect Estimate, £26,000.)

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17 1/2 x 3 x 2	8 10	8 1	14 6
17 1/2 x 3 x 1 1/2	6 9	6 2	10 9



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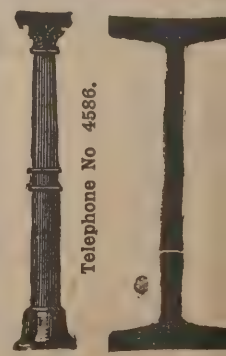
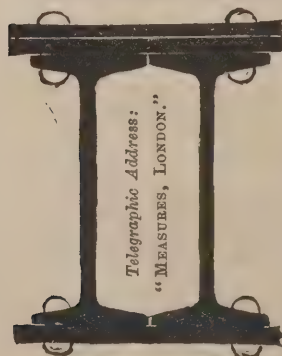
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CHISWICK, W.—For finishing three houses in Burnaby Gardens, on the Sutton Court Lodge Estate. Mr. Edward Monson, F.R.I.B.A., architect, 22, Buckingham-street, Adelphi, W.C., and Acton Vale, W.—
G. W. Bolton ... £1,720
W. Blackburn ... £1,185
Ferris Bros. ... 1,640
J. W. Bryant, Chis. ... 1,300
R. Nichols ... 1,300
wick* ... 1,084
*Accepted.

CHOPWELL, near Newcastle-on-Tyne.—Accepted for the erection of a house and shop at Chopwell, near Newcastle-on-Tyne, for Mr. Robinson. Messrs. Plummer and Barrell, architects, 13, Grey-street, Newcastle, and at Durham:—
Harlow, Carlisle-square, Newcastle ... £506 19 2

HANLEY Staffs.—For additions, &c., to business premises, Trinity-street. Mr. Eliah Jones, architect, 10, Albion-street, Hanley. Quantities by the architect:—
G. K. Downing ... £1,400 0
C. Cornes & Sons ... £1,300 0
W. H. Johnson ... 1,400 0
T. Godwin ... 1,276 0
Colley and Landop ... 1,339 9
A. Ward ... 1,270 0
W. J. S. Harring ... 1,300 0
C. Cope ... 1,267 10
ton ... 1,300 0
G. Ellis, Hanley* ... 1,255 0
*Accepted.

HEBBURN.—For the execution of street works Victoria-road and others, for the Urban District Council. Mr. J. B. Renton, surveyor, Arystle-street, Hebburn. Quantities by surveyor:—
G. Maughan ... £4,301 17 11
T. Callaghan ... £2,774 17 8
M. D. Young ... 4,058 5 0
Jarow* ... £3,977 5s. 11d.
G. E. Simpson ... 3,908 17 6
*Accepted.

HERNE BAY (Kent).—For the erection of branch banking premises at the corner of High-street and William-street for Parr's Banking Company, Limited. Messrs.

Messenger and Adams, architects, Town Hall Chambers, Herne Bay:—
Wall and Co. ... £5,052
E. T. J. Adams ... £4,070
Henry Lane ... 4,490
A. S. Ingleton, Herne Bay* ... 3,837
Paramor and Sons ... 4,450
W. W. Martin ... 4,295
*Accepted.

LONDON.—For new station following completion of foundations at Cannon-row, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, architect. Quantities by Mr. W. H. Thurgood:—
Dove Bros. ... £41,034
Higgs and Hill ... £37,444
Mowlem and Co. ... 39,914
Patman and Potheringham ... 37,314
H. Lovatt ... 34,413
Pattinson and Son ... 38,249
Holloway Bros. ... 37,180
T. Parker ... 38,214
B. E. Nightingale* ... 36,663
Bywater and Sons ... 38,131
Grover and Son ... 36,564
Scrievner and Co.* ... 38,131
Lawrence and Son ... 36,468
Ashby and Horner ... 37,061
Simpson and Son* ... 35,400
Lathey Bros. ... 37,914
Holland and Hannen ... —
Cubitt and Co.* ... 37,516
Colls and Son ... —
*These tenders made subject to conditions.

LONDON.—For the construction of an underground convenience for women on the north side of Whitechapel-road, for the Board of Works, Whitechapel District. Mr. M. W. Jameson, Engineer, 15, Great Alic-street, Whitechapel, E.C.:—
G. Jennings ... £1,928 0 0
W. Gladding ... £1,587 0 0
Watts, Johnson, and Co. ... 1,815 0 0
Patman and Potheringham, 15, Park-street, Islington* ... 1,581 0 0
Sheffield Bros. ... 1,800 0 0
Islington* ... 1,581 0 0
Johnson Bros. ... 1,719 0 0
Veal and Sons ... 1,497 3 8
W. Griffiths ... 1,700 0 0
Godall and Son ... 1,688 0 0
*Accepted.
Dolman and Co. ... 1,675 0 0

NETHERFIELD.—For erecting Netherfield Board School, near Nottingham. Mr. R. Whitbread, architect, Carlton, near Nottingham:—
Appleby ... £5,000
Tegerdine ... £4,342
Bell ... 4,800
Main, Kendall, and Wilson ... 4,644
Main ... 4,298
Cuthbert ... 4,553
Lewin, Netherfield, Harper ... 4,543
Notts* ... 4,265
*Accepted.

NEWCASTLE-ON-TYNE.—For erecting a church and hall, &c., for the Presbyterian Church of England, College-road, Newcastle-on-Tyne. Messrs. Badenoch and Bruce, architects:—
Middlemiss Bros. ... £11,697 17 3
T. Hutchinson ... £9,748 17 8
J. & W. Lowry ... 11,272 0 0
J. Jackson ... 9,666 15 0
J. Weatherith ... 10,495 0 0
A. Bruce ... 9,337 6 6
Mauchan ... 10,387 12 3
Mauchin* ... 9,317 0 0
*Accepted.

NEWCASTLE-ON-TYNE.—For City wire works, workshops, and dwelling-house at Walker Gate. Messrs. Badenoch and Bruce, architects:—
Stephen Bay ... £325
Dinning and Cooke* ... £260
Emley and Sons ... 275
Electric
F. Reid, Forens and Co. ... £122 0 0
Stephen Bay ... £182 10 0
Thos. G. Usher ... 190 8 0
S. H. Gowdy ... 128 10 0
Carriek & Stevenson ... 185 0 0
Falconar Cross and Co.* ... 127 10 0
son ... 185 0 0
*Accepted.

NEWCASTLE-ON-TYNE.—For City wire works, workshops, and dwelling-house at Walker Gate. Messrs. Badenoch and Bruce, architects:—
W. S. Anderson ... £2,181 1 9
E. T. George ... £1,901 13 0
Alex. Bruce ... 1,976 2 0
J. Anderson* ... 1,812 18 0
W. Baston ... 1,922 6 0
J. Jackson ... 1,806 6 5
*Accepted.



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They do not, however, bind themselves to accept any Design sent in.

All Designs must be sent to the office of the Town Clerk on or before MARCH 28th inst., endorsed "Pavilion," and the one selected (if any) is to become the property of the Council.

THOS. E. LONGMAN, Town Clerk.

Andover,
March, 1900.

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A lithograph plan of the site, with sketch showing approximately the accommodation required, and instructions to competitors will be forwarded on application to the undersigned.

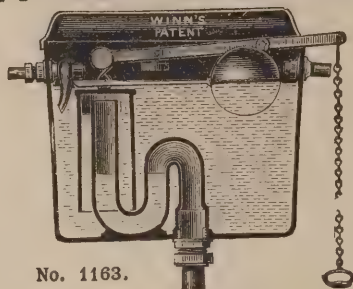
The cost of the buildings is limited to about £6,000. Premiums of Fifty Pounds each will be given to the authors of the two Designs considered by the Council as the first and second in merit which designs will become the property of the Council. The author of the Design considered the best shall, if required by the Technical Education Committee of the County Council, furnish the necessary contract drawings, with details, and specification, for the purpose of obtaining Tenders to execute the work, for which, if so required as aforesaid, he will be paid 2½ per cent. on the estimated cost. If employed to superintend the works such 2½ per cent. and the premium of Fifty Pounds to merge in the usual architect's commission of 5 per cent. on the cost, which shall include the necessary detail drawings, copies for contractor and clerk of the works, superintendence, and all expenses.

All designs to be sent, in accordance with the instructions, to the undersigned on or before APRIL 30th, 1900.

WILLIAM H. WOOLDRIDGE,
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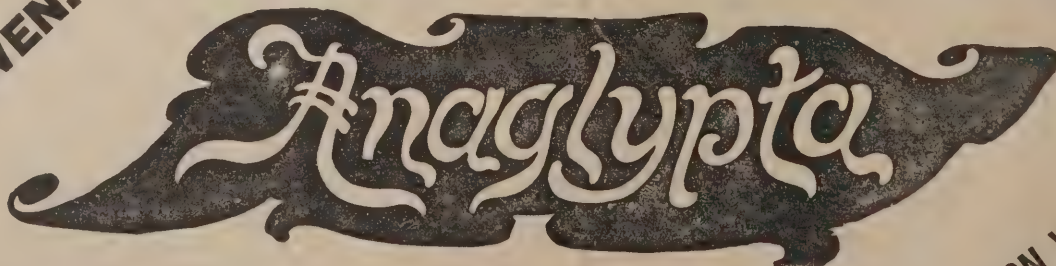
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By W. E. MAGUIRE, J.P., A.I.C.E.I.,
Vice-President Institute of Heating and Ventilating Engineers, London.

HEAT is measured by a standard unit. The B.T.M., or British Thermal Unit, is the amount of heat required to raise 1lb. of water one degree F., say from 50° to 51°. In the metrical system the caloric is adopted as the unit, being the amount of heat required to raise a kilogram of water from 0°C. to 1°C. The foot-pound is the standard English unit of work, and is the amount of work done in raising a 1lb. weight to 1ft. high. Professor Joule fixed the mechanical equivalent of heat as 772 foot pounds; a weight of 772lbs. falling 1ft., or a weight of 1lb. falling 772ft., produces 1 unit of heat; 1 unit of heat, theoretically, should do 772 units of work. One pound of coal is taken to contain, according to quality, from 16,000 to 12,000 units of heat, or, theoretically, from 12 to 9 million units of work in foot-pounds. When applied, a very large proportion of this is lost in radiation, friction, &c.

In artificial heating the heat may be distributed in three ways—by radiation, convection, and conduction. Radiant heat passes in straight lines and at right angles from the heating surface, and travels through air without raising its temperature until the rays strike some heat-absorbing matter. The sun's rays do not warm the air, but they warm the earth, which, by convection, warms the air. The radiant heat rays from a fire, or from any hot surface, also pass through the air of a room without effect, but they warm the floor, walls, ceiling, furniture, which in turn warm the air by convection. Convected heat is that portion of heat which is rubbed off heated surfaces by gases or liquids passing over and in contact with those surfaces; air and water thus take up heat, and by their mobility and power of expansion rapidly convey by direct transport the heat so acquired, and distribute it effectively according to known laws. Conducted heat is only another form of convection. Heat applied at one end of a metal bar will travel by conduction to a distance on that bar, the distance depending on the conductive power, which varies in each metal. Take silver as 1,000, copper 776, iron 119, lead 85, German silver 60. A sheet of silver would be of the least possible use if placed on a wood floor under a hot-air stove; sheet iron would be of some use, sheet lead better, and German silver best, being the best non-conductor.

Much advantage is taken of latent heat in artificial heating. The heat which ice at 32° takes up and conceals, or renders latent at the moment of its conversion into water at 32° under the atmospheric pressure of 30in. of mercury, is called the latent heat of liquifaction; and as 1lb. of ice at 32° takes and conceals as much heat to change it into water at 32° as would be required to raise 142lbs. of water one degree; and as 1lb. of water at 212° takes and conceals as much heat to change it into steam at 212° as would be required to raise 966lbs. of water one degree; the latent heat of water is 142 units, and equals the latent heat of liquifaction; the latent heat of steam is 966 units and equals the latent heat of vaporization. The heat rendered thus latent when water is vaporized into steam is conveyed in the steam to the radiating surfaces, and there the latent heat is again given out during the condensation of the steam to water, and radiated thence to surrounding objects, or rubbed off the heated surfaces by convection and distributed where required.

The greatest amount of heat is obtained from radiators by convection. You can prove this by placing boards on top of a large radiator in any room and checking the flow of air over the surfaces, while allowing free radiation all round, and observing the temperature attained in a given time; then remove the top board and surround the radiator with boards to check radiation, but

leave a space under them for the air to pass freely over the surfaces of the radiator, rubbing off the heat and escaping into the room; and then compare the temperature obtained in the given time with that obtained in the previous case.

How much should an architect know about artificial heating as applied to his buildings? No ordinary mortal architect can grasp all the details of the various arts, sciences and manufactures with which his noble profession brings him into close contact, but he may and ought to have a sufficiently intelligent and practical knowledge of the various artificial requirements of every building he designs so as to be able to define clearly to his clients on the one hand and to his engineer and contractor on the other what those requirements are. He ought to know just enough about heating, ventilating, lighting and other arts to be able to detect and appreciate difficulties when they arise or are created in the elaboration of his plans, so that he may have timely notice when the engineering details are getting beyond his experience and before he gets out of his depth. The aim of this paper will therefore be to indicate and explain the points in the artificial heating of buildings which a well-equipped architect ought to know, rather than to elaborate details belonging to the province of the practical engineer.

Architects should be aware that the cost of effectual artificial heating depends largely on the materials used in building. An iron structure is more difficult to heat than a wooden one. A stone building requires more heating surface than a well-built brick building. Thin and solid walls will waste more heat than thick or hollow walls. Dryness in walls and foundations helps the heating engineer materially. Double-glazed windows effect a considerable saving of heat. The amount of radiating surface should be fixed by the heating engineer, not only by standard formulæ, but by experience. An apparatus continuously at work heating a building satisfactorily might prove quite insufficient if worked only once a week, as is usual in churches. An approximate and very rough estimate of hot-water apparatus, radiating surfaces for heating halls, staircases, and schoolrooms at about 35° in excess of outer air, winter temperature, may be taken at 12 sq. ft. per 1,000 cubic feet of internal space; rooms with one outer wall, 14 sq. ft.; with two outer walls, 16 sq. ft.; with three outer walls, 18 sq. ft.; with four outer walls, 20 sq. ft. Shops usually require about 10 sq. ft., churches and concert rooms, 8 sq. ft. If ventilating radiators are used, add 25 per cent. of surface. Indirect heating requires 50 per cent. additional. The amount of glass, &c., will vary this approximate estimate. In arranging the radiating surfaces you may bear in mind that large surfaces at low temperature give much more pleasant results than small surfaces at high temperature. Temperatures can be reduced by valves at will, but with insufficient radiating surface you cannot increase the heat beyond its limit. The first cost of the radiating surface, too, often curtails it unsatisfactorily.

In this unstable climate, constant only in its inconstancy, we need artificial heating during seven months of the year. You will admit, however, that, though artificial heating is so important a matter, it is often the last and the least considered portion of the plan. Many churches exist in this country without a proper chimney flue and without a suitable furnace chamber, with the result that both inside and outside of such edifices we often find them marred with iron smoke flues of soil-pipe construction. America is famous for its variety of hot-air furnaces. No nation has ever practically experimented to such an extent with these appliances, and no nation can show such a collection of young people prematurely aged, and faded men and women who, in their youth, were remarkable for the purity and brilliancy of their complexions. All heating engineers of standing and wide experience in America or in England agree that artificial heating by hot-air furnaces has many faults and dangers, and only in places where health is considered of less importance than the first cost of the heating apparatus

will this system force itself into prominence. When hot-air furnaces are adopted they are often too small, with the result that in cold weather they are forced to a red or white heat, most injurious both to the apparatus, the air and the inmates of the dwelling. The volume of air passed over the furnace is frequently restricted too much, and care is not observed in taking the air from a pure source; drainage air is sometimes drawn in, heated, and served out again. These are special points to which the close attention of the architect should be directed, as it is very usual for inexperienced and unreliable contractors to fix apparatus of this class cheaply and carelessly, so there is more danger of getting scamped, ill-planned work than with steam or hot-water apparatus.

The danger of setting fire to buildings with overheated furnaces and flues also calls for this special, personal caution of architects in connection with such apparatus.

With hot-air furnaces the heat is sometimes difficult to control, and in many buildings, owing to changes in the direction and force of winds, there results an alternation of hot and cold blasts, the introduction of dust, the burning injuriously to health of organisms floating in the air, wasteful consumption of fuel, and the escape of dangerous gases of combustion into the building. In spite of all these drawbacks, hot-air furnaces are used extensively, owing to their cheapness in first cost and easy rule-of-thumb application. In dwellings or in rooms where inmates sit for hours together the constant breathing of artificially burned or dried air must prove injurious, and in any buildings where long flues capable of collecting and holding dust and dirt would be needed to convey the hot air to given points, let me advise you to beware of recommending hot-air furnaces for adoption. But in churches, where people congregate for brief services, in shops or buildings where constant changes of air occur through frequent coming and going, opening and closing of doors, hot-air furnaces are adopted as a cheap method of artificial heating. In all such cases be very particular to secure a furnace of thick metal, or one with metal sides protected by firebrick, easily replaced when burnt out. See if arrangements are provided for drawing the air of the building itself through the furnace chamber, that you also have an arrangement to stop such draught when the people assemble, and to draw large volumes of fresh pure air from outside through the furnace chamber into the building. The best arrangements of hot-air furnaces are those placed in brick-walled and arched chambers sufficiently spacious to allow free access round the furnace for cleansing and examination. The radiant heat from the furnace heats the walls and roof of the chamber, and the flow of fresh air in passing rubs off the heat rapidly from all these highly heated surfaces, and if it passes at once into the building, and not through prolonged passages and tubes to distant points, a sufficiently satisfactory result may be obtained in churches and concert rooms. The heating chamber must always be right under the body of the building and well inside the outer walls, to ensure steady results with all directions of wind. If the furnace is placed in a chamber outside the walls, such as might be perfectly suitable for a boiler pit, you may find when a strong wind blows against the opposite side of the building that the air inside is forced back through the furnace chamber, reversing its course; so that you must wait until the whole of the parish outside is warmed before you get any warm air into the building, or wait until the wind blows in the opposite direction.

Steam and hot-water heating is now displacing hot-air apparatus in all good buildings in America. We have used high- and low-pressure hot water for heating buildings in this country, and now low-pressure steam from 3lbs. to 10lbs. is in use here. The simple cause of the circulation of hot water in low-pressure apparatus is gravitation. Imagine any ordinary hot-water heating apparatus duly filled, with a flow pipe rising from the top of the boiler, running any distance, and then dropping back into the bottom of the

* A paper read before the Architectural Association of Ireland on February 20th, 1900.

boiler. If all the drops of water in the apparatus are maintained at one temperature, at, say 50°, both in the flow pipe and in the return pipe, each drop will be drawn down towards the centre of the earth by an equal force; in other words every drop will have the same exact density or weight, and so long as that state of things continues there will be nothing to cause any movement among the drops, and the whole body of water will remain in equilibrium and no circulation will take place. Gravity is pulling down the drops of water in the flow pipe with the same force as it is pulling down the drops of water in the return pipe.

Now apply some coal to your boiler and light your fire; the instant that heat is conveyed to the nearest drops of water they stretch and expand, and therefore become lighter drop for drop, bulk for bulk, than the drops in the return pipe. Gravity is quietly acting all this time on every atom of every drop of water in the system, and the instant that some drops expand the force of gravity has less power than before upon the expanded drops, and rather lets them go a little, loosens its hold, whereupon the drops in the return pipe yield to gravitation, and are pulled down, displacing and pushing up the lighter drops. These drops then become heated one after another, and are in their turn pushed up, and circulation starts and proceeds till all the drops in the flow pipe, still cold, press up the warm drops until the circulation becomes faster and faster as the heat increases in the flow pipe, making it lighter bulk for bulk; the water in the return pipe is always cooler, as the heat is given off from the radiating surfaces to the building, and therefore the water in the return, always being more dense, gives the force of gravity greater power upon it to drag it down and so to force the lighter and hotter column up; and so long as the coal dispenses its heat by combustion in the right position so long the equilibrium is destroyed, gravity pulls stronger on the heavier column, and the circulation goes on, giving out by artificial radiation and convection the heat which we desire to distribute in our building. Bear in mind always, for this is important, that the actual difference in the density of the hotter and cooler columns only yields a force of a very few grains in any apparatus, and all obstructions to circulation should, therefore, be avoided.

Low-pressure hot-water apparatus has the great advantage of absolute safety in use; the temperature seldom rises beyond 200°F, and steam is, therefore, never formed under pressure. The apparatus is open at one or more points to the atmosphere for expansion, and the air cannot be injured by overheating or burning. The furnace can be controlled easily by unskilled men, and the fires burn long without attention or renewal and yield economical results, and the temperature remains constant in the pipes and radiates heat equally. The recent great improvements in design and construction of radiators renders the system increasingly suitable for all kinds of buildings. Sections can be arranged so as to be completely shut off, and each radiator can have its temperature regulated at will, which is not the case with ordinary steam heating. Care is necessary in laying out the various circulations to avoid short circuits, dips, air locks, and other obstructions; friction of pipe surfaces on the water flowing, especially at bends, and other changes of direction of flow have a definite retarding effect on circulation. This should limit the extent and range of every hot-water system, for if you go on extending the length of piping in any installation you will reach a point where friction alone will cause circulation to cease, and thus render the system useless. The overhead system of circulation, by which all the hot water is taken by one large flow pipe direct from the boiler to the upper attic floor and is thence dropped in distributing pipes through the radiators on the various floors, has the advantage of increasing the speed of circulation and in removing pipes from the basement. In long range buildings like lunatic asylums, hospitals, &c., several short circulation systems, with boilers for each, will

work more advantageously than one central boiler with long circulations, owing to the obstruction to circulation from friction. But as steam boilers are always necessary in such institutions, low-pressure hot-water heating can be also arranged in short circulations through the various wings with calorifier attached, which may be described as secondary boilers heated by internal steam tubes under high-pressure steam from the central steam boilers; the circulations of hot water through the various sections being induced on precisely the same principle as in the case of the apparatus connected to boilers with furnaces underneath. The writer has also used special steam injectors to heat and drive water round the circulation systems by steam; injected directly under pressure. This steam-injected low-pressure hot-water system is especially serviceable in long circulations, and overcomes one of the difficulties referred to where dips in pipes are unavoidable. This system should not be recommended in buildings where a special steam boiler would be required for the purpose of injection; but in buildings where steam boilers with abundant reserve of steam power are existing for laundry or cooking appliances the system may prove very effective. The objection to steam injectors has hitherto been the noise they cause, which in some cases is unbearable. There is an injector now made which can be fixed to act almost silently, and it is so easily controlled that, by turning a lever handle, heating combined with very rapid circulation starts instantly. In one case where a long circulation previously required four hours to heat partially, this injector did the work effectually in one hour.

The system can be applied to any hot-water system where steam under sufficient pressure can be obtained. The old boiler may be left untouched and ready for use in the event of steam being shut off or unavailable, or it may be taken away altogether. The condensed water from the steam injector mingles with the water in the apparatus, adding gradually to its bulk and overflowing at the supply cistern, whence the hot water is conveyed back to the boiler feed-tanks. In buildings where the circulation of hot water is sluggish and unsatisfactory the system of steam heating by injection should be remembered.

Horticultural buildings are now, and probably will always be, most effectively heated by low-pressure hot-water pipes of 4in. diameter, with about 180° F. average temperature. High-pressure hot-water and steam heat is unsuitable for plants, not only because the heat is too great, but also because temperature rises and falls rapidly as the furnace is brisk or dull. The large volume of water retains its heat for a comparatively long time, even if the furnace is neglected, and neither the air nor the plants suffer from overheating.

Artificial heating by hot water under high pressure in wrought-iron pipes, usually of 3in. bore and 1½in. external diameter, has been in use for sixty years, yet it is not fixed by many firms, as it demands special experience, special workmen and special tools. The pressure and the temperature of the pipes depend mutually on each other. If the pressure is high the temperature is correspondingly high. Apparatuses are constructed to work at pressures from 30lbs. per square inch up to 1,000lbs. per square inch; the pipes are usually tested to 3,000lbs. and the apparatus when fixed complete should be tested to 2,000lbs. per square inch. The apparatus and boiler is formed of one unending coil of pipe; the boiler portion is coiled round the furnace and encased in brick-work or iron, and thence the hot water circulates with great rapidity through the system, and would burst the pipes unless a valve or an air tube were provided to allow for the expansion of the water—this is a necessity. Owing to the great pressure which has to be met, the joints of the pipes must be very strong; no cement has been found capable of resisting the pressure, and the only safe method is to prepare the ends of the pipes at each joint by tapering one end to a sharp edge and by facing the other end dead flat and forcing the sharp edge solid into

the flat end by means of right and left-threaded screws and screwed socket, actually burying one end solid into the other. This requires special tools and specially competent workmen, and such work should not be entrusted to any other. The cause of circulation in this system is the same as in low-pressure work, but the whole volume of water is so small in any high-pressure apparatus that it heats and flows very rapidly. The water gives off its heat soon, and consequently cools rapidly. The circulation must be limited in length owing to the friction set up in the small pipes. Owing to rapid circulation the pipes can be dipped safely under doorways without checking circulation materially; this cannot be safely done in low-pressure apparatus without special precaution. When an expansion tube is used instead of a safety valve, this tube is full of elastic air when the other pipes are filled with cold water. At starting for the season a hand pump of special construction is applied, and all air is forced out of the pipes, which are then pumped full of water, with the exception of the expansion tube, which is full of air. The screws are then tightened up and fire applied. As the water heats and expands it compresses the elastic air in the expansion tube, and the expanding water rises and half fills the tube, preventing undue pressure on the pipes.

Small-bore hot-water apparatus possesses some advantages. The pipes are easily bent and fitted into small spaces, the temperature of the pipes can be made so high that a foot of 1½in. pipe will give as much heat as a foot of 3in. pipe in low-pressure apparatus, there is a minimum of evaporation, and the amount of water needed is very small. For instance, a high-pressure apparatus of 1,000ft. of 3in. bore pipe contains only 26 gallons, and can be made to yield as much heat as a low-pressure apparatus of 1,000ft. of 3in. pipe containing 300 gallons. This form of apparatus is economical. Small-bore apparatus heats up rapidly and cools down rapidly, and is very easily managed by unskilled attendants. Its disadvantages are that the insurance companies often object to its adoption in buildings containing goods at all liable to take fire, owing to the high temperature the pipes may reach. This high temperature also dries the air (the low-pressure temperature seldom exceeds 200°F.); also, if frost attacks the pipes or the boiler when they are cold and not in use, the water freezes and the pipes burst. This can be prevented by keeping a slow fire on always during frost, but the practice sometimes adopted of using chemicals to prevent freezing is to be condemned as they injure the piping by attacking the iron and also form deposits which choke the small pipes.

Another type of the small-bore hot-water apparatus is made by which a pressure not exceeding 30lbs. per square inch is only permitted. The pipes may be the same as in high-pressure apparatus, or may be of iron steam tubing; radiators are freely used as in low-pressure apparatus, the highest radiators on the upper floor being adapted to act as the expansion tube into which the heated water rises. The amount of piping in the furnace is reduced so that the water shall not be heated beyond a definite point, and thus the pressure also is moderated throughout the system. By this system a higher temperature is attained than in low-pressure apparatus, while the smaller-sized circulation pipes may be used with radiators of ornamental design in the principal rooms; but the perfect safety and simplicity of the open low-pressure apparatus with radiators is not compensated by these advantages.

(To be concluded.)

Coventry Street Improvements.—The Local Government Board has sanctioned the borrowing of £6,068 for street improvements in Coventry.

Dublin Tenement Houses.—The Dublin Corporation has drawn up a set of proposed new by-laws relating to tenement houses, as the old by-laws are out-of-date and inadequate from a sanitary point of view.

Builders' Notes.

The Wallpaper Manufacturers, Limited, is a borrowing rather than a selling company—that is to say, it asks the public to find only £1,314,818 out of a paid-up capital of £4,200,000. The prospectus claims that the ring includes substantially the whole (about 98 per cent.) of the wallpaper manufacturers of the United Kingdom, and boasts that it will be “almost hopeless for anyone to compete with the company,” which has entered into agreements for a fixed period of years with dealers for the distribution of its goods.

The Builders' Clerks' Benevolent Institution.—The annual meeting was held at the offices, 21, New Bridge Street, E.C., on February 27th, Mr. Henry Holloway (president-elect) occupying the chair. The report stated that the income had been £688, and the outgoings £659. The amount paid in pensions was £522 (the largest sum yet disbursed), and in temporary relief £30. The retiring members of the committee—Messrs. E. Brooks, H. T. Desch, H. W. Parker, E. Pitts, A. Stansfeld and C. K. Turpin—were re-elected.

Building in Birmingham.—The building surveyor of Birmingham reports that during the year 1899 there was a slight falling off in the number of houses for which plans were submitted, but in 1898 plans were approved for several estates the buildings on which are still in course of erection, and when allowance is made for this it may still be assumed that there is a progressive increase in the erection of houses. The growth of house building is shown by the fact that in the year ended December 31st, 1896, plans were submitted for 1,852 houses; 1897, 1,836; 1898, 2,308; 1899, 2,145. The increase has been greatest in the Saltley district (in the Washwood Heath neighbourhood), whilst Sparkbrook, Rotton Park, and Winson Green also show large increases.

London County Council.—At the meeting of the Council held on February 27th a long discussion arose on the report of the General Purposes Committee with regard to excess expenditure in respect of the Heath Asylum, Bexley, and the Horton Asylum. In one asylum there was an excess of £75,000, and in the other of £107,000 over the estimates. The original vote for the Horton Asylum was £350,000, which sum had been largely exceeded. Mr. Macdougall said he had never intentionally avoided the Standing Orders. If the committee had made a mistake it was a simple one; they had applied a wrong standing order to their case. Mr. H. P. Harris said that if it was impossible to build the asylum for £350,000, why did the Asylum Committee tell the Council it could be done for that sum? All the architect was instructed to do was to take the £350,000 and apportion it as best he could. To do this he had to leave out items which ought to be included, in order not to exceed the stipulated sum. After further discussion, the portion of the report dealing with the Bexley Asylum was agreed to. Mr. Beachcroft moved an amendment declaring that in the opinion of the Council a grave departure had been made in the case of Horton Asylum from the usual and recognised practice as regards the estimate submitted to the Finance Committee, and that in consequence the Council had virtually been deprived of control over the large excess expenditure, amounting to no less than £107,000. After some further discussion the amendment on a division was lost and the excess amounts were then authorised. The Parks Committee reported that the Archbishop of Canterbury had consented to hand over to the London County Council, to be used as a public open space, a large portion of the grounds attached to Lambeth Palace. The Highways Committee recommended “That the Council do sanction the expenditure on capital account by the Highways Committee of the sum of £250 in respect of a portion of the mains in connection with the electric lighting installation for the Victoria Embankment and Westminster Bridge; estimates in respect of which were submitted to and approved by the Council on July 13th,

1897, and February 15th, 1898.” The Council approved. The entire scheme is estimated to cost £25,800.

Fire Tests with Protective Coverings.

—Publication No. 43 of the British Fire Prevention Committee deals with the firetests with two kinds of protective compositions made by the “Gypsine” Brick Company, Ltd., of London and Paris. Steel joists 7in. deep were employed, one of them being covered by a composition applied as plaster about 1in. thick and the other joist being bedded in a composition about 3in. thick. The following observations were made after the test with regard to the beam of larger section:—There was a longitudinal crack on the soffit of the protecting material for about half the length; there were fine hair cracks on all surfaces of the protecting material; the lower arrises of the protecting material were damaged; the protecting material was very sodden from the applied water, and was very soft and easily impressed; the composition remained attached all round, and the girder was not affected by the test. The following observations were made after the test with regard to the beam of smaller section:—A layer of protecting material to the soffit of the beam about ½in. thick had become detached and had dropped off; the sides of the protecting material showed vertical cracks, and the surface of the material showed fine hair cracks on all faces; there was a longitudinal crack in the protecting material on the top surface; the protecting material was sodden with the applied water, and was soft and easily impressed. By the future arrangements of the British Fire Prevention Committee there will be a number of reports on the various forms of patented or specially made partitions, the following being the names of firms who have either applied for tests or whose partitions are already under investigation:—The London Non-Flammable Wood Co., Ltd. (matchboarded partitions of non-flammable wood); the Gypsine Brick Co. (partitions of gypsine bricks); the Mural and Decorations Syndicate, Ltd. (partition of special lathing); the Fireproof Partition Syndicate, Ltd. (“Cunah-Wright” partition); J. A. King and Co. (Mack's partition); D. Anderson and Co., Ltd. and Broadbent and Co., Ltd., jointly (stud partitions filled in with slag wool).

Engineering Notes.

The Belfast Mechanical and Engineering Association recently held its eighth annual reunion, when Mr. John Erskine, J.P., presided.

Strand Electric Works on Fire.—The large works of the Charing Cross and Strand Electricity Supply Corporation in Maiden Lane were severely damaged by fire on Saturday last; cause unknown.

Wallasey Water Scheme.—A Local Government Board enquiry was held on February 27th into the application of the Wallasey Urban District Council for sanction to borrow £14,000 for water supply works, and £4,500 for the erection of a technical school at New Brighton. It is proposed to construct two boreholes on the site of the existing well at Liscard, one to be carried to the depth of 800ft., and the other to the depth of 600ft. The land for the proposed technical school is situated at the corner of Field Road and Rowson Street, New Brighton, and contains 618 sq. yds., of which 25 sq. yds. are proposed to be added to the highway, leaving the net site 593 sq. yds. The building is two storeys high, with heating apparatus and coal in the basement.

Corrosion in Boilers.—In the course of a lecture on this subject, read before the Institution of Civil Engineers on February 27th, Mr. John Dewrance, M.I.C.E., pointed out that air had been for many years a well recognised cause of corrosion, and that the boilers in which the best means had been adopted to keep out air had been those least affected. It was of paramount importance to return the water from the condenser to the boiler without

allowing it an opportunity of dissolving air. With this aim, Mr. Dewrance suggested that the hot well should be placed between the condenser and the air-pump, making it a separator of water and air. The air-pump would then pump out the air and the feed-pumps pump the water back to the boiler.

Steam Raising.—At the conclusion of a recent lecture, by Captain H. R. Armitage on “Steam Raising Plant,” delivered before the Bradford Textile Society, the following principles for laying down new plant were stated: (1) Chimney: of sufficient area. (2) Boilers: not less than 100lbs. pressure, using full pressure for engines, and reducing for other purposes; the boilers to be without tubes. (3) Flues and setting: bottom flue not less than one-half diameter of boiler; side flues, 12in. wide at the narrowest point. (4) Main flues: gradually enlarging up to chimney bottom, and also enlarged on the outer sides of all curves (as in a river bed), and all bends, either in downtake, uptake, or junction to main flue, to be treated like a flow of water. (5) Economiser: sufficient pipes either for water alone or water and air, if the heated air can be used, to reduce the flue temperature to 350deg. at the chimney bottom. (6) Boiler and pipe covering: leave a stationary layer of air between two layers of covering; this would form an efficient non-conductor, and at the same time flange coverings could be made. This should also be made to fall to a point or two points, where a steam trap should be connected. (7) Method of firing: by mechanical stoker and self-cleaning bars.

Surveying and Sanitary Notes.

Wakefield Sewage Works Opened.—The sewage disposal works which the Wakefield City Council has constructed at Calder Vale were formally opened on March 1st. They have cost £70,500.

Sanitary Inspectors' Association.—The seventeenth annual dinner of this association was held on Saturday at the Holborn Restaurant, Sir H. Gilzean Reid, the president, occupying the chair. The association was formed in 1883 and now has 600 members.

Hackney Vestry: Surveyor's Annual Report.—We have received a copy of the report of Mr. James Lovegrove, A.M.I.C.E., chief surveyor to the Hackney Vestry, for the year ending March 25th, 1899. The total expenditure for labour during this period was £19,066 7s. 10d., while the quantity of materials put on the roads was 18,288½ cubic yards; £5,459 13s. 4d. was spent for road watering purposes. This is Mr. Lovegrove's final annual report, after fifty-three years of office.

Sheffield and the Local Government Board have been playing a game of battledore and shuttlecock for the past seven years over the adoption of a sewerage scheme to replace the present rubble sewers. The Local Government Board has now changed its attitude and is considering the renewed application of the Sheffield Corporation to borrow £68,635. The Corporation are promoting a Bill in the present session of Parliament in which there is a clause to empower them to acquire certain land immediately adjoining the sewage disposal works, containing about 105 acres, for extensions.

Birmingham City Surveyor's Report.—The annual report of Mr. Price (city surveyor of Birmingham) states that during the past year the reconstruction of the sewers has proceeded satisfactorily. The tenders for the work already in hand amount in the aggregate to about £75,000. The most important work is, perhaps, the reconstruction of a length of about 1½ miles of the Rea main intercepting sewer from Montagu Street to the overflow weir on the River Rea at Nechells. The length still to be completed consists mostly of 6ft. circular sewer. Not the least of the

benefits from the above work will be the prevention of flooding, which for years past has periodically taken place in the lower part of Duddeston Mill Road. In the Balsall Heath district extensive works of sewerage and surface water drainage have been completed. A new 3ft. circular culvert in Edward Road now drains a district which previously had been subject to flooding. In connection with the Edgbaston and Harborne scheme, the sewerage of the district lying between Bristol Road and the River Rea is, with the exception of one or two streets, completed, a length of 1½ miles of defective sewers having been taken out and seven miles of new sewers constructed. The expenditure to December 31st, 1899, on that part of the Edgbaston and Harborne sewerage scheme which is being carried out departmentally was £17,175 19s. 5d. Upwards of 30,000,000 gallons of water have been used for sewer flushing during the past twelve months, in addition to the large amount used in the summer months in flushing private drains in courts, yards, and other back premises. The number of loads of mud and dry sweepings removed during the year from the roads was: Mud, 66,205; dry sweepings, 38,499; making a total of 104,704 loads. The heavy fall of snow which took place on December 12th involved the removal of 9,190 loads, and the cost amounted to £1,500 11s. 9d., being an average of about 3s. 3d. per load, inclusive of labour and cartage. About 5,000 tons of granite chippings and crushed gravel were used for gritting granite and wood pavements, and 49,765,245 gallons of water for street watering purposes.

The Birmingham District of the National Association of Master Plumbers, Limited, held their fourth annual dinner last Wednesday evening.

Dunfermline Joiners Dispute Settled.—The operative joiners of Dunfermline have agreed to submit to a reduction of wages from 8½d. to 8d., a compromise from the 1d. reduction at first notified by the masters.

Strike of Aberdeen Joiners.—About 700 operative joiners in Aberdeen struck work last week against a reduction of the standard rate of wages from 8½d. to 8d. per hour. Three masters, employing between forty and fifty men, have already acceded to the demands of the men, but at a meeting of the executive of the Masters' Association it was unanimously resolved to adhere to the decision to enforce the reduction, and also agreed not to meet again for a month.

Trade and Craft.

Light Diffusion.

In nine cases out of ten the aim of the lighting engineer should be, though it often is not, diffusion. Clear, uncovered lights, irrespective of their nature, have the great drawback of injuring the eyesight, and it is now admitted that the ideal lamp is the glow lamp—that is, one having no objectionable incandescent filament or distinct point of light. Prominent experimental electricians in America, like Tesla, have spent a good deal of energy in the attempt to produce a lamp in which the electrical current would expend itself somewhat in the manner of the Geissler tube, rather than the direct heating of a filament; and this surely shows how things are tending. With this same end in view the Spiral Globe Company has put on the market a light-refracting and diffusing envelope for the ordinary electric incandescent lamp in the form of a globe made of a closely-wound spiral of circular glass rod. The statement is made, and substantiated by authority, that, whereas a sixteen candle-power electric lamp (hung vertically) will illuminate the surface directed to it with an effective light of ten candle-power; this lamp, when enclosed in the spiral globe, will give twenty-three candle-power; so that there is an economy of more than fifty per cent., which means a lower electric light bill. In addition, the light is softened so as to be agreeable to the eyes. The Spiral Globe Lamp complete costs 4s. 6d., the lamp itself costing 2s. net, and can be seen and inspected at the company's showrooms at 28, Bush Lane, Cannon Street, E.C.

American Fireproof Construction.

Two matters which have been engaging universal attention during the past decade are—the housing of the poor and fireproof construction. These have a distinct connection with one another, as if huge tenements have to be built containing quite a colony of human beings, they must be planned and constructed so that the risks of fire, and probable resulting loss of life, are reduced to the lowest possible limit. While it is only right that planning should have the first consideration, it needs to be well supplemented by fireproof construction, for the preservation of life ought always to be the great aim and the preservation of property to receive secondary consideration. These two aims must be

judiciously combined. It is of no use if your theatre staircases withstand the flames and yet are so narrow and bent that the people cannot get out of the building; nor is it worth while to have excellently planned exits if their construction is such that they will burn up in no time. Fireproof construction becomes, therefore, an essential factor. The Columbian system, which is extensively used in America, consists of ribbed steel bars of double cruciform section, which are completely embedded in concrete composed of the best Portland cement, sand and furnace slag or cinders. There are three forms of Columbian concrete fireproof floors. First, there is the panelled floor, in which all the joists and main girders are completely encased with concrete and the under side is protected by concrete slabs secured with concealed anchors and providing air space; 2in. and 2½in. ribbed bars hung in stirrups are used to carry 4cwt. to 12cwt. In the second form, the double construction, instead of the joists projecting below the ceiling line, 1in. ribbed bars are laid on the lower flange and a wooden centering is placed below to receive a 2½in. concrete ceiling. Joists are not spaced further apart than 7ft. and this construction is specially adapted for high buildings and heavy floors. In the third form 3½in., 4in. or 5in. ribbed bars are spaced between the main girders, or placed resting on the wall, and the concrete floor is built up around them. This type of floor is suitable for hospitals, asylums, hotels and similar buildings, and 1cwt. to 3cwt. per square foot of surface can be carried with safety. The London offices of the Columbian Fireproofing Company, Ltd., are at 37, King William Street, E.C.

A new Warehouse is in course of erection at Marsh Gate Lane, Stratford, E., for Messrs. T. H. Harris and Sons. Messrs. J. T. Newman and Jacques, 2, Fen Court, E.C., are the architects.

"THEY WILL WANT A LITTLE NURSING," said Sir Redvers Buller of the gallant defenders of Ladysmith, and even after the most careful nursing many poor fellows will be unfit for active service again. Will you help to provide a Home of Rest for some of these? If so, send a shilling—or several shillings if you prefer it—to the B.J. Shilling Fund.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
March	BUILDING—		
9	Aberaman, Wales—House		Manager, Powell Duffryn Co.'s Office, Aberaman, Aberdare.
9	Bronley, Kent—Ambulance House	Hospital Board	J. Ladds, 7, Doughty-street, Meaklenburgh-square, W.C.
9	Rotherham—Generating Station	Corporation	J. Platts, Old Bank-buildings, High-street, Rotherham.
9	West Bromwich—R. offg.	Guardians	T. Rollason, Architect, High-street, West Bromwich.
9	Wigan—School Chapel		The Keeper, Standishgate Wesleyan Chapel.
9	Winsford—Rebuilding	Industrial Co-operative Society	W. Fryer, Secretary, 23, High-street, Winsford.
10	Newport, I. of W.—Repairs		J. B. Colson, 45, Jewry-street, Winchester.
10	Bradford—Additions	Messrs. G. Hodgson, Ltd.	Mawson and Hud-on, Architects, Exchange, Bradford.
10	Brampton, near Carlisle—Vagrant Wards	Guardians	George Birkett, Clerk, Union Office, Brampton.
10	Londonberry—Additions	Guardians	M. A. Robinson, Richmond-street, Londonderry.
10	Mold, Flint.—Cottages	County Council	The Clerk, Council Offices, Mold.
10	Moreton Saye, near Market Drayton—Alterations		The Rector, The Rectory, Moreton Saye.
10	Sedgefield, Durham—Staircases		W. Crozier, County Surveyor, Shire Hall, Durham.
12	South Normanton—School	School Board	R. C. & E. E. Sutton, Bromley Ho., Angel-row, Nottingham.
12	Iford—Pavilion	Urban District Council	H. Shaw, 7, Cranbrook-road, Iford.
12	Treharris, Wales—Schoolroom		J. P. Gibbon, Brynawel House, Treharris.
12	Sunderland—Sheds	Corporation	Borough Engineer, Town Hall, Sunderland.
12	Ludgvan, Cornwall—Classrooms		M. Morris, Crowlas, Ludgvan.
12	Leeds—House	R. Jowitt	G. W. Atkinson, 1, Mark-lane, Leeds.
12	Ingleton—Institute		George Walling, Wheat Sheaf Hotel, Ingleton.
12	Halifax—Roof	S. Whitley and Co.	A. G. Dalzell, 15, Commercial-street, Halifax.
12	Grimsby—Rope Works	Corluge Co., Ltd.	G. W. Atkinson, 1, Mark-lane, Leeds.
12	Bexley, Kent—Farm Buildings	London County Council	Clerk to Committee, 6, Waterloo-place, S.W.
12	Belfast—Shed	Great Northern Ry. Co. (Ireland)	The District Engineer, Belfast.
12	Aylesbury—Premises	Co-operative Society, Ltd.	Manager, Co-operative Society, High-street, Aylesbury.
12	Hornsey—Mortuary	Urban District Council	Surveyor, Council Offices, Southwood-lane, Highgate, N.
12	Dartford—School	School Board	H. Hall, 19, Doughty-street, Mecklenburgh-square.
13	Mortlake—Dwellings	Urban District Council	G. B. Tomes, Surveyor, High-street, Mortlake, S.W.
13	Cwm, near Ebbw Vale, Mon.—Cottages	Building Co.	B. Lawrence and Sons, Austin Friars Chambers, Newport.
13	Southampton—Reconstruction of Depot	Corporation	Borough Surveyor, Municipal Offices, Southampton.
14	Dartford—Hospital	Metropolitan Asylums Board	A. and G. Harston, 15, Leadenhall-street, E.C.
14	London, W.C.—Cupboards	Metropolitan Asylums Board	Clerk to Board, Norfolk House, Norfolk-street, Strand.
14	Hoylake, Cheshire—Chimney	Urban District Council	T. Foster, District Council Offices, Hoylake.
14	Eardsley, near Ashton-under-Lyne—Store	Rural District Council	Foster, Son and Bardsley, 23, John Dalton-st., Manchester.
14	Bradford—Warehouses		Fairbank and Wall, Craven Bank Chambers, Bradford.
14	Lancaster—Warehouse	Co-operative Society	Wright and Sons, Surveyors, Lancaster.
14	Newcastle-on-Tyne—Stores	North-Eastern Railway Co.	W. Ball, Architect, Central Station, Newcastle.
14	Tyne Dock—Coaling Stage	North-Eastern Railway Co.	W. Ball, Architect, Central Station, Newcastle.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—Continued.			
March 14	Waterloo, Ashton-under-Lyne—Storehouse	Rural District Council	Foster, Son and Barley, 23, John Dalton-st., Manchester.
" 15	Luton—Depot	Town Council	Engineer, Town Hall, Luton.
" 15	Sheffield—Walling	Water Committee	Manager, Water Department, Town Hall, Sheffield.
" 15	Southmead, near Bristol—Workhouse Buildings	Guardians	A. P. I. Cotterell, 28, Baldwin-street, Bristol.
" 16	West Bromwich—Buildings	Corporation	A. D. Greatorex, Town Hall, West Bromwich.
" 16	Shrewsbury—Sorting Office	Office of Works	The Post Office, Shrewsbury.
" 19	Wrexham—Baths	Town Council	Borough Surveyor, Guildhall, Wrexham.
" 19	Wrexham—Shed	Town Council	Borough Surveyor, Guildhall, Wrexham.
" 20	Stourbridge—Station	Great Western Railway Co.	The Engineer, G.W.R. Station, Wolverhampton.
" 20	South Kirby, Yorks.—Houses	Colliery Co. Ltd.	Garside and Pennington, Architects, Pontefract.
" 20	Barking, Essex—Additions	Urban District Council	C. F. Dawson, Public Offices, Barking.
" 24	Bradford—Fire Station	Corporation	Mawson and Hulton, The Exchange, Bradford.
" 25	Thorndon, Suffolk—Shed		F. C. Foster, Thorndon.
" 27	London, S.W.—Dwellings	London County Council	Engineer, County Buildings, Spring-gardens, S.W.
ENGINEERING—			
March 10	Waterford—Reservoir		G. J. Briscoe, District Asylum, Waterford.
" 10	Southampton—Dredging	Harbour Board	A. H. Skelton, Board Offices, Town Quay, Southampton.
" 10	Leicester—Boilers	Lighting Committee	A. Colson, Lighting Committee, Millstone-lane, Leicester.
" 10	Leicester—Roofs	Lighting Committee	A. Colson, Lighting Committee, Millstone-lane, Leicester.
" 12	Blackpool—Tramways	Committee	J. Wolstenholme, Engineer, Town Hall, Blackpool.
" 12	Dreghorn, Scotland—Waterworks	County Council	W. R. Copland, 115, West Regent-st. est. Glasgow.
" 13	Kettering—Fire Engine	Urban District Council	Council's Surveyor, Market-place, Kettering.
" 14	Bexley Heath—Road Roller	Urban District Council	W. T. Howse, Public Offices, Bexley Heath.
" 15	Ealing—Sludge Pressing Machinery	Urban District Council	Engineer, Public-buildings, Ealing, W.
" 15	Egremont, Cheshire—Boring	Urban District Council	J. H. Crowther, Engineer, Great Float, near Birkenhead.
" 15	Egremont, Cheshire—Pumping Plant	Urban District Council	J. H. Crowther, Engineer, Great Float, near Birkenhead.
" 17	Falmouth—Tanks	Guardians	Henderson and Son, River-street, Truro.
" 17	Birmingham—Boilers		J. Cox, Engineer, Kent-street, Birmingham.
" 17	Warrington—Steel Mains	Corporation	J. Deas, Bank House, Warrington.
" 20	Mullingar, Ireland—Waterworks	District Council	E. R. Loaragan, District Council Offices, Mullingar.
" 21	Leeds—Dynamos	Tramway Committee	T. Hewson, Municipal buildings, Leeds.
" 22	Cowes, Isle of Wight—Purifiers	Gas Committee	W. Halliday, 40, High-street, Cowes.
" 27	Mansfield—Bridge		H. Silcock, 14, Westgate, Mansfield.
IRON AND STEEL—			
March 10	Hakstad, Essex—Fence	Urban District Council	H. Webb, Council Offices, Halstead.
" 10	Cork—Pipes	Corporation	H. A. Cutler, Engineer, Municipal Buildings, Cork.
" 12	Ilford—Bandstand and Fencing	Urban District Council	H. Shaw, 7, Cranbrook-road, Ilford.
" 12	Clebury Mortimer, Salop—Pipes	Rural District Council	T. S. Stooke, Severn Villa, Shrewsbury.
" 12	Swansea—Pipes	Town Council	Waterworks Engineer, Guildhall, Swansea.
" 13	Huddersfield—Rails	Corporation	Borough Engineer, 1, Peel-street, Huddersfield.
" 13	Southport—Roof	Corporation	Engineer, Town Hall, Southport.
" 12	Islington—Iron and Steel	Vestry	Clerk, Vestry Hall, Upper-street, N.
" 19	London, E.—Ironwork	Limehouse Board of Works	S. G. Ritchie, Clerk, Board Offices, Limehouse.
" 22	Valetta, Malta—Pipes and Fittings		Crown Agent for Colonies, Downing-street, S.W.
PAINTING AND PLUMBING—			
March 9	Heckmondwike—Painting		The Caretaker, Wesleyan Chapel, Heckmondwike.
" 12	St. Mary Ebone—Painting	Guardians	Steward, Infirmary, Rackham-street, Notting Hill.
" 14	Rotherham—Painting	Corporation	J. Platts, Old Bank Buildings, High-street, Rotherham.
ROADS—			
March 9	Hull—Stone	Corporation	A. E. White, Town Hall, Hull.
" 10	Woolley—Hauling Materials	Rural District Council	F. Gwillam, Surveyor, Woolley, R.S.O.
" 10	Rugby—Granite	Rural District Council	J. W. Pendred, Clerk, Council Offices, Rugby.
" 12	Beckenham—Paving	Urban District Council	F. Stevens, Council Offices, Beckenham.
" 12	Ilford—Street Works	Urban District Council	Surveyor, Council Offices, Ilford.
" 12	East Retford—Materials	Rural District Council	T. Henry, Surveyor, Retford.
" 12	Cheshunt—Gravel	Urban District Council	S. Toulson, Surveyor, Cheshunt.
" 13	London, W.C.—Paving	St. Giles Board of Works	Engineer, Board Offices, 197, High Holborn, W.C.
" 13	Cleethorpes, near Grimsby—Works	Urban District Council	E. Kushton, Council Offices, Cleethorpes.
" 13	Salford—Paving		Engineer, Town Hall, Salford.
" 14	Long Sutton—Granite and Slag	Urban District Council	S. S. Mossop, Council Offices, Long Sutton.
" 14	Hoo, Kent—Materials	Rural District Council	R. P. Smyth, Clerk, Strood.
" 14	Bexley—Material	Urban District Council	W. T. Howse, Public Offices, Bexley Heath.
" 14	Birmingham, Notts.—Materials	Rural District Council	R. H. Beaumont, Clerk, Market Street, Birmingham.
" 14	Birkenhead—Streetmaking	Corporation	C. Brownridge, Town Hall, Birkenhead.
" 15	Flaxton, York—Materials	Rural District Council	J. Peters, 4, New Street, York.
" 15	Houghton-le-Spring—Materials	Rural District Council	D. Balfour, Engineer, Houghton-le-Spring, R.S.O.
" 15	London, S.W.—Paving	St. James's Vestry	T. H. Munsey, St. James's Vestry Hall, Piccadilly, W.
" 16	Bradfield, Berks.—Road Repair	Rural District Council	J. Forrester, District Surveyor, Theale, near Reading.
" 17	Thorpe, near Doncaster—Materials	Rural District Council	G. Kenyon, Clerk, Plantation-road, Thorpe.
" 20	Bury, Lancs.—Street Works	Paving Committee	A. W. Bradley, Engineer, Corporation Offices, Bury.
" 23	Ipswich—Materials	Rural District Council	J. J. White, Surveyor, Needham Market.
SANITARY—			
March 9	Durham—Scavenging	Rural District Council	J. Menzies, Woodview, Shincliffe, Durham.
" 9	Penzance—Scavenging		Surveyor, Public Buildings, Penzance.
" 12	Cheadle—Sewers	Urban District Council	E. Sykes, 9, High-street, Chaddle.
" 12	Margate—Sewer	Town Council	Engineer, Town Hall, Margate.
" 13	Dover—Sewer	Town Council	H. E. Stilgoe, Town Hall, Dover.
" 13	Hythe—Sewer	Corporation	H. S. Butterworth, Hythe.
" 14	Mortlake—Drainage Works	Watney, Coombe, Reid, and Co.	The Engineer, Main Drainage Works, Mortlake.
" 16	Tavistock—Sewers	District Council	G. D. Bellamy, 64, Courtenay-street, Plymouth.
" 17	Earlstown, Scotland—Sewers	County Council	Thomson and Wright, 22, Rutland-square, Edinburgh.
" 17	Wilstone—Sewerage Works	Rural District Council	B. Asquith, Park-road, Tring.
" 19	North Staffordshire—Drainage Works	Infirmary	A. E. Boyce, Secretary, Infirmary, Stoke-on-Trent.
" 19	Walsall—Scavenging	Rural District Council	A. H. Lewis, 29, Leicester-square, Walsall.
" 22	London, S.E.—Drainage Works	St. Olave's Union	Newman and Newman, 31, Tooley-st., London Bridge, S.E.
" 26	Godstone—Sewerage Works	Rural District Council	T. C. Baralett, Surveyor, New Oxford.
" 30	West Hartlepool—Sewer	Corporation	J. W. Brown, Corporation Buildings, West Hartlepool.
TIMBER—			
March 12	Ilford—Fencing	Urban District Council	H. Shaw, Council Offices, Ilford.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
March 12	Belfast—Assembly Hall	£100, £50, £25	W. D. Eakin, 12, May-street, Belfast.
" 30	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor.	J. R. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
" 31	Blackpool—Poster		C. Noden, Town Hall, Blackpool.
April 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
" 31	Riviera—Villa for Sir William Ingram	£75 15s., £23 5s., £5 5s.	" Architectural Review.
No date.	Glasgow—District Hospital	£150, £100, £50	J. R. Motion, 33, Cochrane-street, Glasgow.

Property and Land Sales.

To Shop Builders and others.—Romford.—Exceedingly valuable Block of Freehold Building Land in the main station thoroughfare and affording an unrivalled site for a block of first-class shops, for which there is an increasingly great demand in this rapidly-growing suburban town. The property is in the heart of the business portion of the town, adjoins Messrs. Ind Coope's Brewery and the post office, and has a frontage of nearly 18 ft. to South-street, with an excellent depth.

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Architecture of the Renaissance in Italy (Anderson)	12	6
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Quantities (Banister Fletcher)	6	0
Estimating (Stephenson)	5	6
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Stanley Bros., Ltd. ...	x	Granite—		The St. Pancras Ironworks ...	viii
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Williams, G. A., and Son ...	xi	Heating—		Ball, H. A. ...	iii
Bell and Co. ...	xi	Blackman Ventilating Co. ...	xi	Coalbrookdale Co., Ltd. ...	—
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Important to Architects.

It often happens that in addition to preparing plans for the erection of a public building or private house, an architect is called upon to carry out a scheme of interior decoration and furnishing.

In order that this may be done satisfactorily it is necessary to take into consideration the style to be adopted in relation to the architecture of the building treated, and also the schemes of colour and materials to be used in the decoration of surfaces.

Formerly the difficulty has been to find an authoritative publication which would be a reliable guide to those engaged in this branch of the profession, and one which would introduce new ideas for interior decoration in addition to keeping a record of all the novelties introduced by the manufacturers of furniture and fittings.

The proprietors of the "Builders' Journal" have therefore pleasure in directing the attention of the profession to their new monthly publication THE FURNISHER, which deals exhaustively with all branches of the furnishing trades. This publication is divided into sections dealing with "Furniture and Upholstery," "Decoration," "Metal Work," "Lighting and Heating," "Pottery, China and Glass," and "Silver and Electroplate." Each issue contains original designs and suggestions by well-known modern designers, and plates are given from time to time, with examples of the best work of some of the older schools. The journal is printed on superior paper, and illustrated in first-class style, and is worthy of the attention of all who have in any way to deal with the furnishing and decorating of public buildings or private dwellings.

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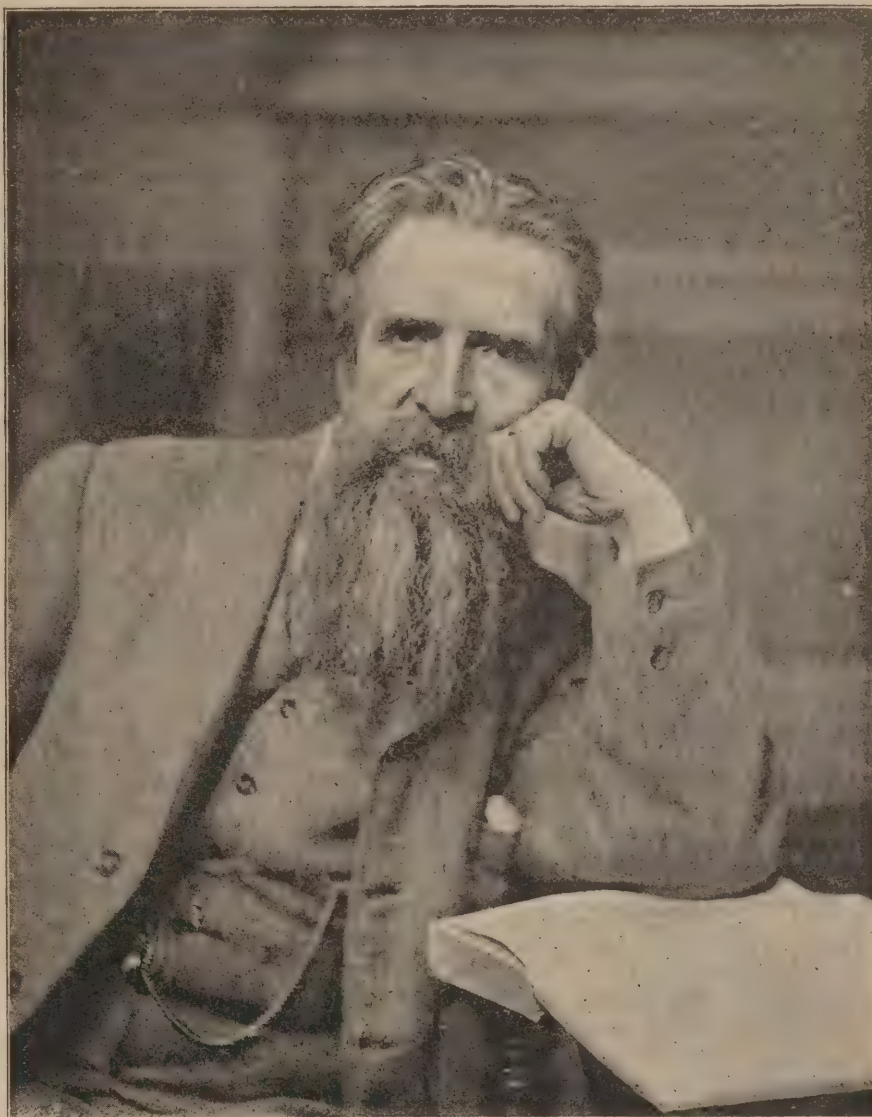
An Architectural Causerie.

Public Buildings and Heraldic Decorations.

PROBABLY one of the most marked architectural effects of the capitals of England, France, Germany, and the United States, is afforded by the lavish way in which hotels and restaurants are now built. These establishments may well be described as palatial, although, no doubt, the true artist will often have to deplore the way in which the architect's mind has run riot, both as regards fantastic designing and over-elaboration in decoration. Taken as a whole, however, great progress has been made of late, for, apart from the question of mere size, the accommodation in the modern hotel and restaurant is certainly more convenient than it was of old. The tendency, which at one time undoubtedly existed, to build hotels somewhat on barrack lines has given way to more rational ideas, and it is recognised that even a big place can be made handsome and given the comforts which one might expect in a well-regulated home. In many instances establishments, or special apartments, have been fitted up and decorated with a fair approach to exactitude to some historic period. It is noticeable that heraldry plays a great part in many of these schemes of decoration. We find armorial bearings and badges sculptured in stone, carved in wood, wrought in iron, moulded in terra-cotta or plaster; they are shown in the illuminated windows, and introduced into the colour schemes of mural paintings. Good examples can be found in London, and even in New York, but the latest and one of the most thorough object lessons is afforded by that superb new restaurant in Berlin, the Kaiser-Keller, just off Friedrichstrasse. Externally rather more striking than dignified, the Kaiser-Keller is admirably planned for its purpose, and contains a number of big halls, decorated in a strange variety of styles, but each apartment perfect in itself. Both painter and carver frequently make use of heraldic symbols. On the first floor is one of the most important of the salons, known as the Hohenzollernsaal. It is quaint, being long and vaulted, a faithful representation of an old German castle hall. The chief mural ornamentation here consists of the genealogical tree of Hohenzollern line. The tree ascends from a golden castle, flanked by two knights in black armour. The branches reach to the ceiling, and spread out 45ft. The branches are numerous, adorned with names, portraits, and the proper armorial insignia. It must have been a gigantic undertaking, and though far too gorgeous for an ordinary hall, looks well enough in the vaulted chamber. Fronting this Royal and Imperial tree, the civic arms of the chief towns of the Province of Brandenburg are tastefully arranged amidst conventional designs. This is, of course, an

extreme case. Such a surfeit of heraldry would be inappropriate anywhere else than in a dining hall designed on historic lines, admitting of the lavish display of contrasting primary colours and the two precious metals. It is to be noted that the treatment of the symbols must necessarily vary with the architectural style. With Gothic surrounding, or in baronial halls, free play may be given to the artist's fancy as regards the outline of shields and outward ornamentations, and the drawing of animals, &c. When the building is more or less strictly classic,

from all others by means of a series of vertical or horizontal fire-resisting screens or partitions. Much the same sort of thing happened with regard to drainage some years ago, when over-trapping was rampant, the bottling up of the sewer gas within the drains being aimed at; whereas now it is recognised that trapping, though essential within proper limits, yet has its limits of efficiency, and that proper ventilation has also to be secured. So, in the opinion of fire-



EDWARD R. TAYLOR, HEAD MASTER OF THE BIRMINGHAM MUNICIPAL SCHOOL OF ART.

heraldry must be severely subordinated, the shields must be as plain as possible, and all drawing quite formal, and even then such shields can only be used for interior decoration.

G. C. R.

Fireproof Construction: the Fireman's Standpoint.

THERE are two ways of looking at most things, and this seems to be the case with fireproof—or, more correctly speaking, fire-resisting or slow-burning—construction. When first the subject was brought into public notice, none save the most drastic methods were thought to be of any use—the absolute cutting off of the burning portion of a building or its contents

men of experience, it seems to be with a burning building. Separation into fire-tight compartments, corresponding to the water-tight compartments of a ship, is well if complete and in small sections, but needs combining with some means for free vent of the flames and the gases evolved in a direction in which they will do no harm. Evolved they are, and escape they will in some direction or other, and if prevented from doing so vertically they will be sure to spread laterally. The position of windows is, therefore, of great importance, that the escaping flames may do no damage to neighbouring property, while the firemen may be provided with means of entry, or at least with the opportunity of pouring water through them upon the burning mass within. In this connection the provision of a roof of fire-resisting material seems, from the fireman's point of

view, to be a mistake, confining the flames, and forcing them out laterally when they might have a free outlet upwards without any material risk of damage to neighbouring property, for with party walls properly carried through the roof it is almost impossible for burning timbers to fall or be thrown from one building to another. Another advantage of a roof which burns through and falls in is that it allows water to be poured downwards through the gap; but the chief one is that the flames ascend without seeking fresh fuel and lateral outlet. With regard to staircases, forming as they always do natural tunnels for communicating fire from floor to floor, by all means cut them off from the floors which they serve with hardwood doors, for which, as also for the floors themselves, teak is the best material. Wood is in fact liked much better by the fireman than is generally understood—he always prefers it to metal, and for stairs at least he places it in a higher position than stone or concrete. The reason is plain; he can at once see by inspection whether it is safe to trust himself to timber or not, whereas other materials are dangerously treacherous under extreme heat; and it takes a great deal of burning to do more than char the surface of a solid beam, or stair, or door of such a wood as teak. There are men who go so far as to say that few so-called fireproof floors will confine a fire so well as one of hardwood boards, tongued with hardwood tongues so that the flames cannot penetrate the joints—while a built-up teak staircase is permitted for warehouses under the stringent London regulations. As for a floor or staircase of solid balk timber, it is almost indestructible by fire under any save most abnormal conditions.

G. A. T. M.

Cement Tests.

THE recent flotation of a limited company to take over a big Portland cement factory discloses the fact that one well-known firm of contractors requires at least 50,000 tons of this material per annum. Probably this enormous figure does not excite the attention it would have done fifty years ago; but this alone is proof of the important position held by Portland cement in the field of modern construction. In considering the multitudinous building purposes for which it is employed, the necessity for more clearly studying and understanding this material becomes increasingly evident. The paper read by Mr. W. G. Day before the College of Masons last month, which appears in our columns this week, reveals many little points in the origin, composition, and manufacture of cement that we think will be useful to our readers. The summary on testing is a useful addition to the paper, for the mistake most commonly made by architects and engineers is in specifying impossibilities, and very frequently extravagant demands are made "in order to be on the safe side," which no maker can possibly fulfil. There are various tests for fineness, specific gravity, chemical analysis, tensility and adhesion, heating and expansion, issued by the Cement Users' Testing Association, and they also give tests for three qualities, the first for engineering works requiring great strength, the second for engineering works not exposed to great strain and for first-class architectural works, and the third for general purposes. A study of these tests would often make the specification a much more useful document than it is.

On Reflection.

Picketing. THE law relating to picketing is now clear of ambiguity.

This has been brought about by the case of *Lyons v. Wilkins*. Section 7 of the Conspiracy and Protection of Property Act, 1875, says that you must not, under penalty, watch or beset a house or other place for the purpose of getting anyone to abstain from doing what he has a legal right to do; but there is the limitation that "attending at or near a house or place where a person resides, or works, or carries on business, or happens to be, or the approach to such house or place, in order merely to obtain or communicate information, shall not be deemed a watching or besetting within the meaning of this section." It used to be thought that this proviso allowed "peaceful picketing," that is to say, it allowed a workman who had had a difference with his employer to quietly argue with his fellow-workmen and try to get them to throw up their work. It was, of course, always understood that violence and intimidation were illegal. In the case of *Lyons v. Wilkins* the plaintiff's premises were picketed in the usual manner, so they applied for and obtained an injunction to restrain the defendant from watching and besetting, except for the purpose of obtaining or communicating information. They afterwards obtained a perpetual injunction, and, as the appeal to the House of Lords has been abandoned, the holding of the Court of Appeal on December 20th, 1898, is the law. By this holding pickets must confine themselves to their legitimate business, and not argue—simply obtain or communicate information. The Employers' Parliamentary Council (whose duty it is to take action in respect of any Parliamentary Bills or the action of Imperial or local authorities affecting trade) thinks that the days of effectual picketing are thus numbered. But we are of opinion that the difficulty of determining whether a man has come to argue and entice or simply to "obtain or communicate information" will still give rise to much controversy and litigation.

A Case for Reform.

THERE are a number of good old institutions in this country that require shaking up and resetting, and prominent amongst them is that laborious, ill-systematized and inefficient creation, the Patent Office. The wretched state of our patent laws is notorious, and it is largely due to this that so many worthless patents yearly tax the brains of persons who fancy they have discovered the philosopher's stone; but fancy soon turns to disappointing fact—after patenting. For those who do not know, it may be well to state that it is possible to take out a patent in this country for something which has already been patented, all that is asked being that you should conform in your application and specification with some stereotyped requirements and pay the fees. The method of comparing us with other countries (to our detriment, of course) is a popular one at the present time, and through it a deal of good has resulted; and it may, therefore, be well to enquire how patent matters are managed in the United States, a land full of innovations, excellent and otherwise. In order to ensure novelty, a body of experts is connected with the American Patent Office, so that when the inventor's application is sealed he knows that his is a new invention, and that he has procured real protection for it. To illustrate how this protection does not exist here, we may mention an instance in which an old and well-known window fastener was sent up some time ago and was patented again, though no

change whatever had been made to it! The result of all this is that when an inventor finds his idea stolen (and unscrupulous infringers are not lacking) it is futile for him to wave aloft his sealed patent, and he either has to let things go on or drag the matter into the Courts, where he often becomes ruined, or finds that his costs exceed what he would have lost if he had not sought the law for protection at all. Moreover, the British system does not foster invention, one reason being (apart from the insecurity of patenting) that its fees are too high. Adding up all the fees, every invention costs the inventor £99 for fourteen years, as he is required to pay an increasing yearly fee during the term of his patent. In America he can obtain real protection for seventeen years for £7. This fact speaks for itself. See what a change took place when the "Patents, Designs, and Trade Marks Act, 1883," came into force. In 1883 the total number of applications for patents was 5,993; the next year it went up to 17,110. And no doubt a similar increase would take place if fees were again reduced, while, if a proper examining board were instituted, ignorant inventors would be saved throwing away their money on useless or antiquated inventions, and the clerical staffs would be saved a good deal of trouble. Less than 7 per cent. of all the patents granted and sealed are on an average kept in force to the end of the thirteenth year by the payment of renewal fees. The object of these fees is said to be twofold; to reduce the number of useless inventions, and to increase the revenue. Well, useless inventions die very soon without any help, and the fault lies in allowing them to be taken out; while figures prove that if renewal fees were abolished (they produced £122,987 in 1898) and a single low fee introduced, the Patent Office would still have a balance on the right side. An excellent little pamphlet by Mr. James Keith, C.E., on "Our Patent Laws" (originally published in 1890) sets forth these facts, and mentions that a Departmental Committee has been appointed on the subject of patent facilities; whether this will do good or not time will show. Let us hope it will, for our present system of patenting is bad enough in all conscience, and needs a lot of remedying to make it what it ought to be—a real means of protection within the reach of every inventor.

Freestone and Brick.

IF there is one feature of modern building which is overdone, it is the wholesale mixture of freestone and red brick; we see it at every corner, and the house often looks more like a doll's creation than the work of an architect. Bands of the freestone are added indiscriminately, it surrounds the window openings, forms the corners, and is inserted in great blocks at various heights. The result of all this is that many architects are becoming thoroughly tired of this ubiquitous mixture—and rightly so. Why it should be thought indispensable to employ freestone in this manner can surely only find an answer in the corruption of the modern architect. There seems to be very little attempt at originality, no noble ideal; nothing but a commonplace commercialism pervading the whole. Freestone requires careful employment with brick, for it is most apt to produce a spotty, unstable effect, which is, of course, highly undesirable. The number of houses built of red brick alone is now proportionately small, for if freestone is not used it is pretty sure that some terra-cotta will be. Yet a well-built house of red bricks throughout looks exceedingly well, especially if red tiles are used for the roof, and, this being so, it seems a pity that when there is a possibility of attaining to something like an artistic result it should be so harshly marred by this promiscuous use of freestone.



[PANEL FOR BIRMINGHAM MUNICIPAL SCHOOL OF ART EXTENSION. BY BENJAMIN CRESWICK.]

BIRMINGHAM MUNICIPAL SCHOOL OF ART.

By E. PRESTON HYTCH.

IN view of the extension of local government in Great Britain, and as an encouragement to the advocates of municipal art teaching, it may be interesting to trace the development which has followed the transfer to the Corporation of the classes conducted until 1885 by the Birmingham Society of Arts and School of Art. As early as 1821 several prominent townsmen endeavoured to provide for art instruction in a manner adequate to the requirements of Birmingham; and from that day to this a succession of earnest and capable men have laboured self-sacrificingly in this cause. Despite the importance to the trades of the town of a knowledge of drawing, modelling and design, the assistance of a body of subscribers, and, in later years, the pecuniary and other encouragement willingly afforded by the Department of Science and Art, it was not until 1876 that the future of the work began to appear hopeful. In that year the late Miss Louisa Anne Ryland, a benefactress to whom Birmingham is indebted in many ways, presented to the School of Art the sum of £10,000 to be applied partly in augmentation of the head masters salary and partly in the provision of free admissions and scholarships. This gift was followed in 1877 by the appointment as head master of Mr. Edward R. Taylor, who had been head master of the Lincoln School of Art since its establishment in 1863 and whose brilliant career there is still remembered.

There are many ex-students who gratefully recall the advantages derived from the School of Art when it was largely supported by voluntary subscriptions; and who owe to the school much of their success in after-life, especially in industrial pursuits. Previously to the transfer, the school was already a force in Birmingham. The list of devoted chairmen includes the name of James Prince Lee, at one time head master of King Edward's School, Birmingham, and afterwards Bishop of Manchester; the late Mr. William C. T. Dobson, R.A., and the late Mr. George Wallis, F.S.A., keeper of the art collections at the South Kensington Museum, had served in the head mastership; and the school had numbered amongst its students, with many others whose names are less familiar, Mrs. Allingham, Mr. W. A. Breakspeare, Mr. Walter Langley, R.I., Mr. George T. Morgan, engraver to the U.S. Mint, and Mr. W. J. Wainwright, A.R.W.S. The main strength of the school then, as now, lay in its popularity and its usefulness amongst the large body of local craftsmen. But those who have read the reports of the Committee, particularly during the chairmanship of the late Mr. John Henry Chamberlain, F.R.I.B.A., and those who were then students—and amongst the ex-students are many who are now practicing architects—will recollect how pressing was the need of adequate classrooms and examples.

In 1879, Mr. John Thackray Bunce, a member of the Committee who had long been impressed with that need, published in the "Birmingham Daily Post" an article setting forth the great disadvantages under which the school laboured from the want of suitable accommodation. It was fitting that the first res-

ponse should come from a local manufacturer. Mr. (now Sir) Richard Tangye stated, in his letter dated November 8th, 1881, and addressed to Mr. Bunce: "I was much impressed by what you wrote, and determined to do my best towards supplying the deficiency." At the same time Mr. Tangye enclosed a letter to the then mayor (Alderman Richard Chamberlain) offering on behalf of himself and his brother, Mr. George Tangye, £10,000 (afterwards increased to £10,937) towards the provision of new buildings on condition: "first, that the property shall belong to the town, and secondly, that the town council shall assume the maintenance and control of the school as soon as it is practicable for it to do so." In addition to this generous offer, Mr. W. B. Cregoe Colmore undertook to present to the Corporation a site, valued at £14,000, and the late Miss Louisa Anne Ryland to give £10,000 towards the building. These offers the Town Council accepted. Accordingly there was

included in the Birmingham Corporation (Consolidation) Act, 1883, a clause empowering the Council (a) to meet out of the Free Libraries Rate any deficiency in the fees, grants, and other receipts of the school, and (b) to increase that rate, if required, beyond the usual limit of 1d. in the £1. The Central School of Art had grown so much that in 1890 the Council authorised the lease for ninety-nine years, at an annual rental of £266 15s., of a piece of land for the extension of the building. This extension was completed in September, 1893, at a cost of £17,798. The Department of Science and Art granted £1,038 on the fittings and casts for the original building, and Mr. W. B. Cregoe Colmore £1,000 towards the cost of the addition. The total capital value of the school as it stands to-day is £56,844, and the net capital cost to the Corporation is £19,869. While not making any further condition as to the above-mentioned gift from himself and his brother, Mr. Richard Tangye expressed, in another letter to the Mayor, "a very strong feeling as to the architect who should be employed to carry out the work," and added that "Mr. John Henry Chamberlain possesses in an eminent degree all the requisite qualifications." The designs and plans of the original municipal school were prepared, almost to completion, by Mr. John Henry Chamberlain, and the tenders for the building, issued under his direction, were received on the day of his lamented death—the 22nd of October, 1883. On the death of Mr. Chamberlain the Committee appointed his partner, Mr. William Martin, as architect to the building, with instructions to carry out Mr. Chamberlain's designs. The firm of Messrs. Martin and



ALDERMAN THE RIGHT HON. WILLIAM KENRICK, P.C., CHAIRMAN OF THE MUSEUM
AND SCHOOL OF ART COMMITTEE OF THE BIRMINGHAM CITY COUNCIL.



MODELLED DESIGN FOR A FOUNTAIN.
E. WILLIAM HAYWOOD.

Chamberlain also supervised the extension of the school.

This central school, with its branches held in the evenings in Board schools in different parts of the city, was the first municipal school of art in the United Kingdom. All the work done in the classes is "technical instruction" as defined in the Technical Instruction Acts of later years, whose provisions with regard to art were anticipated in the above-named local act of 1883. The new school was opened in September, 1885. It is managed by a committee, which also controls the Museum and Art Gallery and Aston Hall, the latter a fine example of Elizabethan architecture, formerly the residence of the Holte family and now used as a supplementary museum. The original members of this Museum and School of Art Committee included, as representatives of the Town Council, Aldermen Richard Chamberlain and William Kenrick, and Councillors John B. Hardman, Alfred N. Hopkins, G. J. Johnson, R. F. Martineau, Maurice Pollack, and Charles Wallis; and, as representatives for life of the former Society of Arts and School of Art, Messrs. John Bragg,

John Thackray Bunce, Charles James Hart, Councillor Alfred Clarkson Osler, Jonathan Pratt, Edwin Smith, James Henry Stone and Edmund Tonks, B.C.L.—a list which includes names distinguished not only in municipal administration, but also for the application of art to important local industries. Alderman the Right Hon. William Kenrick, P.C., son of Mr. Archibald Kenrick, one of the founders of the Society of Arts in 1821, has been chairman of the Museum and School of Art Committee since its establishment; Mr. Bunce was chairman of the Building Sub-Committee which superintended the erection of the school and chairman of the Management Sub-Committee from its formation in 1885 until his death in 1899. The continuity of policy and method thus ensured has been of the greatest possible value. There are other sub-committees; namely, the Finance and the Visiting and Examinations Sub-Committees. The position of a member of the Committee is no sinecure; the members regularly visit all the schools under their control. One of the first duties undertaken by the Committee was the revision of the students' fees. In this revision they adopted the principle of maintaining a fairly high scale in those classes attended by students who could afford to pay adequate fees for instruction, and of making a substantial reduction in other classes, particularly in the branch schools. The important object of educating a purchasing class, whilst facilitating as much as possible the art instruction of those engaged in the trades of the town, was thus fulfilled. As a testimony to the esteem in which Mr. Kenrick is held in connection with his assistance to the school, a portrait, executed and presented by Mr. E. S. Harper, was unveiled last Saturday evening on the occasion of the distribution of prizes at the Central School.

The organisation of art teaching in Birmingham has attracted the attention of many specialists, not only in Great Britain and the Colonies, but in America, France, Germany, and Belgium. What most impresses these visitors to the school is the completeness of the educational ladder as regards art, and the valuable and cordial co-operation of other educational and industrial authorities. The work of the School of Art begins with the lowest standard in the boys' departments of Board schools within the city, for the Committee have entered into an arrangement with the Birmingham School Board for the general supervision, by officers of the school, of the teaching of drawing in all the boys' departments of Board schools. The art instruction given in the Board schools is thus



PANEL. BY HENRY A. PAYNE.

pursued on the same lines as in the central and branch schools of art, and one of the greatest advantages of this system is that a boy, after leaving a Board school, and on joining one of the schools of art, is able to continue his art studies just from the point which he reached at the Board school. In pursuance



MODELLED PANEL: "THE SEASONS." BY FRED. MASON.

of this scheme the city has been divided into three divisions; in charge of each division is an inspecting teacher, whose duty it is, at least twice a month, to visit each school in his division. The inspecting teachers are required to discharge the following duties:—(1) The frequent and regular inspection of the drawing taught in each of the boys' schools; (2) the arrangement with the head master of each Board school of the course of instruction in drawing and the proper classification of scholars for that subject; (3) the giving of model lessons so often and of such a character as to instruct the class-master in his methods of teaching; (4) the examination of the drawing done, and the transmission to the head master of the Board school, when required, of written criticisms and suggestions thereon; and (5) the supply of reports to the school management committee of the Board.

There are fifteen branch schools of art—twelve of them held in Board schools in different parts of the city. One is conducted in the Vittoria Street building, which was acquired by the Council, adapted and equipped at a cost of £3,500, and opened in September, 1890. Another is held in the special building in Mosley Road (corner of Lime Grove), built and equipped at a cost of £10,000, and opened on November 18th, 1899. Mr. W. H. Bidlake, M.A., A.R.I.B.A., the special lecturer on architectural history and architectural design at the Central School, was architect of this new branch school. The course of instruction at the branch schools includes elementary drawing, drawing from models, elementary design, light and shade from nature, casts and objects, sepia drawing, geometry, perspective, elementary modelling, elementary modelled design, &c. Building construction, also, is taught at four of the branch schools. At the Moseley Road branch school afternoon and evening classes are held, and the fees are the same as at the Central School. The fee for attendance at any other branch school on five evenings a week throughout the school year of thirty-two weeks is five shillings; and, in addition, a drawing board is provided free for each student. There is thus a branch school within easy reach of every part of the city, and the fee for attendance is so low as practically to exclude none. The Vittoria Street branch school is specially intended for those engaged in the jewellery and kindred trades, such as brass-workers, chain makers, chasers, clerks, damasceners, designers, die-sinkers, enamellers, engravers, jewellers' case makers, lapidaries, makers of electro-plate, mounters, repoussé workers, setters, silver-smiths, stampers, tool-makers, travellers, ware-housemen, and any others connected with the metal trades; and other students are admitted so far as space allows. The classes at this branch school are taught by men who are at once qualified art teachers and practical jewellers, and are attended by about 460 students. About 265 female pupil and candidate pupil teachers, under the Birmingham School Board, receive instruction in drawing at the Ratcliff Place branch school; 250 pupil and candidate pupil teachers in the denominational schools attend other branch schools. The main object of the branch schools is to receive students immediately on leaving the day schools, whilst their fingers are still supple, and before they have lost any proficiency in drawing which they may have already obtained, to give to them a thorough grounding in drawing, modelling, design, and the principles of ornament, and thus to equip them for more advanced instruction, either at the Central School of Art or elsewhere, and for the better discharge of their daily work. Every student's course of study is arranged separately, and to bear on his or her occupation. The average student finds in the branch schools a course of study sufficient to occupy him on two or three evenings a week for three or four years. The casts and other examples are carefully selected; the teaching staff is able, experienced, and enthusiastic, and includes some of the most distinguished ex-students of the Central School.

(To be concluded.)

"BUILDERS' JOURNAL" SHILLING FUND.

THE scheme for providing homes of rest for discharged soldiers as a gift from the combined building trades of the country is everywhere being warmly taken up, as will be seen by the long lists of contributions in kind and money which have appeared in our columns. A remarkable testimony to the enthusiasm the proposal has aroused was given last Monday week at Leicester, when a concert was arranged by the local branch of the Master Builders' Association in aid of the fund. The committee decided to organise a procession as an additional attraction, and this was well attended. The trade unions in the town connected with the building industry readily sent contingents, the bricklayers and federated labourers bringing their banners. A contingent of police led the way, followed by about a score of firemen as torch-bearers. A couple of trowel-bearers were at the rear of the firemen, preceding the band of the local Volunteer Battalion. Close behind were the members of the Bricklayers' Union, with their banner, headed by their president and secretary. The plasterers, painters, wood-cutting machinists, employers in the building trade, general labourers, stonemasons, plumbers, carpenters and joiners, and federated labourers followed in the order mentioned, the latter association carrying its banner. A body of smiths and fitters brought up the rear. The concert was a huge success in every way. Spacious as the Floral Hall is its accommodation was severely taxed by the vast audience, which packed floor and gallery alike. The concert was followed by a speech from the Mayor, and a vote of thanks was carried to him and the Mayoress on the proposition of Sir Israel Hart, seconded by Sir John Rolliston.

Our offer of a copy of the current issue of "Specification," the invaluable reference book for all connected with the building trades, sold at 5s. nett, is still open to anyone who collects twenty shillings for the fund we have opened for those who do not feel in a position to send a large cheque to the General Executive.

The following subscriptions have been received since the publication of our last list:—

	Shillings.
Previously acknowledged	1,866½
Staff of Messrs. Alfred Waterhouse and Son, Fellows R.I.B.A., 20, New Cavendish Street, Portland Place, W. ...	42
Employees of Messrs. J. Parnell and Son, contractors, Moulshford Asylum, Berks., per Mr. F. Woodley ...	20
Per J. B. Perkins, Cardiff:—	
J. B. Perkins ...	1
B. W. Preddy ...	1
C. Thorne ...	1
J. Osborne ...	1
S. Perkins ...	1
W. H. Perkins ...	1
M. F. Proctor ...	1
M. A. Proctor ...	1
P. Proctor ...	1
B. Proctor ...	1
J. Price ...	1
H. Talbot ...	1
—	12
"Crown" ...	5
Per Alfred Morton, Aston, Birmingham:—	
Alfred Morton ...	1
Hannah Gee ...	1
George Gee ...	1
Thomas Whitehouse ...	1
—	4
J. H. Collins, Leeds ...	1
E. ...	1
R. R. S., Richmond ...	1
A.C., Leeds ...	1
Per W. A. Osborne, 150, Old Street, E.C. (First List):—	
Miss Shields, Tynemouth ...	10
Mrs. Stacey, Tynemouth ...	2
Miss Stacey, Tynemouth ...	1
E. J. Stacey, Tynemouth ...	1

	Shillings.
C. Wilson, Chiswick ...	1
Mr. Wilson, Chiswick ...	1
Cecil Wilson, Chiswick ...	1
Farmer Wilson, Chiswick ...	1
A. Moore, Birmingham ...	1
G. Grice, Birmingham ...	1
W. H. Grice, Birmingham ...	1
O. Leaker, Birmingham ...	1
Mr. Godfrey, Bristol ...	1
E. Love, Bristol ...	1
F. Cooke, Bristol ...	1
Mrs. Osborne, London ...	2½
W. A. Osborne, London ...	2½
—	30

Total ... 1,983½

The executive of the Building Trades' Gift inform us that in response to the unanimous request of the stewards, Messrs. George Trollope and Sons have kindly consented to act as the builders of the Homes of Rest for Discharged Soldiers, to be erected at Bisley. The donors can hence now rest assured that the workmanship on the Homes in question will do every credit to trades concerned. The executive also wish to announce that, thanks to the generosity of the Right Hon. Lord Pirbright, P.C., the site for the Homes has been extended by an additional two acres, with the result that the property is now well rounded off, and the buildings can be grouped in a very satisfactory manner. The result of the first six weeks' work on this scheme as ending March 1st, has been a collection of gifts in kind to the value of £12,500 (taken at trade prices), and a monetary collection of over £1,000, making £13,500 in all. To complete the scheme, another £5,000 in cash is urgently required, as well as gifts in kind to the value of £6,000. Considerable quantities of timber, joinery, lime, cement, and facing bricks are still required, but particularly timber, the firms connected with the timber trade being conspicuous by their absence on the lists of donors. Regarding such materials as stock bricks, glass roofing materials, paints, &c., in respect to which the entire quantity required has been presented by individual donors. The executive wish to call the attention of the special trades concerned to the fact that the generosity of single representatives should not prevent the remaining firms in that trade from contributing cheques to meet the cost of labour in putting these materials together. The brickmakers in particular are reminded that although Messrs. Eastwood and Co. have splendidly given the material (750,000 bricks), there is no reason why the other brickmakers should not help in paying for the bricklaying.

The following additional contributions in money and kind have been received at the offices of the Executive of the Gift:

CONTRIBUTIONS IN KIND.	
Messrs. J. Tylor and Sons.—Sanitary Equipment for the Recreation House.	
The Crittal Manufacturing Co. (Baintree).—The entire Metal Casements for a pair of Homes.	
Messrs. Walter Macfarlane and Co. (Glasgow).—Rain-water Pipes, Gutters, &c., for one Home.	
Messrs. David Rowell and Co.—750ft. of Iron Railings.	
Messrs. Rowson, Drew and Co.—Two 54in. Double Ranges.	
Messrs. W. N. Froy and Sons.—Twelve Chimney-pieces.	
Messrs. Jacobs Brothers and Co.—50 Tons Portland Cement.	

SUBSCRIPTIONS.		£	s.	d.
Mr. Charles Wall (Chelsea) ...	...	25	0	0
Workmen of Mr. Charles Wall ...	...	11	4	6
Workmen of Messrs. Ashby and Horner ...	...	5	12	9
Messrs. Colledge and Bridgen (Wolverhampton) ...	...	5	5	0
Workmen of Messrs. J. M. Macey and Son ...	...	4	10	0
Messrs. Ashby and Horner ...	...	4	7	3
Workmen of Mr. Benjamin Wells ...	...	3	18	0
Workmen of Messrs. Nicholls and Clarke ...	...	3	10	0
Workmen and Staff of the Sub-Wealdon Gypsum Co. ...	...	3	2	3
Workmen of Messrs. Taylor and Son ...	...	2	17	6
Builders' Collection at Wolverley, per Mr. Henry Smith ...	...	2	2	0
Mr. Benjamin Wells ...	...	2	2	0
Workmen of Messrs. Edward Harris and Sons ...	...	1	15	0
Workmen of Mr. J. J. Quirke ...	...	1	10	0
Workmen of Messrs. Woodward and Co. ...	...	1	6	3
Workmen of Messrs. Humphreys Ltd. (2nd donation) ...	...	1	5	6
Workmen of Mr. W. E. Hill ...	...	1	4	6
Workmen of Messrs. Barnes and Co. ...	...	1	1	0
The Bridgwater Master Builders' Association		1	1	0

ARTIFICIAL HEATING.*

By W. R. MAGUIRE, J.P., A.I.C.E.I.,
Vice-President Institute of Heating and Vent-
ilating Engineers, London.

(Concluded from page xxxv. of the supplement
to last week's issue.)

Steam Heating.

ARTIFICIAL heating by steam now claims our attention, as it is coming more into use every year. It is not very safe to introduce steam heating under high pressures, except, perhaps, in factories or places where very high temperatures are needed in manufactures and processes where suitably strong pipes and fittings are used; but in connection with radiators such as are now used in dwellings, 13lbs. of steam should be the maximum pressure allowed—3lbs. will be much more suitable and safe. It has already been stated that steam at and under atmospheric pressure is now being used in America, and this system is also being adopted in England. We may allow high-pressure steam heating to pass and turn our attention to low-pressure steam heating at from 2lbs. to 10lbs. per square inch.

In New York there are some buildings thirty-four storeys high, and very many from fifteen to twenty storeys high, built in flats and heated by one installation. An ordinary hot-water system would not be suitable because the pressure on the boiler in the basement from a column of water thirty-four storeys high would be something like 150lbs. per square inch, and in the lower flats the water might rise to a temperature which would blow off in steam on the upper flats. Therefore, in high buildings hot-water apparatus is generally unsuitable for artificial heating, and in buildings of wide extent hot water travels too slowly to afford satisfactory results in portions far distant from the boiler. In such cases steam has no rival for artificial heating. It is not, however, very generally understood in this country. There are at least five different systems of ordinary steam heating under pressure. The first consists of a steam boiler, usually placed in a basement cellar, having a steam main pipe leading from the top, with a steady rise to the furthest point so that condensed steam water may flow back through it, and against the steam current, into the top of the boiler. The main in this system must be large, otherwise the water will not flow back in opposition to the current of steam, and then trouble will follow. Condensed steam does not flow back along the bottom of the pipes as you might suppose, but clings in drops all round the pipe by attraction, forming a considerable obstruction to the flow of steam. The radiators are supplied on the floor above by a single steam flow pipe from the main, large enough to carry back the condensed water from each radiator. This system is seldom adopted, and could only be used in a very small building with any chance of success or freedom from noise. In the second system the steam main from the boiler is carried direct to the highest point at the basement ceiling over the boiler, and thence with a gradual fall of, say, 1in. in 10ft. round the basement walls, returning to the boiler, which it enters below the water line. The radiators are fed by flow pipes off the main, the condensed water from them falling back through the steam flow pipes, and against the flow of steam, into the main, and flowing by gravitation back to the boiler in the same direction as the steam flows in the main, which is practically a part of the boiler. These are both one-pipe systems. In the third system, which is very often adopted, the steam main is carried direct to highest point under the basement ceiling and thence with gradual fall to the furthest point of the apparatus, where it drops to the floor level, and then under the water line of boiler becomes a return pipe to the boiler, conveying all condensed water back without loss. The radiators on the floors above are supplied with steam from the main

flow by a smaller flow pipe, and the condensed water is conveyed back from the radiators on the different floors by the same steam pipes, and against the current of steam, into the return main under the water line, all condensed water returning to the boiler by gravitation. This is also properly a one-pipe system, though it has a return main under the water line.

The fourth system is that generally adopted in good work and gives most satisfactory results. The steam main is carried at once to the highest point at the ceiling in the cellar over the boiler and graded thence to the furthest point, then dropping to the floor level and returning under the water line and up into the boiler. The radiators on the different floors are supplied with steam by flow pipes from the mains, but each radiator has a second or return pipe to carry off the condensed water separate from the inflowing steam. The various return pipes are joined into one return pipe, which drops into the return main under the water line. This is the two-pipe system. The fifth system is more elaborate and costly, and, therefore, seldom adopted. The steam mains and return mains are similar to the last, but every radiator has its own return pipe for condensed water, which is kept separate from the return of every other radiator above the water line, and is carried either direct into the return main or joined to the return of some other radiator below water line. By this arrangement there are as many return pipes as there are radiators, and the advantages gained are not sufficient to compensate for the extra cost and trouble. All radiators are provided with shut-off steam valves and with valves to provide for the escape of any air, for air in radiators checks the heating power.

In a paper of this kind there is not space for any extended advice about steam boilers, but we may note that in American practice cast-iron steam boilers are almost universally adopted for low-pressure heating installations. They are made in sections, very convenient indeed for carriage and for meeting the difficulties which arise when boiler pits are at the foot of narrow stairs or at the ends of narrow passages, or where doorways are contracted. The iron used for castings in America is of a special kind. The castings are usually very perfect, and the sections interchangeable, so that in the event of any accident to one section, or of one section burning through, it can be taken out and replaced quickly. The American engineers invariably maintain that cast-iron is more durable than wrought-iron, and that wrought-iron is more durable than steel, which oxidizes more readily. This view is somewhat different to that held by English engineers. In any case, although American boilers are tested to stand 100lbs. pressure per square inch, I would be disposed to place the outside limit of safety in use at 20lbs. of steam, and for heating I prefer not to exceed 10lbs. on any American cast-iron steam boiler. The sectional boilers are very sensitive and utilise the fuel to its full extent, heating up quickly and burning fuel thoroughly. Nearly all are supplied with rocking, self-cleansing grate-bars and economising fittings. In specifying American boilers it is usual to add in all cases 25 per cent. to the book rating as a margin of safety. If you are using direct indirect, that is, ventilating radiators, you may add another 25 per cent. to your rating in order to provide for the warming of the incoming cold fresh air. Manufacturers follow no standard in rating the power of their heating boilers.

Suppose, therefore, you have settled on 4,000ft. of radiating surface in your building; specify a boiler not rated for 4,000ft. but for 5,000ft., and, if you use ventilating radiators, specify a boiler rated for 6,000ft. and you will not be far wrong. Some sectional boilers have their sections connected with packed flanges and bolts and nuts, others by screwed nipples, and others by slip ferrules drawn into solid metallic contact by long iron screwed rods passed from end to end; the last are the most trustworthy.

The wrought-iron Cornish boiler made by reliable makers is one of the best forms for steam work, but it requires careful skilled setting in brickwork to secure good results, and before you specify your dimensions see

that your boiler can be got into position without too much labour or pulling down of walls, and take the advice of an experienced heating engineer. In roughly proportioning the size of such a boiler to your work, if your chimney draught is good with about one-sixth to one-eighth inch the area of your grate, you will not be far out in allowing 10 superficial square feet of boiler surface and $\frac{1}{2}$ sq. ft. of grate area to every 100 sq. ft. of radiating surface; but these proportions will vary with circumstances. Chimney flues are generally provided too small in area for heating boilers. You will do well to avoid that mistake, because proper combustion of your fuel depends on the areas of fire-grate and chimney being properly adjusted, and the economy in heating depends on the arrangement of boiler surface so as to absorb as much as possible of the heat. The more fuel you can burn under and absorb into your boiler at once the less will be your waste heat.

The sizes and arrangement of mains must be carefully considered and determined for every installation as much by practical experience as by standard formulae. You may, however, assume, as a guide for maximum dimensions of steam mains under any system, that the area of an inch pipe for every 100ft. of radiating surface will more than suffice, and that the area of a square inch will be sufficient for hot-water mains at ratio of 7854 to 1 respectively. In steam work one-pipe installations require larger mains than those on the two-pipe system. With experience in piping and with favourable conditions, smaller mains may be adopted. For instance, the radiating surface in many efficient jobs ranges as follows:—With 2in. mains, 400ft. to 600ft. of radiating surface; 3in., 900ft. to 1,200ft.; 4in., 1,500ft. to 2,000ft.; 5in., 2,500ft. to 3,500ft.; 6in., 3,500ft. to 5,000ft.

Strict adherence to the 1 sq. in. area rule in hot-water work is advisable, and it gives us in radiating surface the proportions of 350ft. for 2in., 750ft. for 3in., 1,250ft. for 4in., 2,000ft. for 5in., and 3,000ft. for 6in. mains.

You may keep in mind however that, except for the first cost, an installation will not be any the worse for having large mains and large boilers. Steam will then be able to show nearly the same pressure at the furthest radiator as on the boiler gauge. There are many other points connected with the arrangement of steam and hot-water heating apparatus, essential to the success and economy of every installation, such as provision for expansion and contraction safety valves, shut-off valves, regulators, &c., that we have no time to consider; these are really the business of the heating engineer. Water-hammer noises and want of easy regulation of temperature are the two main objections to steam heating, but the former can be eliminated by good design and proportion with proper manipulation of valves. The latter objection must stand more or less against all ordinary-pressure steam apparatus. You must have your valves full off or full on. In all steam apparatus friction and condensation will cause some loss of pressure in the parts furthest from the boiler. If the loss of steam pressure in a radiator is 1lb., then the water in the return pipe from that radiator will back up 2½ft.; with 2lbs. loss the water will back up 4½ft., and may flood the lower radiators, causing water-hammer noise. If the pressure were the same throughout, the level of water in the furthest return would stand at the level of the water in the boiler. The engineer will endeavour to proportion his piping so as to show the least difference of pressure throughout. In a system with long horizontal runs of main flow and return pipes this point must be well cared for, and the lowest point of the radiators placed as far above the water-line of the boiler as circumstances permit.

In the steam-heating apparatus which we have been considering we force the circulation of steam by maintaining sufficient pressure to drive the air (which is a serious obstruction to the circulation) out of the pipes and indicators. There is always more or less difficulty in doing this. The vacuum system of steam heating at and under atmospheric pressure is now used in America, and is being

* A paper read before the Architectural Association of Ireland on February 20th, 1900.

introduced slowly into this country. By this method the air is first drawn or sucked out of the pipes and radiators by mechanical action, creating a partial vacuum in the system, and it is only after this vacuum is produced that steam is admitted to the heating apparatus; and steam so used may be at or under atmospheric pressure. The vacuum system may be applied to any gravity steam apparatus; the ordinary radiators suffice. A second pipe large enough to carry the water of condensation is taken from each radiator, and is joined to a drop return pipe led down to the basement, where it is connected to a direct-acting vacuum air-pump, which creates a partial vacuum and at the same time draws off all condensed water from the radiators and system generally. An automatic valve is attached to the radiator at the bottom where the vacuum pipe joins. This valve is so constructed that as long as it is cold with air in contact, it remains full open; when hot steam reaches it the valve closes; and when condensed water comes in contact with it, it opens sufficiently to allow the water to pass, closing again when hot steam touches it. This system is known as the Webster system, and in large installations a great economy of fuel is effected. Exhaust steam from steam engines can be utilised without any back pressure on the engine cylinders; but we have all the disadvantages of mechanical appliances in the vacuum pumps to be kept in order. There is another system known as the Paul system in America. It can be adopted to any well-arranged one- or two-pipe steam gravity system as follows:—

An exhausting steam ejector is fitted in the cellar, and the radiators are connected with it by means of $\frac{1}{2}$ in. air-pipes attached to the air-valves of the radiators—condensed water is left to return to the boiler by whatever arrangement may have been previously adopted, either on the one- or two-pipe system. The steam ejector is turned on, and it removes the air from the radiators and pipes, creating a partial vacuum with great ease and rapidity. Into this vacuum the steam at or under the atmospheric pressure (i.e., steam at 200deg. to 212deg., showing no pressure whatever on the steam gauge) may be admitted, and it will flow into the pipes and radiators with far greater rapidity and ease than steam under corresponding pressure will flow into an ordinary apparatus full of air. For instance, if you create a vacuum of 5lbs. in your apparatus, and turn in steam at 212deg., under no apparent pressure, you get much better and quicker results than you could possibly obtain if, without the vacuum, you turned in steam under a pressure of 5lbs. over atmospheric pressure. Atmospheric pressure amounts to about 15lbs. per square inch. Steam gauges are marked to show only the pressure in excess of atmospheric pressure—if your steam gauge shows 5lbs. pressure it means 5lbs. over the atmospheric pressure, or 20lbs. in all.

Suppose we have 10,000 sq. ft. of radiation in an installation. It has been ascertained that 20 per cent. of the fuel can be saved by the vacuum, as compared with the ordinary gravity system of steam heating, and where exhaust steam from an engine is always available for heating (and now completely wasted) we may almost undertake to heat a building free of cost for fuel—all exhaust steam, now so frequently turned to waste, can be saved, purified, and utilised for heating without throwing away back pressure on the engine, which has hitherto been the chief drawback to its use. Any air left in the radiators reduces the effective heating power, and it is not easy to get all the air away in ordinary steam heating under low pressure; but in a vacuum system the maximum amount of air is removed and the maximum heating power gained, and all the foul air of the apparatus is sucked away and discharged outside the building, where the heavy odour is unperceived; it is not an agreeable odour to set free in a building at any time. In the Paul system the air is drawn from the radiators sufficiently high above the bottom to prevent the condensed water being drawn off by the same pipe. In the Webster system the air and condensed water are drawn off together

from the radiator at its lowest point. We will now briefly enumerate

Various Systems for Warming Buildings,

some apart from ventilation, and some combined with it.

First system: direct warming by radiation and convection from fuel in open fireplaces, grates, and hearths, combined with constant active extraction of air by the open flues of the chimney. This system radiates the heat in straight lines to the floor, walls, and surrounding objects, the warmed surface of which in due course convey the heat to the air. This is our English system, and air in the building is never injured by overheating, but draughts are developed across the floor towards the fireplace unless air inlets are specially arranged.

Second system: direct warming by radiation and convection from fuel in closed stoves placed within the building. By this system iron smoke-flues may be utilised to increase the heating power of the stoves; care is required to prevent the quality of the air being deteriorated by overheating of the heated surface or by any escape of gas from the furnace.

Third system: indirect warming by convection from fuel in furnace located in underground heating chambers, columns of fresh air passing over the heated surfaces in the heating chamber. In these systems the furnaces are highly heated, and the salubrity of the building depends on the abundance of the volume of fresh warmed air admitted on the natural system of ventilation.

Fourth system: indirect warming, by convection, by furnaces in underground chambers, accompanied by a system of mechanical extraction of vitiated air from the building, causing a vacuum to draw in the fresh warmed air rapidly on the exhaust method of ventilation.

Fifth system: indirect warming by convection, by furnaces in underground chambers, accompanied by a system of combined mechanical propulsion and extraction, both to draw off vitiated air and to force in large volumes of fresh warmed air to the building, on the combined Plenum and exhaust method of ventilation.

Sixth system: direct warming by radiation and convection from high-pressure hot-water apparatus arranged in small bore wrought-iron pipes and coils within the building, the heat being raised by fuel under a boiler formed of a coil of the same iron piping arranged in a furnace. There are two arrangements of this system—(A) the hermetically sealed arrangement, in which expansive air chambers are provided to allow the necessary means of expansion for the heated water; (B) the safety or double safety arrangement, in which a self-acting valve or valves placed in the water-supply cistern provide the necessary means of expansion for the heated water.

Seventh system: indirect warming by convection from high-pressure small-bore hot-water apparatus, arranged in pipes and coils in one or more heating chambers, combined with a natural flow of fresh air through the heating-chambers, delivered through gratings and channels to the building on the natural method of ventilation.

Eighth system: indirect warming by convection from high-pressure hot-water apparatus in heating chambers, combined with a mechanical system of propulsion of fresh warmed air into the building on the Plenum method of ventilation.

Ninth system: indirect warming by convection from high-pressure hot-water apparatus in heating chambers, combined with a mechanical system of extraction of vitiated air from the building, causing a vacuum to be supplied by fresh warmed air drawn into the building on the exhaust method of ventilation.

Tenth system: indirect warming by convection from high-pressure hot-water apparatus in heating chambers, combining propulsion inwards of fresh warmed air and mechanical extraction outwards of vitiated air on the combined Plenum and exhaust method of ventilation.

Eleventh system: direct warming by radiation

and convection from medium-pressure hot-water apparatus arranged in small-bore wrought-iron pipes and coils with direct radiators within the building, the heat being raised by fuel under a boiler formed by a coil of piping, or by any other form of boiler capable of withstanding twice the pressure that the apparatus can possibly be exposed to. The water circulation by gravitation at a temperature higher than in the low-pressure system, but never rising to an excessive degree.

Twelfth system: direct and indirect warming by radiation and convection from medium-pressure hot-water apparatus arranged in small-bore wrought-iron pipes and coils and boiler, with direct indirect radiators drawing in the fresh air from without and delivering it warmed to the building on the natural method of ventilation.

Thirteenth system: direct warming by radiation and convection from low-pressure hot-water apparatus arranged in pipes and radiators within the building, the heat being raised by fuel under a low-pressure hot-water boiler, and the heated water conveyed in pipes by gravitation through the building.

Fourteenth system: indirect warming by convection from low-pressure hot-water apparatus arranged in pipes and batteries in one or more heating chambers, combined with a flow of fresh air through the heating chambers, delivered through the gratings and channels to the building on the natural method of ventilation.

Fifteenth system: indirect warming by convection from low-pressure hot-water apparatus in heating chambers, combined with a mechanical system of propulsion of fresh warmed air into the building on the Plenum method of ventilation.

Sixteenth system: indirect warming by convection from low-pressure hot-water apparatus in heating chambers, combined with a mechanical system of extraction of vitiated air from the building, causing vacuum to be supplied by fresh warmed air drawn into the building on the exhaust system of ventilation.

Seventeenth system: direct warming by convection from low-pressure hot-water apparatus in heating chambers, combining mechanical propulsion inwards of fresh air and mechanical extraction outwards of vitiated air on the combined Plenum and exhaust method of ventilation.

Eighteenth system: warming by radiation and convection from injection low-pressure hot-water apparatus arranged in pipes and radiators within the building, and to be heated by special silent steam injectors through one or more circuits from a steam boiler. Direct indirect radiators may be used with advantage, admitting fresh warmed air to the building on the natural method of ventilation.

Nineteenth system: direct warming by radiation and convection from steam heated low-pressure hot-water apparatus arranged in pipes and radiators within the building in various suitable independent circuits, each circuit heated by a calorifier (usually a closed cylinder of copper with a coil of heavy copper steam pipe within, carrying highly-heated steam under pressure from 10lb. to 100lb., which rapidly heats the water in the calorifier and starts rapid circulation throughout its own circuit). The steam is taken from any central steam boiler under sufficient pressure, and the condensed steam carried back by gravitation into the steam boiler to avoid waste. Direct indirect radiators may be used with advantage, admitting fresh warmed air to the building on the natural method of ventilation, and this may be accompanied by mechanical extraction of vitiated air on the exhaust system of ventilation.

Twentieth system: direct warming by radiation and convection from two-pipe low-pressure gravitation return steam apparatus arranged with pipes and radiators within the building, with main pipes, supply, steam, and return water pipes, to convey the steam supplied from a steam boiler, all condensed water flowing by gravitation back to the generator; the apparatus arranged to work at steam pressure of from 5lb. to 10lb.

Twenty-first system: direct warming by

radiation and convection from single-pipe low-pressure steam apparatus arranged with direct radiators in the building, and one steam main from the steam generator, condensed water returning to the generator through the steam main; suitable only for small buildings, with the radiators one above another, where long horizontal runs of pipe are not required.

Twenty-second system: direct warming by radiation and convection from double-pipe low-pressure steam apparatus, with gravitation return arranged with pipes and direct indirect radiators within the building, with main pipes, steam supply from and condensed water return pipes to steam boiler. The radiators arranged to admit a flow of fresh warmed air to the building for ventilation by natural method.

Twenty-third system: direct indirect warming by radiation and convection from single-pipe low-pressure steam apparatus, arranged with direct indirect radiators in the building, and one steam main from steam generator, condensed water returning to generator through the steam main; suitable for small building, with radiators one above another where long runs of horizontal pipe are not required. The radiators arranged to admit a flow of fresh warmed air to the building for ventilation on natural method of ventilation.

Twenty-fourth system: same as twenty-third, accompanied by a system of mechanical extraction of vitiated air from the building, causing a vacuum to draw in the fresh warmed air rapidly on the exhaust method of ventilation.

Twenty-fifth system: same as twenty-fourth, accompanied by a system of mechanical extraction of vitiated air from the building, causing a vacuum to draw in the fresh warmed air rapidly on the exhaust method of ventilation.

Twenty-sixth system: indirect warming by convection from low or high-pressure steam apparatus, arranged in batteries in one or more heating chambers, combined with natural flow of air through the heating chambers, delivered through the gratings and channels to the buildings on the natural method of ventilation.

Twenty-seventh system: indirect warming by convection from low or high-pressure steam apparatus in heating chambers, combined with a mechanical system of propulsion of fresh warmed air into the building on the Plenum method of ventilation.

Twenty-eighth system: indirect warming by convection from a low- or high-pressure steam apparatus in heating chamber, combined with a mechanical system of extraction of vitiated air from the building, causing a vacuum to be supplied by fresh warmed air drawn into the building on the exhaust method of ventilation.

Twenty-ninth system: indirect warming by convection from high- or low-pressure steam apparatus in the heating chambers, combining mechanical propulsion inwards of fresh warmed air and mechanical extraction outwards of vitiated air on the combined Plenum and exhaust method of ventilation.

There are also the systems of heating by steam at or under atmospheric pressure, by live or exhaust steam, as already described, with or without ventilation. Indirect warming systems may be combined with direct warming systems by placing radiators giving out radiant heat in any desired portions of the building. Indirect systems of warming should be provided with arrangements to reduce at will the temperature of the air sent into the building, without lessening the volume of air supplied. The control of temperature should be placed in the hands of the engineer or caretaker, and should not be subject to the whims of individuals. In a perfect system of combined warming and ventilation for large asylums, hospitals, colleges, schools, &c., great care must be taken to insure an abundant supply of pure air, which should be taken from some point well above ground level, and well away from the building and from all sources of impurity. Screens for filtering the air, when used at all, must be very readily and frequently cleansed, else they soon become worse than useless, giving back impurities to the passing air when they become subcharged.

In conclusion I would like to say a word on behalf of the heating contractor which may prove useful to all connected with the profession, young architects especially; always remember the dignity of the profession and the old French proverb which says *that noblesse oblige*. Do not be too hard on your contractor. No doubt you will often have a difficult position to fill as mediator between your client and the contractors, but try not only to be as just but as generous as your client ought to be, and, while seeing that your contractor carries out his contract honestly, remember all the difficulties that lie in his path and help him over them as they arise, patiently and kindly if you can. Be the "daysman to lay your hand on both" and keep them together in friendly concord. My own experience furnishes me with many memories of the helpful kindness of members of your profession. How gratefully I recall the names and the features of many who have gone from us, many whose kindly faces you never saw, whose courteous voices you never heard. A great change has passed over your clients during the last fifty years, and I doubt if it be for the better. The writer remembers so well the marked kindness and consideration invariably shown to contractors, but if the changes in the condition of people have lessened the general tone of consideration for others in business dealings, architects have special opportunities of fostering that happy spirit. Especially when limited or not limited tenders are called for in competition, they can see that the conditions are just and that the contractors invited to compete are treated as if they were honest and respectable gentlemen, with a full measure of courtesy, and are afforded every possible facility and information, providing specification, bills of quantities, without cost or needless trouble to the competitors, unless they are to be remunerated in some way. You as considerate, kindly architects will bear in mind that the engineers and contractors for artificial heating invited to your offices have hard work to do and little time to spare; that if they are called on for plans and tenders in competition free of charge, it is a mere chance whether they get the work; and that they must lay other work aside in order to attend to this new demand on their time and brain power; and therefore kindly consideration will be shown, appointments will be punctually kept, and every possible explanation and facility will be courteously given. Contractors greatly appreciate this spirit in architects, but avoid offices where it does not exist.

Then during the progress of the work every aid will be extended to the contractor; he will be treated as an accepted assistant, rather than a suspected conspirator, and when the work is done, necessary tests will be promptly applied, and the final certificate will not be held back unless good reasons exist. The contractor pays his workmen wages week by week, and wants his money; you may be quite certain of that. "The labourer is worthy of his hire," and ought to get it, too! Then, when all is done, the worthy architect will not forget the contractor who has carried out his work well, and will be ready to recommend and prefer him for future contracts, as proof of his approval, and as his fairly earned reward. Business can be both profitably and pleasantly done when architect and contractor show such mutual consideration, and you may depend upon this, that the highest in the land lose nothing by deserving the good word and good opinion of the lowest.

Belfast Technical Institute.—The Council of the County Borough of Belfast has decided to acquire a portion of the Royal Academical Institution grounds as a site for the proposed technical institute.

New Buildings at the Mint.—It is stated that the new die and metal department which is to be erected at the Mint will cost £8,500. The buildings of the Mint were erected in 1805-10 from the designs of Johnson and Smirke, but the operative department underwent entire reconstruction in 1881-2.

EARLY GREEK CIVILIZATION.

MR. CHARLES WALDSTEIN, Litt.D., Ph.D., L.H.D., Slade Professor of Fine Art at Cambridge, gave last Thursday afternoon, at the Royal Institution, Albemarle Street, W., the second of a series of three lectures on "Recent Excavations at the Argive Heraeum in Greece"; the first lecture was reported in our last week's issue. The lecturer pointed out that within the last twenty-five years there had been a marked revolution in views held by archaeologists and historians in respect to the earliest Greek civilization and art. The archaeologists of the older generation had made two mistakes—in regarding as the earliest products of Greek art statues which we should now not dare to place before the ninth or eighth centuries B.C., and in attaching too much importance to the Homeric poems as affording proper indices for the study of early Greek civilization. Students were now realising more and more that the poems marked the end, not the beginning of a civilization and presupposed long stages of anterior evolution. Since Schliemann began his work about twenty-five years ago a new period—the Mycenaean—had been firmly established, grouping round 1500 B.C. It was also realised that this gradually died out and failed about 1450 B.C., and was succeeded by a new and lower civilization beginning with the inroad of the Dorians—a kind of dark Middle Ages grouping round 1100 B.C.—and then a kind of Orientalising influence came in and led up to the highest archaic Greek civilization and art. In regard to these views the site of the Argive Heraeum was of the greatest interest.

It was undoubtedly in Hellas proper that the earliest beginnings of Greek civilization began, and for this reason he attached such importance to the Argive Heraeum, as it was not open to the objections that Hissarlik (Troy), Mycenae, or Tiryns were on the score of not being in Greece proper. The importance of the Mycenaean period had been exaggerated and scholars had supposed it to be the beginning of a Greek civilization, while admitting the existence of an earlier life to which they refused the title Hellenic. But, in the lecturer's opinion, it was necessary to go further back still, and assume that before the Mycenaean period there were at least three centuries of civilization on the Argive plain Hellenic in character and continuous in development. This theory was supported by evidence drawn from topographical and architectural considerations, from mythology and from literary tradition. He was inclined to put the date of the remains of the early temple he had referred to in his first lecture at 1830 B.C., and Mr. F. C. Penrose, who combined astronomy with his studies in archaeology, gave the same date to it from the consideration of its orientation, based upon calculations he had made, tending to show that the orientation of temples erected at various times changed with the position a certain star occupied.

The development of this early art referred to was illustrated by the terra-cottas found on the site; the earliest of these could be classified into eight or nine different types, several of which antedated the Mycenaean period. As regards continuity of development, the lecturer pointed out that Mycenaean art, distinguished by the introduction of glazed colours, by its freehand drawing, and by the naturalistic character of its design, was succeeded by a period of mere geometrical mechanical ornamentation, which, again, was followed by the proto-Corinthian with linear designs. This linear ornamentation had been regarded as being in contradistinction to the naturalistic feeling which was held to be Hellenic, but he considered that the linear was the earliest principle of design, and that it could be traced concurrently with the other, in vases, &c., right through the Mycenaean period from the early beginnings of Greek art. Many photographs were shown in illustration of the various points dealt with in the lecture.

ARCHITECTURAL ASSOCIATION.

SMALL HOUSES.

By C. E. BATEMAN, F.R.I.B.A.

A MEETING of the Architectural Association took place last Friday, Mr. G. H. Fellows Pryne, the president, occupying the chair. The minutes having been read and confirmed, the following gentlemen were unanimously elected members of the Association:—Messrs. R. E. Hemingway, J. A. Jones, A. G. R. Mackenzie and F. Nichols. On the proposition of Mr. R. S. Balfour, hon. secretary, a vote of thanks was then accorded to Mr. W. E. Riley, superintendent architect to the London County Council, for his courtesy on the occasion of the second Spring Visit of the members of the Association to the new artisans' dwellings on the Millbank Estate.

9ft. 3in., and 12ft. by 10ft. 6in.; bath-linen cupboard.

Ground Floor Area, 944ft. super. at 15s. 10d.=£750
First do. do. 731

1,678 ... at 8s. 8d.=£747
Cube ... 26,901 ... at 6d.=£756
Cost, £750 at 5½ per cent.=£39 7s. 6d.
Ground Rent at 2s. a yard = £5 10s. 0d.

£44 17s. 6d.

Rent obtained, £45.

Higher limit.—For the higher limit I also give from an actual example the following accommodation:—Entrance; cloak-recess; hall, 14ft. by 14ft.; drawing-room, 18ft. by 14ft.; bay and ingle, 4ft. 6in. by 8ft.; dining-room, 21ft. by 14ft. 6in.; service door billiard-room, 22ft. by 17ft.; bay and recesses; lavatory; pantry, 14ft. by 7ft.; wine cupboard under stairs; servants' sitting-room, 14ft. by 12ft.; working kitchen, 14ft. by 14ft.; sink, back stairs, trade entrance, larder, servants' yard and covered way to coals, ashes, knives, boots, and water-closet. Bedrooms over hall, dining-room and drawing-room, two over billiard-room; dressing-room over entrance; two rooms over kitchens; box-room

better, and the more certain the interest on outlay. The character and surroundings of the land should govern the character of the house, and it requires restraint not to put too good a house on the land. It requires the genius of the speculating builder to obtain more than six per cent. interest on the outlay, and this is difficult to get. The question of outlay must receive our consideration, because a man cannot live at a higher rental than a certain proportion of his income, which some put down at one-tenth. One also must take into consideration the change in fashion and depreciation upon a change of tenancy or ownership.

Economy, of necessity, is of the utmost importance, oftentimes with advantages, as more houses are spoilt by having too much money badly spent upon them than too little; fortunately for us, a client does not always look to his house to be one of his most saleable investments, but nevertheless it must be one of his available assets.

Birmingham, like many large towns of recent growth, has little or no available land near its centre for residences, as it is more valu-



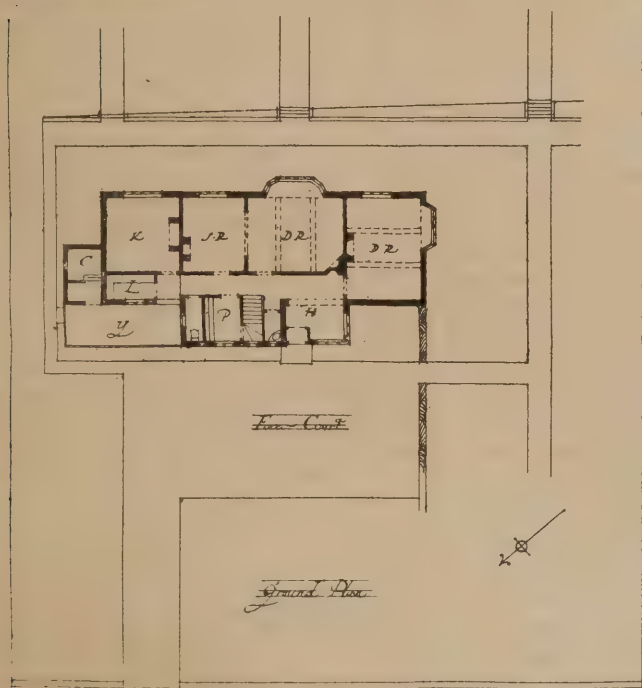
Elevation to the Road



End Elevation



Garden Front



Ground Floor



Upper Floor



Basement Plan

Submitted to the
Committee of the
Institution of
Architects
14th 1900

Scale of Feet

A COITAGE FOR MR. C. A. HARRISON AT BARNT GREEN. BATEMAN AND BATEMAN, ARCHITECTS

It was then announced that a special meeting would be held on March 23rd, before the general meeting, to put before the members some suggested verbal alterations in the by-laws. Mr. C. E. Bateman, F.R.I.B.A., then read his paper on "Small Houses" as follows:—

My remarks are supposed to apply to houses between the limits of, say, £800 and £2,500, which down in the country is the most usual class we have to deal with.

The following is the accommodation of an actual example of the lower limit:—

Lower Limit.—Porch and lobby; two sitting rooms, 17ft. by 13ft.; pantry; larder; wine cupboard; kitchen; scullery; coals; ashes; water-closet; five bedrooms—13ft. 6in. by 13ft. 6in., 12ft. by 13ft., 13ft. by 10ft. 6in., 13ft. 6in. by

over larder; bath-room and water-closet; stables extra and electric light.

Ground Floor Area:

House ... 2,317ft. super.
Outbuildings ... 173ft. super.
Stables ... 836ft. super.

Upper Floor ... 3,326ft. super. at 14s.=£2,324
... 2,263ft. super.

5,589ft. super. at 8s. 4d.=£2,325

Cube:

House ... 61,851ft. at 7½d.=£1,935
Outbuildings ... 2,249ft. at 6d.= 60
Stables ... 13,537ft. at 6d.= 336

Total 77,637

Contract price £2,325.
Ground Rent at 2s. per yard £50.

As a general rule, the smaller the house the

able for business purposes and workmen's dwellings; the distance, therefore, has to be bridged over by rail, tramway, or omnibus. These conditions, I suppose, apply to other great towns. This may seem an unimportant matter, but when a man is engaged in some business which leaves him free for a couple of hours in the middle of the day, he often takes the opportunity of going home for luncheon. It is therefore important that the house should be so disposed that the cooking and service arrangements may be such that he can return to his business in a fairly good temper after taking his midday meal. In Birmingham there is very little or no freehold land; it is practically all in estates which only grant leases. This, perhaps, militates in some

degree against substantial construction, but a certain control is exercised which improves the class of building if a competent surveyor is in charge, and who examines the plans submitted for approval.

The effect of the leasehold system on building is a very vexed question and scarcely comes within our province this evening, although it has a general bearing, but a client will generally build rather a stronger and better house upon freehold land.

Points which force themselves upon us when laying down a plan are the approach to the land, the aspect, the views obtainable and the levels, the most important perhaps being the aspect. Every ray of sunshine should be made available. No house can be considered satisfactory which cannot warm itself and its occupants with the sun as it passes or appears to pass, from east and west; and too much stress cannot be laid upon this fundamental and important consideration. It is easy enough to shut out too much sun, but it is impossible to obtain the sunshine if the rooms are placed on the wrong side of the house. When advising upon the selection of a site keep this well in mind, for should the sun, the views, and the fall in the land be all in one direction, half our troubles are at an end. The most difficult place to arrange is where the approach and the front door, of necessity, come on the south-east, for the reason that the dining-room, being of course placed south-east so as to have sunshine for breakfast and luncheon, the front door has to be placed southward or eastward of it. If eastward, the entrance has to be crossed by the service from the kitchen; and if southward, servants have a long distance to go round the dining-room to admit visitors.

I think you will agree with me that a western aspect is bad for a dining-room, because the evening meal for more than half the year is taken by lamplight, and no direct sunlight is upon the room for breakfast, and very little for luncheon.

While upon the question of approach, I should advise that porches placed in an internal angle, with the doorway on the diagonal, should be avoided, as they are very difficult to drive up to. Porches are not easy to treat, as, when small and of the usual type, they seem to be stuck on, and to have the character of the dog kennel or furniture van. When large enough and two storeys high, they certainly look better, but are expensive, and I am inclined to think the recessed porch is cheaper, while it gives scale to a small house, and forms in the hall a convenient bay-window recess. The space over the top of the door may form a useful cupboard for rugs, tennis rackets, &c.

After having considered the possibilities of the site, with its aspects and approach, the next point will be to determine the number of stories required to contain the accommodation. In the country, basement kitchens are not advisable, as no servants can be kept where they are not on the level. In fact, avoid cellars as much as possible as they entail considerable outlay for a provision which is rarely or little used, while, for the smaller class of house under consideration, sufficient space for wine or beer may generally be found under the staircase by going down three or four steps to the bottom of the footings.

Having disposed of the cellars the ground plan will now receive our attention, but we must not get too much wedded to a particular arrangement without carefully considering the bedroom floor and the roof plan. This latter is so all-important, not only from the nature of our climate and on account of the capacity of attics for containing bedrooms but also from the effect it produces in external appearance, so that the roof in a great measure governs the plan itself and unless it seems to ride comfortably on the walls and with its spans intersecting easily and simply into one another the general harmony and homogeneous character of the whole block will be spoilt.

I have found a space of 17ft. will give useful attics by placing the joists underneath the wall plate, and by carrying them through and spiking them to the feet of the rafters a good tie is obtained. Stud up to the rafters with

the intersection 4ft. from the floor and place the purlins above the ceiling joists at the intersection with the rafters, and you will have a strong, rigid and economical roof.

Trussed purlins are very useful, as forming the sides of the attics and will often be found more convenient than principals, especially in wide spans, as the sill piece can be used as the bearer for the attic joists and the wall plate be kept to 7ft. from the first floor. I generally use 4½in. by 3in. rafters placed 16in. centre to centre, with 11in. by 4in. purlins, and plates 9in. or 11in. wide. This latter, I think, is a wise precaution, especially in 11in. hollow walls, as support is thus obtained from the inner as well as the outer 4½in. of the brick-work.

Boarding the roofs gives an additional strength, and, although it raises the cost, it makes the attics much warmer, and, if you have slept in attics all your life, as I have done, you will realise this advantage. If boarding cannot be adopted, Willesden paper is a useful substitute, and should be placed on the top of the rafters with an additional intermediate lath, the whole torched up solid as the tiles are put on, to keep the fine driving snow from getting in and to keep out the draught.

As regards roof coverings, I suppose it will be agreed that stone slates from Northamptonshire and the Cotswold Hills are without doubt the best, not only from their strength and lasting qualities, but also for their appearance. They require to be carefully laid in the first instance, as they are not easily repaired, except by men from the district where they are obtained; in fact, men used to handling the Colleyweston slates cannot lay those from the Cotswolds, and vice versa. The Colleyweston slates are pointed, and the Cotswolds are not. The cost comes out to about 20s. to 30s. a square more than tiles, which mounts up; but they are worth a sacrifice to obtain. An example may be seen at Mr. Peto's house in Harrington Gardens, and of course every one is familiar with them who knows Oxford. If stone ridges cannot be used, buff-coloured tile ridges look the best. Tiles make a roof warmer than slates, and where sound old ones can be obtained they look all the better for being weathered. Most of our modern tiles will not change colour, or, if they do, go black all of a piece, which is as bad. The smooth surface due to the machine pressing used in their manufacture accounts somewhat for this; but they are also very much thinner than the old ones, causing the roof lines to look hard for the roofs. Half-round ridge tiles are preferable, perhaps, to those with ornamental tops.

Fortunately green slates are more easily obtainable than formerly, and the cost of those from Llandilo, in South Wales, is not so very great. I have tried the experiment of laying them in narrow courses, the long way of the slates going in the same direction as the laths; in this way they come more in the proportion of tiles and with a pleasing effect. Never use a red ridge with green slates; a blue ridge makes a much softer finish against the sky. There has been of late years a crusade against slates, and the purple-coloured Bangors are certainly uncompromising with red bricks, but the blue-grey upon whitewashed brick-work or rough cast are not so objectionable. If hips are introduced, make the ends steeper by lengthening the ridge 3ft. or 4ft. so as to correct the dropping effect where seen on the diagonal. This necessitates altering the gauge of the laths, but it is not a difficult matter.

Before leaving the roofs a word might be said about lead, but owing to its cost it has to be used very sparingly. In a small, cheap house parapets and lead gutters are out of the question, and one often has to use cement flashings to chimneys where tiles are employed. Cement, however, will not always adhere to the smooth pressed tiles without they are chipped. As lead work is expensive, one must not have too many dormers, and it is not easy to design a house without dormers or gutters, in fact, it is difficult but is a useful exercise, as these are two of the points where snow and wet may most easily get in.

Zinc is a poor substitute for lead and its

life is very short, especially when exposed to the effects of atmosphere containing chemical acids, though in the country, and if of strong gauge, it may be used with care.

Running the roofs over the walls of gables always seems the most practical and simple way of keeping the wall dry, while it saves a flashing, but there is a peculiar charm about coped gable, which marks the verticality of the gable in contrast to the horizontal line of the eaves. When a soft stone like Bath is used, the coping should be laid on a damp course of slates or asphalt and run out, instead of having kneelers, as the water running down is interrupted here, soaks through the stone, and appears in the room. When this method is adopted, a flat back section about 4in. thick with a good overhang is the best.

Hard bricks on edge with a tile creasing will keep out the wet; but in this case kneelers must be arranged, or else the bricks slip off, unless clip irons are used, in which case they are apt to look as if they would tumble off.

As to the projection of eaves, unless the soffits are plastered, they look thin if projecting more than 9in. to the back of the spout. Gardeners do not like a large projection, as the wall-creepers get little or no rain upon them. This goes to show that eaves keep the walls dry. When arranging the eaves and spouting look out for opening casements; it is trying to find that the windows won't open more than 6in. or 9in. Half-round eaves-spouts are as good as any. There is a good deal of difference of opinion as to whether chimneys on inside or on the outside walls make the rooms the most warm. Those in favour of inside stacks say that all the heat is thus conserved, while others maintain that an outside wall is cold unless it has a chimney in it. A safe way is to put some inside and some out, this being the arrangement that looks the best; and it is advisable for appearance to have as few large and high chimneys as possible, as the external facing is increased by multiplying the stacks, while they always look shorter and smaller in the work than on the drawings. Chimneys should be looked upon as miniature towers, not stalks. The roof and chimney design, with the general grouping, will often make or mar a house.

The term bungalow has had a good run for some time, but it is misleading; a house with simply a large and spreading roof is not, of necessity, a bungalow, and I doubt if it is an economical treatment, while it savours somewhat of affectation.

There is not much to be learnt from old houses about the planning of the bedroom floor, as in these the majority of the rooms lead out of one another and there are no original sanitary arrangements. These are points which would be considered serious defects in a modern house. One can, however, learn a great deal from them in the treatment of their plaster ceilings, to be seen not only in the best bedrooms but also in the attics. Chastleton, in Oxfordshire, and Daneway, in Gloucestershire, may be given as good examples. Iron casements are still expensive, and if many are inserted the price runs up, two opening casements, and often only one, are quite sufficient in a window; two hollows run round the edge of wooden casements will keep the wet from driving through in exposed situations. It is not often that one can avoid lath and plaster partitions, as the number of bedrooms cannot be obtained in a two-storey house by simply carrying up the walls. They are, however, a great nuisance, as they invariably both crack from the shrinkage of the timber and also more especially when carrying any portion of the roof. This has been recognised in one estate near Birmingham, where the surveyor declines to pass plans where they are shown. If open ceilings are adopted for the ground-floor rooms, it is very difficult to introduce rolled iron joists to carry the walls. The use of expanded metal lathing would, I think, avoid some of the cracking, but the intersection of the partition with the wall is the point where the greatest difficulty occurs. 17ft. by 13ft. is a very workable size for a bedroom, while 10ft. wide is about the minimum for comfort.

As to internal plumbing, it is hopeless to say anything about sanitary fittings as they are changing every day, but a combined iron bath and lavatory, known as the Brampton, is a useful arrangement. For water-closets, I prefer the lead traps to the basins, as there is less fear of breakage at the joint with the soil pipe. In order to avoid flooding from the freezing of pipes, expose and fix them all on wooden grounds on the top of the plaster; this keeps them clear of the brickwork, while a gas jet or lamp in the water-closet will keep the flushing-tank from freezing. Round circulating tanks seem to work the best and are the strongest. If these can be placed in a cupboard off the passage instead of in the bath-room the linen is not affected by the steam from the bath and can be got out when the bath is being used, while the passage may be to some extent warmed. It is, I presume, unnecessary to point out the great disadvantage of ever putting the bath-room and w.c. over a living-room, not only because of a possible collapse but also because of the nuisance arising from the noise. Provision should be made for stopping the supply with stop-taps, say near the scullery sink, if that is where the main covers in, as then the scullery tap will empty the pipe. A stop valve fixed just behind the ball valve will facilitate taking off for repairs in the w.c. A scouring joint to empty the kitchen back boilers, in case of repairs, must not be overlooked.

When arranging the staircase remember that elderly people will have to use it. Upon the recommendation of the coroner, no staircase is passed in Birmingham without a hand or wall rail. It is also well to bear in mind that sometimes coffins have to be carried down the stairs, and that it is unseemly to have carpenters in the house to break up the stairs or for the coffin to be let down through a window. The position of the staircase frequently dominates the arrangement of a plan, especially when we have attics. For this reason a T-shaped plan is often convenient, as the stairs will then land in the centre of the attics, avoiding passages, which are almost impossible to arrange owing to the want of head room under the rafters and particularly under the valleys. If stairs are carried up between walls, 3ft. 9in. is about a minimum width. These walls can be wrought framed up with 7in. by 2½in. timber and plastered between with good effect. Thick cords run through ring brackets are more agreeable than wall rails. For open stairs and landings saw-cut balusters and panels of ¾in. square bars in pattern are a pleasant change and inexpensive if not over elaborate. Many handrails are spoilt by being over moulded, which makes them uncomfortable to the touch. The nosing to the steps is best flat-rounder on the top side so as to avoid cutting the stair-carpet. 3½in. or 4in. square newels, carried up to the ceiling, help to support trimmers and beams, and appear to enclose the stairs and give you more for the money than turned oak newels. To place the staircase in the middle of the plan saves passages, as the bedrooms can be entered from all round the landing, but for light and ventilation a staircase against an outside wall is better; borrowed light through doors and screens is a poor substitute for direct window light. The starting of the stairs is often better out of sight of the front door, and if planned to lead out of a lobby instead of directly from the hall the latter can be made a more comfortable sitting-room. Owing to the number of doors in a hall there is, of necessity, a certain amount of draught. The sitting hall and ingle are often applied to houses which are really not big enough to receive them; hence they are terribly cramped, or else other points have been so sacrificed to obtain them that the balance comes on the wrong side.

A sitting-hall gives a certain spaciousness on entering, but it is not of much use unless it is, say, 12ft. by 15ft. with the staircase shut off from it. Ingle nooks want to be at least 4ft. 6in. deep from the face of the opening to the chimney breast, so as to admit of two persons sitting at the side, and they should be 9ft. or 10ft. wide, to save

scorching their clothes. I am not certain if fixed seats are so good as saddle-back chairs. We have all, I suppose, met with the difficulty of getting dog grates to draw properly, and I shall be glad to hear if anyone has found a remedy for their smoking. I think it is a good plan to narrow the opening to the flue from back to front, bringing it over and taking it back again higher up, the opening to the flue being 6in. or 9in. from back to front. Very sharp twists are bad, but gradual and easy bends are a help; lining the flues with 10in. pipes is a good practice, but expensive. I am inclined to think that the position of doors and windows and the direction of the draughts has a good deal to do with causing chimneys to smoke. One may generally rely on most of the flues going badly for the first twelve months, until they get dry, when pots may be added as necessary, and it will be well to keep these of varying heights, which sometimes prevents the smoke from one flue being drawn down an unused flue adjoining it. Nine-inch square flues are too small, as the clogging of the soot, which hardens and will not brush out, must be taken into account. I much prefer stone or marble chimney-pieces, because they then come into the contract and are put in as the work goes up, avoiding the stock pattern which we are compelled so often to adopt. I think a red stone, if it is of a bright colour, perhaps, looks best. A good builder will make the wood chimney-pieces just as well as anybody else, and, although it saves trouble to go to a specialist, the stock-pattern effect is nearly always obvious.

In arranging the lighting of the rooms, a discount for curtains and blinds should be allowed for. If mullion windows are adopted one light extra should be provided to meet this loss. In spacing out, 1ft. 6in. to 1ft. 8in. centre to centre works well for 4½in. by 3in. wood, and for light stone mullions, while 1ft. 10in. is the limit for 10in. by 5in. moulded stone mullions; 6½ and 4½ is a good section for a square stone mullion. When Bath is used and carefully sawn, it requires little labour upon it; at any rate, do not permit the drag tool or comb to be used. Heads and sills are best not less than three courses of bricks deep, except for very small windows. Avoid getting the jamb stones of only two dimensions where toothing into the brickwork; vary their length as much as possible to avoid a mechanical appearance.

Sash windows are perhaps the most draught-proof and water-tight, particularly as they are not usually filled with lead lights, but they govern to a large extent the character of the elevation and are not always admissible. It is also a question if the slight inlet of air through lead lights—that is, supposing them to be of good quality—is not an advantage in ventilation, especially where the rooms are low.

Thick leads and two, or at most three, panes of glass in width to the light are better than very small squares. Put in plenty of saddle-bars, as cleaning the windows cracks the joints and lets in the wet; ¾in. bars are not even. Bay windows to be of any use want to be big enough; two canted angles at the ends are better than only one, and a step up into the bay gives an elevation to the seat which is agreeable when looking through the window or down into the room.

Low wide windows perhaps light a room most agreeably and prevent the sun's rays from penetrating too far into the room in the summer when the sun is higher than it is in the winter.

In housework joinery is an important trade, but owing to the small stock of timber kept in country places—and often in any town for the matter of that—it is difficult to get it good. The mechanical processes of drying now in vogue are a poor exchange for the old-time method and for this reason large panels have to be avoided, except under special circumstances; pitch-pine is liable to split, and if used is better unstained. Square-framed doors are really quite good enough. When the panels are thick, in order to prevent weakening the styles, have the edges of the panels double rebated. Owing to the smallness of our rooms it is a great advantage to arrange them so that they can be thrown together by using folding doors. If you set the hall in the middle and can throw

the room into it on each side you obtain quite a big and interesting room for special occasions. Sliding doors for this purpose are a nuisance, and folding them back like shutters is as good a way as any, but look out for the projection of mouldings, skirtings and lock furniture, and use projecting butts. These doors want to be higher than the ordinary doors, which will do 6ft. 6in. or 6ft. 3in. by 3ft. or 3ft. 3in. Ledged doors in two heights or stable doors are nice for the entrance, as the upper portion can remain open in warm weather, and the porch is a pleasant place to sit in. Ploughed and tongued floors are necessary on the ground floor for warmth; these, of course, must be ventilated underneath, and iron sliding gratings are best, because of being under control. Open timber ceilings look very nice, but they are dreadfully noisy; if you do use them, put two thicknesses of floor boards and two thicknesses of felt, with inch strips between to make a cavity. For a room 17ft. by 13ft. two beams, 9in. by 7in., laid flat, will be sufficient, with 5½in. by 3in. joists, also flat, stumped into the beams at 16in. centres. If you lay the joists on the top of the beams and plaster the under side, put a small wood mould at the intersection of the plaster and the beam, to cover the subsequent crack which will arise from shrinkage.

A point that comes under our notice on the job is the way in which a 4½in. wall gets cut about by the ends of the joists of the floors, leading to a settlement and probable collapse some day. A course of bricks laid on edge across the wall makes a corbel table and gets rid of the difficulty. Proper fittings in the pantry, larder, kitchen and scullery add a good deal of comfort to a house. Pantry dressers are usually made 1ft. 6in. wide and 2ft. at the wash-up portion, and 2ft. 10in. high from the floor, with cupboards having two shelves, and drawers about 5in. or 6in. deep. The shelves overrun 7in., 9in. and 11in., spaced about 11in. apart, the top shelf running all round over the top of door and window. Glazed sliding doors in front of the shelves will keep the china and glass clean, especially that which is not in continual use, while brackets of angle iron to support the shelves will be found less clumsy than in wood. They will, moreover, not be in the way when the china, &c., is moved along the shelf. To economise space the pantry may very well be a passage-room between kitchens and hall; in fact, if it is increased in size and has a fireplace, it may also be used as a servants' sitting-room.

Many people prefer the scullery to be the working kitchen and the kitchen proper to become the servants' sitting-room; this is a useful arrangement in a small as well as in a larger house, as in the smaller the same room can be used for breakfast—an advantage where only one servant is kept and the sitting-rooms are not dusted until later on in the morning. The rule that says a kitchen should be as big as the dining-room applies to a larger as well as to a small house, because the larger the dining-room the more people there may be to cook for. One cannot do very much in the way of outside premises, so luxuriously provided for in old houses. Coals, ashes, &c., knives and boots, with perhaps a shed, is all we can expect, but even these should be in a separate yard, not approached by the tradesmen's entrance, and must be also cut off from the stable yard, where there is one.

Buff-coloured tiles, perhaps, look the cleanest for kitchen floors and larders, but are somewhat softer than the red. Ruabon wire-cut 6in. by 3in. tiles last and look well for entrance passages and floors of ingle nooks, but for the latter I prefer stone paving, raised up 3in. or 4in. above the floor of the room. In the Cotswold Hills the ordinary stone from the hard bed is used for paving, and is of a very pleasing colour. Wood-block floors are too expensive to use, except, perhaps, in a billiard room, where the table gets a good foundation from the concrete bed.

Panelling and fittings are almost out of the question for houses of this type, not to mention ornamental plastering; necessities for comfort must not be sacrificed for them, as they can be inserted afterwards.

As to plastering, it is better to carry it round the jambs up to the windows instead of using wood linings and mouldings, which only get covered up with curtains, but as such jambs are liable to injury from staybars, &c., they are better if finished in cement. No mouldings are required. Modelled plaster ought to be kept soft and somewhat indistinct, and quite different from carved stone or wood. For panelling, one must study the old examples to get into the way of treating it properly; both for the small and large panel types you will find how necessary it is to keep the panels exactly the same width, while a gradual and almost imperceptible diminishing in height is desirable as you rise up the wall in the small panel work.

With regard to decoration I cannot say very much. Unless you are very fond of colour and know how to treat it, you will be landed into difficulties, while the selection of wall-papers for clients is conducive to more ructions than anything else. For my own part, the whitewash brush is, I think, a handy instrument, and white paint is very easily mixed.

Concerning the external appearance, we must again turn to our grammar of old examples. It does not follow that because something looks well in an old building it will look well if introduced straight away into a new one, the glamour of age will be wanting, the scale will probably be different, and the surroundings of totally different character; but the close and measured study of old work is, without doubt, an essential part of our education, guiding our minds to value certain ranges of proportion and teaching us the value of surface.

I suppose at one time or another every one does a half-timber house, and wishes they had not after a later inspection. There will be a day of reckoning hereafter when the dilapidations are taken on these top coats of deal boards. It is a great thing in the exterior work to introduce as little as possible that will be required to be renewed and regularly painted. Five pounds a year for the jobbing builder does not seem much, but represents interest on £100; this would probably pay the difference in cost of oak or stone over deal and cover a good deal of that care in workmanship that is so wanting at the present day. Houses built of brick entirely look better in the work than on the drawings, especially in a neighbourhood where good bricks are obtainable; while, if the bricks are bad, whitewash them, either with or without rough cast. This particular treatment is being taken up a good deal now, I suppose as a reaction from the scarlet fever we have been suffering from for some time past. Rough cast certainly has a texture and surface more nearly approaching stonework than anything else, but unfortunately it has a habit of peeling off and wants to be fairly well done.

I do not think it is possible to lay down any rules for designing a satisfactory elevation; it is very much a question of setting out and of the proportion of the solids to the voids, an outcome of the surface and colour of the materials employed, and of the grouping of the blocks of the plan and their roofing. I think one may take it that the solids diminish and the voids increase in the work, and you need not put in what you can possibly leave out. I am afraid this will be thought a very dry and uninteresting discourse on construction, but architecture is nothing but construction, with the addition of a refining and beautifying element obtained by continued and enthusiastic study, developing a certain natural aptitude. I hope, therefore, I shall be forgiven if I have said nothing fresh or very helpful about designing small houses.

A letter from Mr. Ernest Newton was then read. He says: Mr. Bateman strikes a true note when insisting upon the recognition of the practical side of house-building. The proper solution of these problems takes us a long way on the road to the production of a good house; but it is one note only. All these practical requirements may be satisfied and yet the result may be an uninteresting building, devoid of character and quality. Practical problems may be solved in many ways, all right in varying degrees; but to

solve them completely I think two senses must be at work, one definite and teachable, the other the property of the individual. It is not enough to give a practical and obvious solution only; every material we use in building has an expression proper to itself alone; it is not easy to define this, but we feel intuitively that stone and wood must be treated differently, one kind of stone differently from another; lead, copper, iron, all have their fields and their limitations; deal must be treated in one way, oak in another and so on, all through the whole range of materials. The right selection and proper expressive use of materials play an important part in fixing the general character very considerably. Then besides all this sub-expression, the building must have a note of its own, grave, gay, dignified, homely, austere, whatever it is that we are aiming to express. Locality often to some extent determines this character. The conditions may be varied. Three sitting-rooms, a hall, six or seven bedrooms, cupboards, conveniences of all sorts, sanitation, ventilation, all the things so wisely and rightly insisted upon, but if we take house building exclusively from the practical point of view we may get a "dwelling," but not a home.

Half-timber has led us all astray at one time or another, but its inherent falseness for modern use is fortunately killing it. Solidity and plenty of wall space are always right; not only do we want substantial walls, but substantial doors and windows and strong solid floors; flimsiness in a house destroys the self-respect of its possessor, and, in course of time, would be an excuse for almost any crime he may commit. The simple roof is undoubtedly the form most suitable to our climate, and the most restful to the eye. Good tiles ought not to be difficult to get; thick, strong deep red, hand-made tiles, however, are scarcely to be found; tile makers are too much in love with a thing like a piece of boiler-plate painted pink. I believe that if architects were more persistent the demand would create the supply. As it is with tiles, so it is with almost all other materials. The manufacturer's ideal is a hard, highly finished article; finish, rightly applied, has its own beauty and its own place, but its application should not be universal.

In conclusion, I should like to say that what I have endeavoured to make clear is that a house that is the outcome of an honest attempt to grapple with all the practical difficulties is always respectable, and sometimes even interesting, and that the ideal house must have all these qualities, plus a flavour and distinction of its own. The draughtsman's house, like a piece of petrified sketch-book, is a thing without soul or body, and is always ridiculous, uninteresting and impossible.

Mr. Arnold Mitchell proposed a vote of thanks to Mr. Bateman, which was seconded by Mr. Beresford Pite, and supported by Messrs. H. W. Pratt, C. H. Brodie, Arthur Bolton, L. C. Riddett, W. E. Hewitt, A. S. Taylor, H. J. Leaning, E. Greenop, and G. H. Fellowes Prynne. The motion was carried by acclamation, and Mr. C. E. Bateman briefly replied.

Improvements at St. Anne's, Blackpool.—Application is to be made to the Public Works Loan Commissioners for £29,589 for the following purposes:—Electric lighting, £18,161; fire-station, slaughter-houses, and depot, £5,830; street improvements, £4,679; sewerage, £309; mortuary, £170; steam fire-engine, £350.

Leeds and Yorkshire Architectural Society.—The officers nominated in connection with the coming session of the Leeds and Yorkshire Architectural Society are: President, Mr. W. Carby Hall; vice-presidents, Mr. W. H. Beevers and Mr. C. B. Howdill; hon. treasurer, Mr. W. H. Thorp; hon. librarian, Mr. W. H. Beevers; hon. secretary, Mr. F. W. Bedford; council, Messrs. G. Atkinson, W. S. Braithwaite, T. B. Wilson, G. F. Bowman, A. R. Hill (Bradford), and R. Ward; auditors, Messrs. F. Musto and H. Ambler. These names will come up for confirmation at the next general meeting on March 19th.

Engineering Notes.

Electric Light and Trams for Devonport.—Devonport Electric Lighting Committee has approved plans, estimates, and specifications for the erection and equipment of the power station at Newport Quay, and for mains and works in Devonport and Stonehouse. It also recommends the Borough Council to apply to the Local Government Board for sanction to borrow £74,536 to carry out the work.

Closing Breaches in Embankments.—At a meeting of the Society of Engineers on March 5th a paper was read on "The Closing of Breaches in Sea and River Embankments" by Mr. Richard F. Grantham, M.I.C.E., F.G.S., in the course of which he suggested that in the case of land having only an agricultural value, where the area was not too large, the inset wall was the cheapest, and was attended with the least risk.

London County Council Tramways.—The Highways Committee of the London County Council report that, in regard to the tramways owned and worked by the Council south of the Thames, the estimated surplus of receipts over expenditure for the year 1900-1901 is £40,000, and this with sums derived from other sources, including a saving in the estimated cost of repairs during the past year, will leave a total sum of £53,000 available for the relief of rates or for such other purposes as the Council may decide.

New Works for the Metropolitan Electric Supply Corporation have been erected about a mile from Willesden Junction, N.W. The site is about eight acres and a half in extent. When finished, the works will cover over two and a half acres, and will consist of two parallel boiler houses, each 384ft. long by 88ft. wide, with a two-bay engine house between, measuring 384ft. by 112ft., and four huge chimney shafts. This engine house will contain eighteen alternators, capable of lighting about 810,000 eight candle-power lamps. The boiler house as it now stands measures 164ft. by 88ft.

The late Professor David Edward Hughes, a past president of the Institute of Civil Engineers, bequeathed in his will between £300,000 and £400,000 to the Middlesex, London, King's College and Charing Cross Hospitals. Among other public bequests are: £2,000 to the Institute of Electrical Engineers for a "David Hughes Scholarship Fund"; £2,000 to the Société Internationale des Electriciens in Paris for a similar fund; £4,000 to the Royal Society, to apply the income for original discoveries in physical science; £4,000 for like purposes to the Academie des Sciences de l'Institut, Paris; and £1,000 to the Royal Institution of Great Britain, Albemarle Street.

The Suez Canal Works.—At the meeting of the Institution of Civil Engineers on March 6th "A Short History of the Engineering Works of the Suez Canal" was given by Sir Charles A. Hartley, K.C.M.G., M.Inst.C.E. After referring to Sir William Denison's paper of 1867, and giving a general account of the inception and progress of the canal works down to the time of the opening in November, 1869, the author proceeded to describe the new development which had been rendered necessary by the great increase of traffic since 1872. After a great deal of investigation the International Consultative Commission met in Paris in 1885 and accepted the recommendations of the Consultative Commission, which were to the general effect that the canal should be enlarged to 246ft. in straight reaches, and to 262ft. (at the apex) in curves. It was recommended that the canal should ultimately be deepened to 9 metres (29ft. 6in.), but that at first only 8½ metres should be provided. The enlargement works were at once put in hand on this basis, the first stage (to 121ft. 4in. bottom-width, and 8ft. 6in. depth) being completed in December, 1898, twelve years from the commencement of the work.

New Infirmary, Bethnal Green.

THE new infirmary which has been erected in Cambridge Road, E., for the Bethnal Green Guardians (opened last week) has been designed by Messrs. Giles, Gough and Trollope, architects, of 28, Craven Street, W.C., for the accommodation of 750 patients, together with the whole of the staff necessary for the working of the institution. The site has a length of 740ft., with a frontage to Cambridge Road of 330ft. and of 280ft. to Russia Lane, with an area of about $4\frac{1}{2}$ acres. The Cambridge Road frontage is partly occupied by an entrance block, containing, on the ground floor, a commodious committee room, with clerk's office adjoining, waiting room, porter's office, and retiring rooms. On the first floor are suites of apartments for the steward and engineer. The infirmary is planned with a central administrative block, situated midway between the Cambridge Road and Russia Lane boundaries of the site, containing the medical officer's, matron's, nurses', and female servants' quarters, and the main kitchen and stores departments. This block is of four storeys with basement, the latter containing spacious storage for coal, firewood and heavy goods, and having cart access by means of an inclined roadway leading from the main approach road. Lifts to the ground floor are provided for goods and coal. The ground floor contains an entrance hall, medical officer's residence and office, dispensary and assistant medical officer's common room, chaplain's office, matron's sitting room, nurses' messroom and recreation room. Separating the front portion of the block from the back is the main corridor running east and west to the wards, enlarged at its centre to form a serving hall. Opening from the serving hall is the main kitchen, around which are the scullery, vegetable scullery, larder, dairy, pantry, &c. Supplies are brought up to this department by a lift from the stores below and all refuse passes down glazed shoots into portable receivers in the low level yard at the back, and is thence carted away. To the east of the main kitchen, &c., is the stores department; on the west is a department under the direct control of the matron, comprising servants' hall, with scullery attached, matron's office, matron's store, and large sewing room. To the rear of and detached from the matron's department is the steam laundry, a two-storey building. The mortuary is on the same floor as the laundry, and in the basement storey under the latter is the electric light and heating plant. The medical officer's residence has been provided at the north-east angle of the administrative block and incorporated with the main building. A wide staircase leads up from a corridor near the nurses' mess and recreation rooms on the ground floor to the three floors of nurses' bedrooms above. The nurses number eighty, each having a separate bedroom. All w.c.'s have cross-ventilated lobbies. In order to provide for the better circulation of air around the large block of buildings, the continuity of the building has been interrupted at suitable points and the necessary communication obtained by bridges across the spaces thus formed. The wards are contained in separate blocks or pavilions, three on each side of the administrative block, and connected with it and with each other by a corridor on the ground floor only. This corridor is an extension to the east and west of the main corridor, and is 10ft. wide throughout. It has a flat roof which forms a promenade for convalescent patients in fine weather. The receiving rooms for patients (a separate suite being provided for each sex) have direct access to this main corridor. Each consists of a one-storey building. The wards are all of three storeys and extend northwards and southwards of the main corridor. The axis of all the wards is thus north and south, this being the best possible disposition for the reception of sunlight on both sides. They are all arranged on one principle, the majority of them being intended for twenty-eight patients. Each pavilion contains a spacious staircase, a direct-acting hydraulic bed lift, and a food and coal

lift for the service of the upper wards. Each ward is approached from the main corridor or staircase by a short corridor, opening from which are a small ward for two special cases, with separate w.c. accommodation, a ward kitchen or nurses' duty room, a small storeroom for patients' clothes, and another small storeroom for ward linen and requisites. The large wards are 24ft. wide, arranged for the beds in pairs on each side between the windows. Central stoves are used for warming, in addition to which low-pressure hot-water radiators are provided at the sides. All the wards have foul air extraction shafts, and the windows are fitted at the top with ventilating hoppers of special design, and have sliding sashes with wide guard heads at the bottom for allowing ventilation at the meeting rails without draught. Tobin ventilation shafts are also provided. Two sanitary annexes or towers are provided at the ends of each ward, approached through cross-ventilated lobbies, and between them is a balcony for the use of convalescent patients. Iron fire escape staircases are provided at the ends of wards furthest from the main staircase. Isolation wards are provided in three three-storey pavilions. These are aerially isolated from the main buildings, the only connection being by a covered way or bridge open to the air on each side. The wards are for ten beds each and are similar to the general wards, except that a larger proportion of space is provided per bed. The buildings are erected of stock bricks with best quality facings, relieved by strings of moulded white Suffolk bricks. The heads and sills of windows, plinths, &c., are of Portland stone. Internally the walls of corridors, kitchens, sanitary annexes, &c., are faced with tinted glazed bricks to dado height. The wards have Keen's cement dados, all angles being rounded. The main corridors and other parts have marble mosaic paving, and granolithic paving is used in the administrative block. The floors of the wards generally are of pitch pine, polished. Mr. Thomas Rowbotham, of Birmingham, was the general contractor. The electric lighting has been carried out by Messrs. Calvert and Co., of Manchester. The total cost of the building was £200,000.

PORTLAND CEMENT:*

Its Origin, Manufacture, and Testing.

By W. G. DAY.

THE somewhat misleading name of "Portland Cement" was given to the artificial compound of lime and clay prepared by Mr. Joseph Aspdin, a Leeds bricklayer, in October, 1824, which was exhibited at the Industrial Exhibition of 1851. He chose this name in consequence of its fancied resemblance in point of colour and texture to the oolitic limestone of the island of Portland, well known and in great favour in this country as a building stone. In the year 1825 Mr. Aspdin erected a works at Wakefield, and for him may be claimed the honour of having manufactured and supplied the Portland cement used in the Thames Tunnel about 1828. Although at that time it cost 20s. to 22s. per cask, besides the cost of carriage from Wakefield to London, Sir I. Brunel decided (notwithstanding his ability to procure Roman cement at 12s. per cask delivered on the spot) to use Portland chiefly for his purpose, as its merits required no other recommendation than an impartial trial. There is no doubt that the Thames Tunnel was the first engineering work of importance in which Portland cement was used, as in its earlier days it was mainly a stucco cement, and it was not until very much later that it acquired the confidence of the engineering profession. One of the founders of the Portland cement we use to-day was the late Mr. I. C. Johnson, who, having improved on the quality of the cement manufactured by

Aspdin, established the first factory on the Medway at Frindsbury, near Rochester. Before the success of Aspdin's material was thoroughly assured, Johnson launched out by renting several acres of land near Gravesend, and commenced building Portland Hall in such an elaborate and artistic manner as to require some £40,000 to bring it to completion. When the structure was rather more than one-third completed he had to stop, and sold off at so great a sacrifice that he left the country and died abroad. The banks of the river Medway above Rochester Bridge possess special advantages for the erection of cement works, as a very short distance inland an abundant supply of chalk can be obtained at a nominal cost, in addition to which the clay used in the manufacture is obtained from marsh land on each side of the river. The cost of the original ingredients being minimised in this way is the principal reason why Portland cement can be sold at such a comparatively low figure. While to many of you its price may appear very high, I think, as we proceed with the process of manufacture, you will be convinced of the truth of my claim as to the small cost of an article which is daily proving its superiority over many of its substitutes, not only from an economical point of view but also in its durability, and from the fact that to-day the manufacture of Portland cement has reached that stage of perfection when manufacturers can justly claim to be able to produce it to meet the requirements of many classes of work never before contemplated. As many of you no doubt are aware, some of the firms now supplying cement for building purposes in London and the provinces also supply cement for all classes of work in Egypt, South America and South Africa, where the climate puts a far greater strain upon its durability than in our own country. Before proceeding with the process of manufacture, a few figures relating to the raw materials and the extent of the variations in their proportions may be of interest.

White chalk contains from 90 to 100 per cent. of calcium carbonate, while the percentage in grey chalk may be as low as 60, the other constituents being silica, alumina, and iron oxide in varying proportions. The moisture varies from 40 to 50 per cent. Dried clay contains the following:—

	Per Cent.
Organic matter and combined moisture	1 to 10
Silica	50 to 65
Alumina	15 to 23
Iron oxide	5 to 9
Calcium carbonate	0 to 5
Magnesium carbonate	0 to 5
Alkalies	0 to 2

Medway Clay.

A good Medway clay contains at least twice as much silica as alumina and iron oxide combined. A typical analysis is as follows:—

Organic matter and combined moisture	4.77
Silica	59.96
Alumina	16.82
Iron oxide	6.20
Calcium carbonate	5.75
Magnesium carbonate	4.89
Alkalies, &c.	1.61

100.00

PORTLAND CEMENT MANUFACTURE.

Portland cement manufactured on the Thames and the Medway is composed solely of chalk and clay. The clay is brought to the works in barges, deposited in heaps on the wharf, and thence in wheelbarrows to the washmills. The chalk being, as a rule, close to the works, it is filled into trucks at the quarry, and is also conveyed to the washmills. These are circular brick-lined pits, in each of which revolves a spider, the arms of which carry what are very similar in construction to harrows, and as these revolve they strike against the lumps of chalk and break them up. The chalk and clay in given quantities are deposited in the washmills simultaneously, a standard weight of chalk being used, and the proportions of clay are

*A paper read before the College of Masons on February 13th, 1900.

determined by the results of tests made from the mixture. The proportions are, roughly, two thirds of chalk and one of clay. A constant supply of water is maintained, which assists in the intimate mixing of these two substances, and the thick creamy liquid resulting is termed slurry. In one side of the washmill is a grating of iron bars with about $\frac{1}{4}$ in. spaces through which the slurry passes into a catchpit. From this it is elevated by means of an endless chain of buckets into a hopper erected in the grinding mill; small particles of chalk not disintegrated in the washmill require grinding to ensure a perfect mixture, and to avoid what is known as "free lime." The stones used for grinding purposes are formed of "French Burr" and are placed horizontally, the lower one remaining stationary while the upper one revolves at a speed of 120 revolutions per minute. These are fed from the hopper into which the slurry has been elevated. After being ground, the slurry passes into mixers (which consist of circular pits like the washmills, with bars of angle iron attached to a horizontal arm, revolving like the spider in the washmills), and while so doing samples are taken for testing purposes in the following manner:—About one pint of slurry is taken at given intervals, and a portion of it thoroughly dried and reduced to powder in a mortar; then, after cooling, the test for percentage of calcium carbonate is proceeded with. This is determined by means of an apparatus technically termed a calcimeter. If the slurry is found to contain a greater percentage of calcium carbonate than is required, clay in proportion to the excess of chalk is put into the washmills to counteract. If, on the contrary, the percentage is too low, the quantity of clay is reduced proportionately, and a further test for calcium carbonate is made to ensure that the alteration in the proportion of clay has had the desired effect. The balance of the pint of slurry taken is now placed in a sieve (having 5,776 meshes to the square inch) which is held under a water-tap until all that can have passed through, the object of this test being to ascertain if the chalk has been efficiently ground.

Another test, of greater importance to-day than ever in the past, is that made for the percentage of water in the slurry, which varies between 40 and 45 per cent. Owing to the dearth of coke during the summer months, many firms are compelled to close a portion of their works at this season. Taking advantage of this, the gas companies have now increased their prices to such an extent that cement manufacturers are threatened with greater difficulties than ever in manufacturing cement at a cost which will enable them to sell at a profit; and I have no hesitation in saying that, as a result, the imports from Germany and Belgium will be largely increased, as English manufacturers cannot possibly continue to sell at present prices.

The slurry in the mixers is now ready for drying, and is pumped into the chamber or drying floor to a depth of 9 in. or 1 ft. previous to burning. Both these processes of drying and burning are conducted at one operation in one kiln, the method adopted varying slightly with the different type of kiln. Speaking generally, the kilns consist of two parts, the kiln proper and the chamber or drying floor. The kilns have a perforated brick bottom, and in starting to load them about twenty faggots (according to the size of the kilns) are placed on the bottoms; upon these, coke of a large size is placed to ensure a good heat in commencing the burning process, the remainder of the kiln being filled with alternate layers of dried slurry and coke. The success of the burning process depends to a very great extent on the skill of the man who regulates the proportions of coke and dried slurry in the various layers of the kiln. The filling of the kiln being completed, the chamber or drying floor is now filled with the liquid slurry. The kiln is lighted from the bottom, the fire gradually working its way through the contents. At the same time the hot gases from the combustion passing over the liquid slurry in the chamber dry it in readiness for the next filling of the kiln. Here is seen the importance

of keeping the percentage of water in the slurry as low as possible, as, if an excess is used, additional fuel has to be put into the kiln to render the slurry dry enough for the next filling. The average time occupied in the burning process is five days, and at the end of this period the ashes are cleared from the bottom and the contents of the kiln loaded into trucks and taken to the mills. The well-burned clinker is black in colour, with a greenish tint, but there is always present in the kiln a small proportion of underburned clinker, which varies in colour, and may be white, yellow, or pink. As the presence of this underburned material is detrimental to the quality of the cement, it is the aim of the burner to load his kiln in such a way that a minimum of it is produced, and great precautions have to be taken that none of it passes to the mills with the well-burned clinker.

The output of each kiln varies from twenty to thirty tons. For a works producing 1,000 tons per week, about forty kilns would be required, as a considerable allowance has to be made for kilns under repair. The clinker is first broken in crushers of the usual stone-crusher type and then passes to the mills to be ground to the required fineness. These mills are of three principal types, of which there are almost innumerable modifications. The first and oldest type is the bed stone and runner, similar to those used in flour milling. These, although giving a splendid product, are too expensive to be largely used owing to the enormous power required to drive them. The next is the edge-runner type, which is very extensively used at the present time under the designation of Collis-Freeman Mills, Dutrulle and Solomon Mills, Neate's Dynamic Grinder, Taylor and Duffield Mills, and others. Although these mills do their work at comparatively small cost, the product contains a much smaller proportion of that "flour" which goes to produce a well-finished cement. The third and most recent type is that known as the ball mill, which consists of a revolving steel cylinder containing heavy steel balls. The crushed clinker is fed in at one end and, passing along the cylinder, is ground by the action of these balls. As a rule, in connection with all these types of mills, there is a system of sieves or separators into which the ground cement passes in order to eliminate any particles of clinker which exceed the required fineness. From the mills the finished cement is conveyed by means of Archimedean screws to the various stores or warehouses.

Testing.

The tests which are usually made in accordance with the requirements of the more important specifications are the following:—(1) Weight per bushel or cubic foot; (2) specific gravity; (3) fineness of grinding; (4) setting time; (5) tensile strain; (6) soundness; and (7) chemical analysis.

(1) *Weight per Bushel or Cubic Foot.*—The origin of this test belongs to an early period when cement was sold by the bushel, and naturally the purchaser preferred a cement which gave a heavy weight per bushel. The real value of the test is in determining whether the cement has been thoroughly burned, as the presence of even a small proportion of underburned clinker causes a considerable decrease in the weight. It should be remembered, however, that the fineness of the cement has a great influence on the weight per bushel. It has been found by experiment that a cement ground to a fineness of 5 per cent. on a sieve of 2,500 meshes to the square inch gives an average weight of 116 lbs. per bushel, while the same cement ground to such a fineness as to leave no residue on a 50 mesh sieve has an average weight of 111 lbs.; hence, in specifying that a cement should have a given weight per bushel, the fineness should always be taken into account. In many recent instances the weight per cubic foot has taken the place of the weight per bushel; this varies from 85 lbs. to 90 lbs. A fairer criterion of the thoroughness of the burning is undoubtedly obtained by the specific gravity test.

(2) *Specific Gravity.*—The specific gravity of a well-burned cement, when freshly ground,

varies between 3.12 and 3.16, but a cement that has been aerated to any extent may be taken as satisfactory if the specific gravity exceeds 3.05.

(3) *Fineness.*—A great revolution has taken place in recent years with reference to the requirements for fineness; only a short time ago a cement leaving a residue of 15 to 20 per cent. on a 50 by 50 mesh sieve was considered fine, whereas now the extreme limit is 10 per cent. on a 50 by 50 sieve, and occasionally cement is required to be ground so fine as to leave no residue on a 100 by 100 mesh sieve (10,000 meshes to the square inch). In dealing with the question of fineness, there can of course be no doubt that a finely ground cement goes farther when used for concrete, and develops its maximum strength at an early date, but the ultimate strength attained by a fine cement does not exceed that attained by the same cement coarsely ground. Taking into consideration the increased cost of fine grinding, a cement which has a residue not exceeding 5 per cent. on a 50 by 50 mesh sieve seems to be the most suitable for general purposes.

(4) *Setting Time.*—It is of great importance that those using cement should know its setting time, as concrete or grout which is disturbed after the setting has commenced loses much of its strength. The setting time is usually determined by gauging the cement with a minimum quantity of water and noting the time which elapses when it is impossible to make any impression with a Vicat needle on the surface of the cement.

(5) *Tensile Strain.*—The tensile strain of Portland cement is usually looked upon as its most important characteristic and is an almost universal test. The usual method of procedure is to fill the cement, gauged with a minimum quantity of water (about 20 per cent.), into moulds of 1 in. by 1 in. section. After remaining in these moulds for twenty-four hours the briquettes are placed in water for three, seven, fourteen, twenty-eight days, or even longer periods. They are then tested in machines of varying types, with which no doubt you are quite familiar. The period usually specified at which the tensile strain is to be determined is seven days, the average strain, and one which I consider quite reasonable, being 400 lbs. Many specifications require that briquettes made of 1 part cement mixed with 3 parts of standard sand shall produce certain strains at seven and twenty-eight days, the most usual being 100 lbs. at seven days and 200 lbs. at twenty-eight days. Although the sand tests are regarded as of little importance in comparison with the neat, yet it should be borne in mind that cement is almost universally used with sand, and consequently the neat tests may be misleading, and in this particular the German engineers are teaching us a lesson, the criterion in that country as to the value of a cement being obtained almost exclusively from the sand tests.

(6) *Soundness.*—A simple test for soundness is to gauge a small quantity of cement and place it on a piece of plate glass or slate in the form of a thin cake or slab. This is immersed in water after it is set, and if at the end of seven days no cracks are visible on the surface or the cake has not buckled, the cement is regarded as perfectly sound. Some specifications require the cake to be immersed in water immediately after gauging; but experiments have proved that this test is not a fair one for soundness, the freedom from cracking depending to a very large extent on the setting time and the temperature of the water in which the cake is immersed. Other specifications require that the cake should be immersed in hot water for a period of twenty-four hours without showing any signs of disintegration.

(7) *Chemical Analysis.*—Chemical analysis is a test which is somewhat unnecessary if the cement has satisfied all the above-mentioned requirements, and it is only for the more important contracts and in cases where the cement has proved unsatisfactory that it is usually applied. It is somewhat difficult to draw any hard and fast line limiting the proportions of the various constituents. The following may be useful as showing the varia-

tions in the parts per cent. of the various constituents usually present in Portland cement:—

	Per Cent.
Insoluble matter	0.5 to 1.5
Silica	20 to 23
Alumina	7.5 to 11
Iron oxide	2 to 4
Lime	59 to 64
Magnesia	1 to 1.5
Sulphuric anhydride	0.5 to 2
Alkalies	1

A typical analysis of cement is as follows:—

	Per Cent.
Insoluble matter	1.12
Silica	22.14
Alumina	8.38
Iron oxide	3.30
Lime	62.26
Magnesia	1.24
Sulphuric anhydride	1.39
Alkalies, &c.	0.17
	100.00

Under Discussion.

Damascus.

A lecture on "Damascus, the Immortal," was delivered by the Rev. E. H. Smith before the Hull Literary and Philosophical Society on March 6th. It was, he said, the oldest city in the world, and was undoubtedly the only city that had maintained unimpaired continuity from the days when it was first founded. Abraham lived four thousand years ago, and they read that Abraham's servant was a native of Damascus, and that Abraham himself passed through the city on his way to the land of Canaan; and it was very probable that the Patriarch saw the very same street scenes and customs which were to be witnessed at the present day. The word Damascus meant "renowned for activity." With the aid of a number of photographs taken by the lecturer and thrown on a large screen, the audience were able to follow the speaker on a tour round the city. He exhibited the mosque built by Arcadius, son of Theodosius, fifteen hundred years ago, of which unfortunately was burnt and totally destroyed on the 14th of October, 1893. A bird's eye view of Damascus was given, which showed the street called "Straight" mentioned in the Acts of the Apostles. All that remained of it at the present time was one of the side footpaths, the main roadway and the opposite footpath having disappeared.

The Comacine Builders.

Mr. Thomas Drew, R.H.A., vice-president, read a paper on "The Comacine Masters in Ireland" before the Architectural Association of Ireland, on March 6th at Dublin. Mr. Drew said that very many pedantic theories were being dissolved by modern travel and the improvement of photography. People believed in these days of tourists' guide books and excursions that those who lived in the early ages did not travel, but the contrary was the case. Though progress was slow, it was none the less continual. Soldiers of fortune, crusaders, clerics, and, as they now knew, builders passed from land to land; and the language of medieval Europe was more of an approach to universality than the language of our own more educated day. He referred to the influence which the migratory associated bands of master builders exercised on architecture in explanation of the Comacine symbolism. Dealing with early church architecture in Ireland, he expressed the opinion that it had its origin in the teaching of the Comacine Masters. A noble architecture had its birth, its rude, and masculine beginning around Como first; and then developed the strange, symbolic and mystic sculpture of the Comacines that might be traced in all lands—in Sicily, southern and western France, and to England and remoter Ireland. He referred to the incased stone now in the restored chapel of St. Laurence O'Toole, Christ Church, Dublin, relating to "John, the Master

Builder (Lombard), son of Raymond of Parma, and Dame Rame Perez of Saint Salvador of Asturias," and he belived this record of a Comacine Master Architect Freemason in Ireland in the twelfth century was unique in England, Ireland, and Scotland. He pointed out that "John, Master Builder, from Asturias," had built additions to Christ Church, as it had been originally built by Sitric, the Danish King.

Welby Pugin.

Mr. Peter Paul Pugin read a paper on "The Work of the late Welby Pugin" before the architectural section of the Glasgow Philosophical Society on March 5th. He said that who was the art architect of the Houses of Parliament had always been a bone of contention between the families of the Pugins and the Barrys. A great controversy on the subject took place in 1863, and he, as the son of Augustus Welby Pugin, had no hesitation in saying that he considered his father was the art architect of the Houses of Parliament. One had only to look at the building to see the great impress of his genius everywhere. Amongst 84 sets of drawings that were sent in for the competition of the Houses of Parliament, Pugin made designs both for Sir Charles Barry and Gillespie Graham. Barry was a classic architect, and made a classic plan, and from it Pugin raised the Gothic elevations. With Gillespie Graham's drawings he had a far freer hand. Gillespie Graham had given a plan in the genuine spirit of Gothic architecture, defying symmetry and order, but presenting combinations of convenience and picturesque grouping in perfect keeping with the character of the style and most delightful to contemplate. Pugin never at any period of his life sought to associate himself with any institution or chartered body having for its object the promotion of arts, yet he never withdrew himself from his professional brethren, and was always ready to give assistance or advice when asked. Pugin built more than sixty-five churches in the United Kingdom and many in the Colonies, besides convents, monasteries, mansions, and schools, and made endless designs for works which were executed, the authorship of which he never claimed. He had not yet arrived at the meridian of his power when he was taken down to the silent grave. Pugin's tomb was in no place of public honour. No reward fell to his lot, living or dead.

Scotch Ecclesiastical Architecture.

On page 79 of last week's issue we gave a report of Mr. Thomas Ross's first lecture on "Ecclesiastical Architecture in Scotland from the Twelfth to the Sixteenth Century," delivered at Edinburgh. In his second lecture he completed the list of places in Scotland with parish churches that still retained remnants of Norman architecture, but added that it was only by including the Norman remains to be found in the great abbey and cathedral churches, and the references in abbey rolls and charters to churches no longer existing, that one obtained a true idea of the great building activity of the twelfth century. After examining the plan of the various cathedral and abbey churches, Mr. Ross commented, in his concluding remarks, on the preference displayed in Scotland for the square rather than the apsidal form and east end throughout the twelfth century. At the commencement of the third lecture he said they had now arrived at a period when the architects of the Middle Ages had mastered the principles of stone vaulting in an entirely new and logical manner, so much so that were every Gothic building to be swept away with all the representations of them the style could probably be invented again. For that, however, it would be necessary to recall the old state of society. Although Scotland could not pretend to have done much to bring about the creation of the style, buildings of great beauty and interest were erected in great numbers, of which only a mere handful remained, and not one of them anything like a complete building. Of all the cathedrals, Glasgow, it was often said, was the only one left entire.

But was it entire or anything like entire? Where were its western towers, one of them a fine castellated keep? Where was the Bishop's Palace, which was as large a structure as the cathedral itself? Where were all the carved woodwork, monuments, illuminated books, metal work, jewels and vestments, paintings and sculptures? Yet this was the most complete and best example we had—an empty shell. Mr. Ross afterwards passed in review the cathedral churches of St. Andrews, Elgin, and other great Gothic structures. In his fourth lecture he continued his description of the great Gothic structures, dealing with the abbeys of Lindores, Inchcolm (in many respects the best preserved abbey in Scotland), Culross, and Cambuskenneth. Continuing, the lecturer referred to the check which progress in Scotland received consequent on the death of Alexander the Third in 1286. Although but few ecclesiastical buildings were erected during this period, there was considerable employment for masons in the building of castles and in the enlarging and strengthening of those already existing; and especially towards the close of the fourteenth century, and after, the number of castles on hand was very great. The erection of these stubborn castles had a most important effect on the later Gothic architecture of Scotland. When churches again began to be built in Scotland in considerable numbers this long apprenticeship to castle-building had so completely changed their ideas of architecture that we constantly saw reminiscences of the castles appearing in the churches. And as time went on this tendency increased more and more. It was somewhat curious that there should then have been built the church which illustrates the principles of Gothic construction better, perhaps, than any other building in Scotland. We had hardly any building which contained such fine work as Melrose, and in such fine profusion. There must have been a race of artificers here such as had not been seen since in Scotland. And they had been fortunate in having found a stone to work with, which, both in appearance and in enduring quality, left nothing to be desired. They had been most unfortunate that not one-half of their work remained, and the country had lost in reputation from the ruin of a building which was evidently a masterpiece of architecture.

Masters and Men.

The Airdrie and Coathridge Joiners are out on Strike against a reduction in wages of a ½d. per hour.

Plasterers Dispute.—About 300 plasterers came out on strike last week in London in opposition to a rule providing that an independent arbitrator might award damages against either masters or men in case of a breach of the rules.

Perth Station Painters' Dispute.—Some time ago a dispute arose among the men employed in repainting Perth Station regarding their wages. The Glasgow men it seems are paid at the rate of 10d. per hour, according to the rules of their Association. The Perth men, on the other hand, only receive 9d. per hour, and among them an agitation arose with a view to their being placed on an equal footing with their Glasgow colleagues. The men employed within the city of Glasgow were paid at the rate of 8d. per hour, while the men sent to work outside required to be paid at the rate of 10d. per hour. The men are of the opinion that the masters are bound to abide by that agreement. Having failed to come to a settlement the men came out on strike last week, and, according to the rules of the Association, the Glasgow men also stopped work. About fifty Perth men are on strike.

A Memorial Window in St. Bartholomew's Church, Bristol, has been erected by Messrs. Joseph Bell and Son, of 12, College Green, Bristol.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Wherefore I perceive there is nothing better than that a man should rejoice in his own works, for that is his portion."—ECCLESIASTES.

Our Inset Plates.

IN the report of last Friday's meeting of the Architectural Association, particulars are given of Mr. Bateman's designs for small houses. The houses at Willenhall Park, Barnet, are a fair example of the class and character of the residences now in course of erection on this estate. Special care has been taken by the architect (Mr. G. D. Martin, 3, Pall Mall East, S.W.) in the design and planning of each individual house to take full advantage of the contour of the site and the position, shape, and size of the plot on which it is to be built. The materials for the large house are red brick facings for the ground floor walls, while the first floor is treated with half-timber work and tile hangings. The principal external features of the design are the angle bay window in the drawing-room and the large window over the entrance porch, which lights the main staircase and central hall. The former is decorated with a deep frieze of ornamental cast-lead work between the windows of the ground and first floor. The roof is covered with red tiles, and the external wood of sashes and frames, &c., is to be painted white, the casements being filled with plain leadlights. In the smaller house the external walls are rough cast. The scheme for the development of the site includes the erection of a spacious club house with tennis courts and bowling green for the use of residents.

Architects and Illicit Commissions.

THE honorary secretaries of the Birmingham Architectural Association have sent us the following copies of correspondence for which they desire publicity. The first letter is addressed to Mr. W. H. Bidlake, president of the association, by Mr. George Kenwick (Birmingham), who says: "It is notorious that Fellows of the Royal Institute and other practising architects do accept illicit commissions, if it is possible to find the meaning of these terms. I give the following examples: (a) Only a few weeks ago the representative of a well-known firm of terra-cotta manufacturers offered a client of mine the usual (!) commission for or on the terra-cotta included in the bill of quantities, and amounting to nearly £2,000. The architect refused; the manufacturers' representative was surprised. As this is an instance outside Birmingham it cannot be used as a reflection on this Association. (b) It is well known that provisional amounts are paid by builders to architects who hand over their cheques or cash to the manufacturers. This is done largely in this city. Lastly, I think it would be well if this Association would define the meaning of 'illicit commission,' and state whether it is competent for an architect to receive any other amount than his architectural charges."

The Association's Reply.

IN their reply, the honorary secretaries said: "Your letter of December 5th, addressed to the President of the Birmingham Architectural Association, has been considered by the Council, and we are desired to say (1) that the reference to commission in the circular to which you allude was marked 'private,' and therefore could not be open as you state; that as a member of this Association you must be aware that the receipt of commissions other than those legitimately due from clients is systematically discountenanced not only by this Association, but also by the R.I.B.A. All members of this Association and Fellows and Associates of the Institute have on their election to sign a declaration containing the following words: 'I promise and agree that I will not accept any trade or other discounts, or illicit or surreptitious commissions or allowances in connection with any works

the execution of which I may be engaged to superintend, or with any other professional business which may be entrusted to me.' With regard to that paragraph of your letter marked a, the statement of what a business firm's representative may have said is no proof against architects; but the Council assure you that if you or anyone else can give the precise particulars of any architect having received commission from builders or tradesmen supplying materials used in works carried out under his directions, enquiry will be made and action taken. As to paragraph marked b, the Council have absolutely no knowledge of what is well known and largely done in this city. You, as a quantity surveyor through whose hands a number of builders' accounts probably pass for settlement, will know that it is usual to adjust these provisional sums, and, should the amounts expended be less than the provisions, the balance is credited to the employer without either cheque or cash passing through the hands of the architect. In reply to the question in your last paragraph, the Council consider that illicit commission is clearly defined by the declaration previously referred to, which debars the architect accepting any commission or payment other than his legitimate fees, which are paid by or with the knowledge of his client. We are further desired to forward your letter and this reply for publication in the local and professional papers."

Spurgeon's Tabernacle.

IT is now nearly two years since the Metropolitan Tabernacle was almost entirely destroyed by fire. Soon the re-opening of the new building will take place. It will be remembered that the fire gutted the interior, but left the main walls standing, so that exteriorly the Tabernacle will not be much changed. The back wall has required most reconstruction. But a new wall has been built within the Tabernacle itself, about 13ft. from the original back wall, the space between being occupied by several rooms, including offices for various allied societies. Thus the interior of the building—that is, the main auditorium—will be about 13ft. shorter than it was before. Another alteration is the greater depth of the hall in the basement. The old lecture room and schools, which occupied the basement, were greatly burnt. The ground was dug out 1½ft. lower, so that, although the ceiling—that is, the floor of the Tabernacle above—is at the same level as before, the hall below is more lofty. When the Tabernacle is opened for public worship, this new hall will be divided into lecture hall and schoolrooms as before. The depth being greater, the windows have been carried 2ft. lower, and the reveals are covered with an opalescent substance which reflects brightly, so that the new hall is well lighted. The floor above is of concrete and steel girders, covered with wood blocks of pitch-pine; the gallery floors are also of steel girders and concrete, covered with wood; but, there being no air under the wood, it is rendered almost unflammable, and the floors are regarded as fireproof. No fewer than nine staircases have been built, all except one being constructed of stone and concrete; the exceptional one, which is for the vestries, being of iron. Nearly all the iron columns are new, but some of the old ones were preserved, among them being the smaller columns on which the pulpit of the late Mr. Spurgeon was supported. These will be employed for a similar purpose for the new pulpit. The total cost will be £44,576.

Conway Castle.

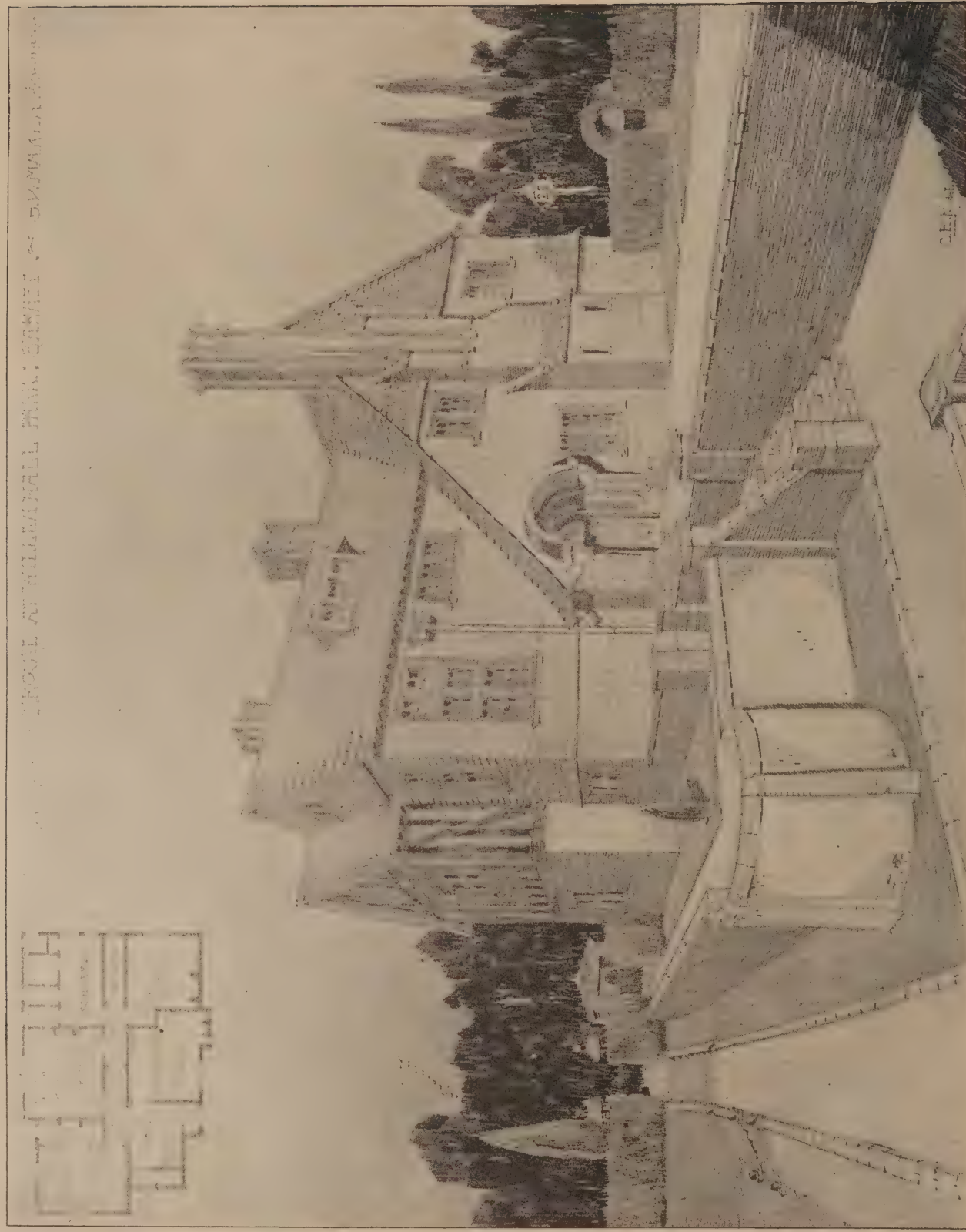
ANTIQUARIANS and architects will regret to learn that serious injury has been caused to the venerable and picturesque ruins of Conway Castle by the collapse of one of the two remaining archways in the Banqueting Hall. The recent tempestuous weather is said to have been the immediate cause of the accident; but it may easily appear, on examination, that the ivy growth and the constant vibration of the trains which pass quite close to the ruins, had done much to render it possible (what would Ruskin

have said?). The disappearance of any portion of this peculiarly interesting fortress would have been a calamity; but the Banqueting Hall was a particularly noble apartment, of such great size—it was 130ft. long and 30ft. high—that three fireplaces were needed to warm it, even in the days when the trunk of a small tree was the fitting fuel for a baronial hearth. It is to its bold and commanding position on the estuary of Conway river, even more than to its history, that the Castle owes its fame. Its grim, serrated outlines, seen against an evening sky, are remarkably impressive, and suggest a ponderous strength which has for long past been merely a delusion. Telford's graceful suspension bridge over the estuary was a distinct addition to a beautiful scene, but the tubular railway bridge, constructed by Stephenson, has hopelessly marred effects which were once the delight of every artist and every lover of fine scenery. It seems a great pity that the influences of modern civilization should destroy so quickly that which has withstood so well the ravages of centuries. With reference to the vibration of trains near the Castle, it is stated that one of the towers is in a dangerous condition, and that the railway company gave £50 for its repair some time ago, but that hitherto nothing has been done. A strenuous effort ought really to be made to preserve these interesting ruins.

Finnish Art.

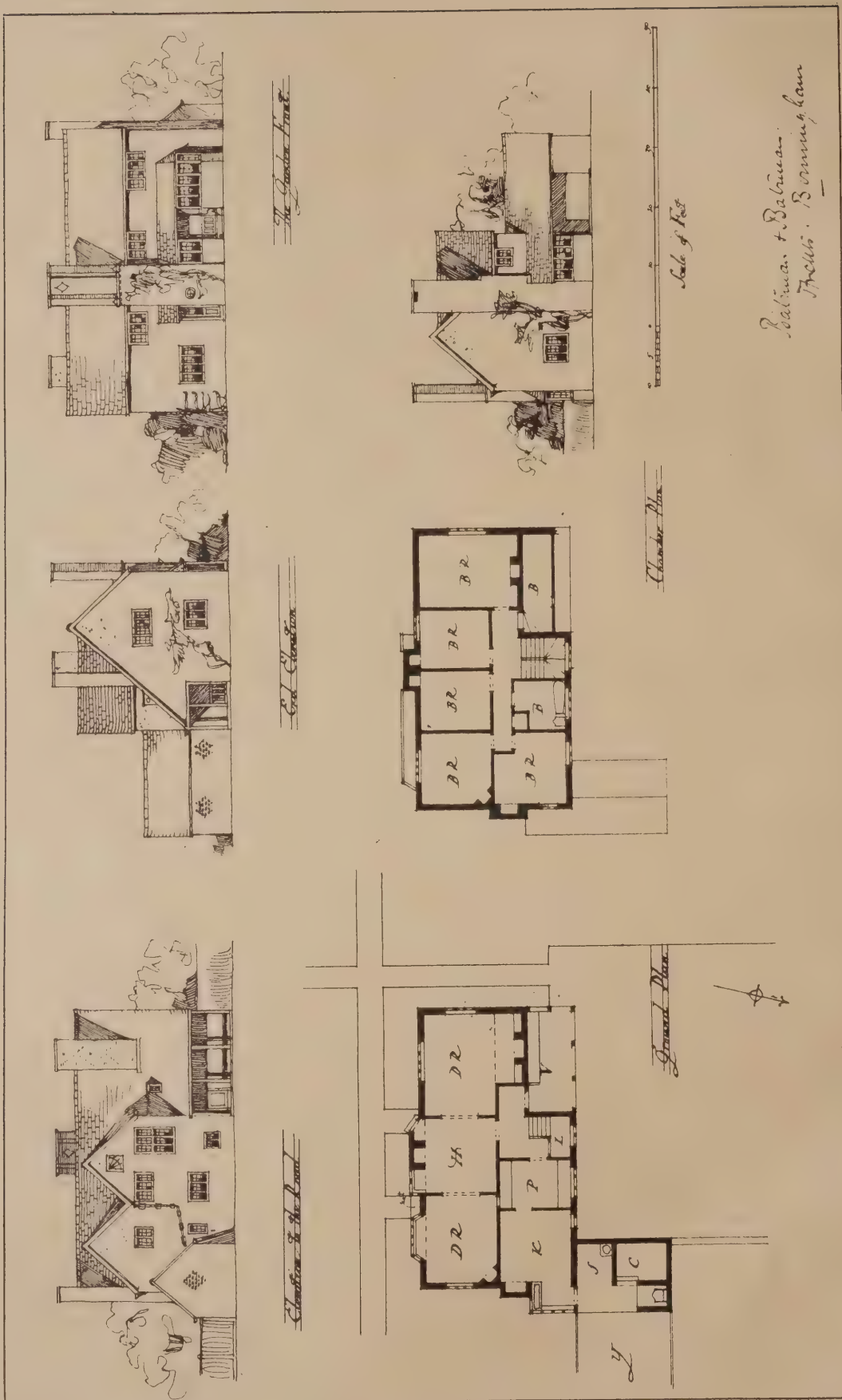
ACCORDING to Emerson, every genuine work of art has as much reason for being as the earth and the sun. In the last number of "Finland" (a monthly magazine) attention is called to the development of art in that country. The old Finnish churches, built of the stone which the glaciers bestowed so bountifully upon Finland, tell us that many hundreds of years ago the country produced architects, who, if not greatly daring in their conceptions of the beautiful, were at any rate thorough and substantial men; while the same religious enthusiasm that inspired Giotto to cause the walls of Florence to live with his frescoes, brought primitive yet wondrous altar pieces and pictures, with painted walls and ceilings, into these lonely temples of the north. The blighting hand of the Reformation was scarcely felt in this direction, and the decorative artists worked steadily down to the end of the eighteenth century. The first great name of a Finnish artist is that of Lauraus, a native of Abo, who, however, deserted his country for fields that offered a wider scope for his ambition. He died at Rome in 1823, and one cannot say that his work had any influence upon the progress of art in Finland. With Robert Wilhelm Ekman, born at Nystad in 1808, it was otherwise. He received his art training in Stockholm, and in 1845 founded in Abo a humble drawing school. In 1846 the Finnish Art Union was founded in Helsingfors. It soon opened a drawing school, and in 1851 took over Ekman's school at Abo. The nucleus of a permanent collection of pictures was formed, and support and encouragement were extended by the Society to all who seemed inclined to follow art as a profession. The Union recognised that "the teaching of art is the teaching of all things," and the State was soon wise enough to realise this truth also, for it began to vote yearly sums for the maintenance of the schools of the Union, and, in and after 1863, for travelling scholarships. Later on came pensions for deserving artists, yearly prize competitions, general exhibitions in Helsingfors, purchases of important pictures, &c. In 1885 the building of the Athenæum was commenced at the expense of the nation, and the completion of the work in 1887 provided a home for all the art societies and industrial art unions of Helsingfors. There are to-day art unions in Abo and Viborg; an Artists' Guild, founded in 1864; and many other artistic societies. Perhaps the first to paint pictures that actually, by reason of their intrinsic merit, raised the Finnish to the general level of European art, was Werner Holmberg, who was born in Helsingfors in 1830. He died in Dusseldorf in 1860, barely thirty years of age.

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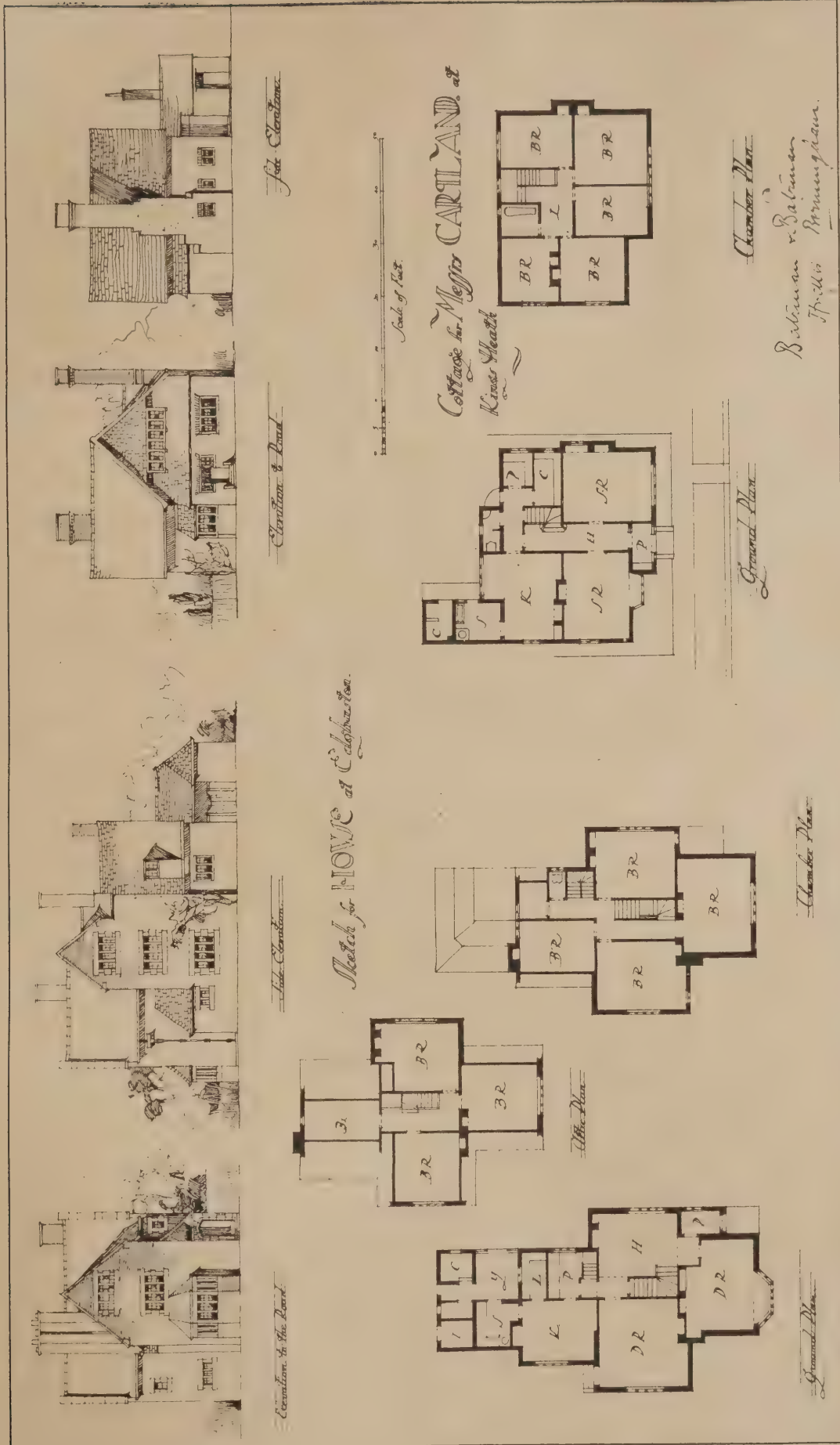
HOUSE AT WILLENHALL PARK, BARNET. G. D. MARTIN, ARCHITECT.

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DESIGN FOR A SMALL HOUSE. BATEMAN AND BATEMAN, ARCHITECTS.

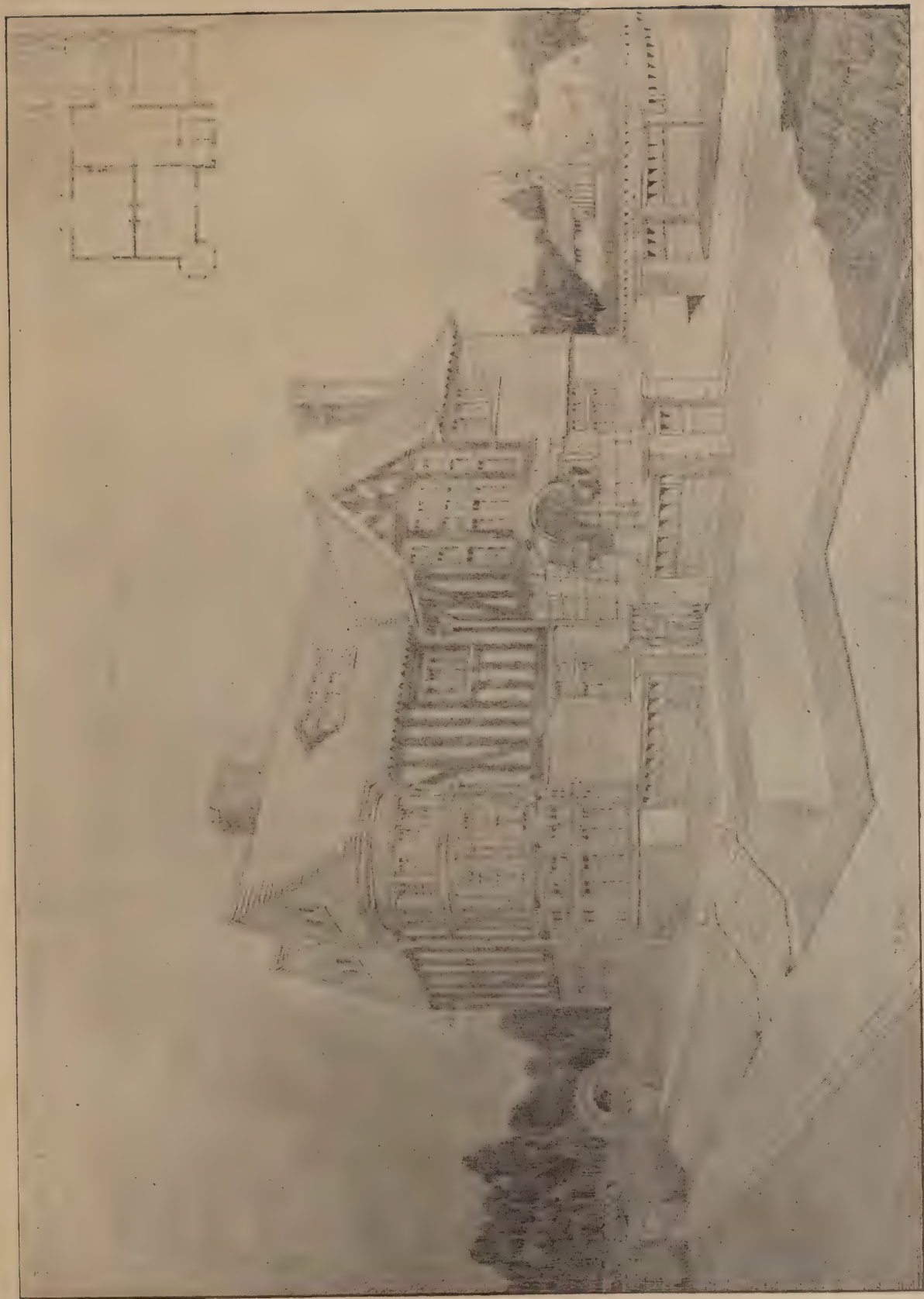
IN ILLUSTRATION OF MR. C. E. BATEMAN'S PAPER ON "SMALL HOUSES." (See p. 89.)



DESIGNS FOR SMALL HOUSES. BATEMAN AND BATEMAN, ARCHITECTS.

IN ILLUSTRATION OF MR. C. E. BATEMAN'S PAPER ON "SMALL HOUSES." (See p. 89.)

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HOUSE AT WILLENHALL PARK, BARNET. G. D. MARTIN, ARCHITECT.

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Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

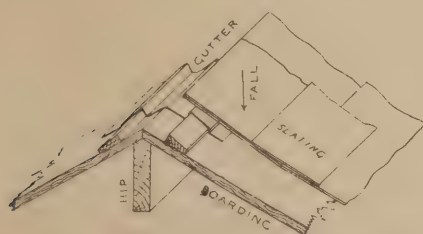
Obtaining Cross Section of River.

SHIPTON.—M. H. writes: "How can I obtain the cross section of a river when it is not possible to traverse it by a boat?"

In the absence of further particulars as to size of river, &c., we are unable to answer this question, which on the face appears absurd. If "M. H." will send further particulars we shall be happy to help him.

Hip Gutter.

CANTERBURY.—W. W. writes: "I should be glad if you would give a sketch section of a simple and effective form of hip gutter so



HIP GUTTER.

that the slating could be mitred at the hip instead of having a lead or other covering over. In this country this is seldom done, the usual form being lead turned out over the slating with a roll. What is the usual section of this secret kind of gutter, say with a 2in. hip?"

The accompanying sketch shows the method of forming a secret gutter for the hip of a slated roof.

HENRY ADAMS.

New By-Laws.

ELHAM, KENT.—HERBERT writes: "I should be glad to know if a rural district council, which has just sent some building by-laws up for the sanction of the Local Government Board, can compel me to conform with them before they get them returned and the seal affixed?"

No. The by-laws must be under the common seal of the Council (section 182 of the Public Health Act, 1875) and do not take effect unless and until they have been submitted to and confirmed by the Local Government Board (Section 184).

H. P. B.

Safe Load on Cantilever.

BELFAST.—JOIST writes: "What weight will a spruce joist 9in. x 1½in., projecting 2ft., and supported at one end and loaded at the other, carry?"

Breaking weight on a beam supported at both ends and loaded in the middle = $W = \frac{c b d^3}{L}$, where W = breaking weight in cwts.;

c = weight in cwts. required to fracture a bar 1in. square and 1ft. long = 3cwts.; b = breadth in inches; d = depth in inches; L = length in feet. A cantilever of same length and scantling, loaded at the end, is one-fourth as strong; therefore breaking weight on joist 9in. x 1½in., projecting 2ft. = $\frac{c b d^3}{4 L} = \frac{3 \times 1\frac{1}{2} \times 9 \times 9}{4 \times 2} = \frac{729}{16} = 45.5$ cwts. Taking factor of safety at 10, safe load = $\frac{45.5}{10} = 4\frac{1}{2}$ cwts.

HENRY ADAMS.

Projections beyond Building Line.

WALTON-ON-THAMES.—S. A. D. writes: "Smith lays out an estate for building purposes, and on a part of it he builds a house which he sells to Brown. The agreement contains the usual restrictions as to boundaries, sites, values of buildings, &c. Jones also buys two plots and proceeds to erect three shops on them, projecting one side several feet beyond the building line. (1) Is the vendor responsible in any way? (2) Is the act of Jones legal? (3) Is the U.D.C. or their surveyor free from responsibility in the matter?"

We assume that one of the restrictions contained in the agreement was that the purchaser of each lot was not to build beyond the building line. On that assumption the vendor will be responsible if he has by the agreement bound himself to enforce the conditions, but not otherwise. The act of Jones will not be legal, and can be restrained by an injunction at the suit of the vendor or of Brown. The U.D.C. or their surveyor incur no legal responsibility in the matter.

H. P. B.

Elizabethan, Jacobean and Queen Anne Architecture.

GRAVESEND.—VESWOR writes: "I should be glad to have a rather full list of the characteristic features of Elizabethan, Jacobean and Queen Anne architecture. I should also be very pleased to have the title of any book dealing with the above styles very fully."

A most exhaustive account of Elizabethan architecture is to be found in the R.I.B.A. prize essay for this year, which, though not yet published, can be consulted at the R.I.B.A. library. This query could only be properly answered by printing this essay in full, and by adding equally exhaustive treatises on the other two styles mentioned; but probably it will serve "Veswor's" purpose to point out to him that Jacobean work—i.e., the work done under the Stuart monarchs before the time of the great Civil War—was in deterioration of the already debased Elizabethan; while the Queen Anne would include all domestic work subsequent to the Restoration until the middle of the eighteenth century, most of which is solid, brick built, and rectangular, with heavy cornices and good pediments and doorways. The large folio works by Mr. J. A. Gutch and Messrs. Belcher and Macartney should be consulted.

G. A. T. M.

New Streets.

HEXHAM.—W. M. B. writes: "Under what circumstance can a Council legally demand land when building on an admittedly public road that is not of the required width? Is it a question of fact to be decided by different cases? For example, if four houses only were built, would that be different to a row of twenty or thirty buildings? The lane is only 16ft. wide and the Council has regularly kept it in repair, but they wish me to set back half the width of a new street, measuring from the centre of the existing roadway. There is no possibility of anything being built opposite. The lane continues the same width for some distance; could it be made into a new street, or could streets be set off at right angles to it, seeing that the owner of the land has no power to widen it for an entrance to the proposed new street to comply with by-law 8 of the Model Series, which are adopted here. With regard to the decision of Justice Wills on February 23rd, 1893, in the case of *Bromley Local Board v. M. Lloyd* (which, I understand, has been overruled), do you think a by-law providing for an entrance to both ends of the new street, the full width of the street, would be considered good and reasonable?"

We cannot undertake to answer abstract questions such as our correspondent puts. If he will state facts and found a query upon them, we shall endeavour to reply as clearly as possible. The only answer we can give to his first question is that in order to constitute a "new street" there must be a certain degree of continuity in the buildings, if this is the point he wishes to have cleared up. Whether there is, or is not, such continuity is a question

to be decided by the facts of each case. The second question we cannot understand; but see no reason why the lane in question should not be made into a new street. As to the third, we are not aware that the case referred to has been overruled, but must decline to answer a speculative question about a by-law which appears to have no existence.

H. P. B.

Power of Committee to Sanction Building.

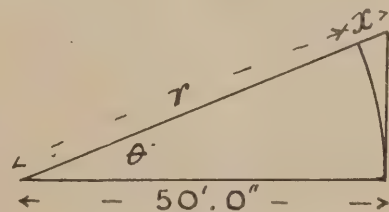
PADSTOW, CORNWALL.—INTERESTED writes: "In an urban council district a wooden building has been erected which is to be known as a sailors' rest. When the Council recently held its meeting a member enquired whether the usual notices had been given to the Council, and whether plans had been submitted as required by the by-laws. He was informed that no plans had been submitted, neither had the matter been brought before the Council in any way. The person who put up the building had seen the surveyor and some members of the Building Committee separately, and these gentlemen consented to the shelter being built. By-law 28 says: 'Every person who shall intend to erect any new building shall give a fortnight's notice to the Board of such intention by writing, delivered to the local surveyor or left at his office, and shall at the same time leave or cause to be left at the said office detail plans and sections of every floor of such intended building.' Had the Building Committee any power to give their sanction, not having been called together? Can a member or a minority take any steps to insist on the by-laws being complied with?"

The Building Committee had no power to give their sanction in the way they are described as having done. Even if they had been called together, and had met regularly, they could not have effectually sanctioned the erection of any building in respect of which the provisions of by-law 28 did not comply: *Yabbicorn v. King* (1899, 1 Q. B. 144). A by-law cannot be dispensed with by the public authority which passes it, as the by-law is not made for their benefit but that of the public. The remedy of the minority is by a complaint to the Local Government Board under section 299 of the Public Health Act, 1875: *Passmore v. Oswaldtwistle Urban District Council* (1899, Appeal Cases, 387).

H. P. B.

Chaining on Slope.

BRIGHTON.—W. B. writes: "I should be glad if you would give me a table showing the distance in feet and inches to be added on the ground when chaining on different gradients with a 50ft. chain in order to get a horizontal measurement. What instrument do you consider best to use in order to measure these gradients other than a theodolite? I am in



CHAINING ON SLOPE.

the habit of using an Abney reflecting level for the purposes. Can I do better?"

The amount to add per chain on the ground for any slope can be obtained from the formula $r \sec \theta - r = x$. Using a chain of 50ft., this gives for 2 degrees 0.36 inches.

4	"	1.46	"
6	"	3.30	"
8	"	5.54	"
10	"	9.25	"
12	"	13.40	"
15	"	21.16	"
20	"	38.51	"

Abney's reflecting level is the most convenient instrument for finding slopes in chaining.

HENRY ADAMS.

Correspondence.

Initials L.A.S.M.

To the Editor of THE BUILDERS' JOURNAL.
EDINBURGH.

SIR,—With reference to the reply given on page 77 of your last week's issue with regard to the initials "L.A.S.M.," how would "Land Surveyor and Measurer" do? If this is what they stand for, their use after an architect's name is surely very misleading, as the ignorant would take it for some degree or other.—Yours truly,
J. McA.

Ellipse by Compasses.

To the Editor of THE BUILDERS' JOURNAL.

ASHTON-UNDER-LYNE.

SIR,—In the supplementary article on the above, appearing in your issue for February 28th, Mr. Ramm again asserts that true ellipses may be drawn by compasses and straight edge, and he gives us by way of proof Fig. 15, of which he says: "The curve is drawn by compasses and afterwards tested by finding points in the curve from the foci in the usual way." I, for one, do not admit this as satisfactory proof. In the first place the diagram is too small to prove proper coincidence. Secondly, when the construction used in Fig. 15 is attempted on a large scale, it always fails to bring point C on the minor axis into its proper position. Employing a major axis 3ft. long and a minor axis 2ft. long, point C comes nearly $\frac{1}{2}$ in. short of its proper position, whilst with the same length of axis, and by the methods described for Figs. 3 and 6, page 271 of the issue for December 6th last, other parts of the curve are distorted to nearly the same extent.

I should like to ask Mr. Ramm why eight segments of circles are necessary to complete a true ellipse. If eight, why not six, or even four? The obvious answer is, I think, that the more segments used, the nearer the true curve can be approached, but an infinity of segments cannot theoretically suffice for the reasons given in the previous replies.—Yours truly,
J. A. PERCIVAL.

Valuation of Houses (Repairs and Empties).

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Your correspondent "F. S. I." kindly criticises some points contained in my reply to an enquiry for an example as to the method of valuing house property. I am obliged to "F. S. I." or to any other correspondent who similarly gives attention to these matters from the point of view based upon comparison with his own experience, because it brings into prominence those actual facts which, as "F. S. I." himself hints, are so often hidden by professional men who are less endowed with moral courage than with a desire to effect business to their own immediate pecuniary advantage.

It is as easy though to paint black as to gild; and "F. S. I." whilst drawing a most uncommonly dark picture of the value of house property generally, fails to show why such is estimated at its present value on the market, and is at the same time entirely on the wrong tack in taking the answer I gave as emanating from one whose interest it is to enlarge upon the returns obtainable from investments in house property.

Before entering upon the question of average deductions, I would ask "F. S. I." to consider how it is possible to give figures applicable to the many different classes of this property, to the various localities, and figures equally satisfactory to querists distant hundreds of miles apart perhaps from one's own district—figures which shall represent the so-called fair average. These fair averages are unsatisfactory in that readers are led to apply them to their own particular districts, which may actually need special, and perhaps extraordinary, modifications. I put no faith in averages between figures of so wide range. I would ask any reader to consider the value of an average of figures varying from 2½ to 100 per cent., the range, according to

"F. S. I.," covered by empties and bad debts in actual practice. Would not a so-called average be an exceedingly powerful inducement for a valuer residing either in the exceptionally bad or the very good district to greatly modify his figures? I trust this will suffice to show why, as the facts were with regard to the example I gave, these figures were not put forward as representing in anyway so-called fair averages. The example was for the single purpose of affording an easy illustration of the method of arriving at the nett from the gross value of a house by deducting the specified items, the particular amounts for which might equally have been represented by the letters *x*, *y*, or *z*.

Average figures I must decline to give; but this will not deter me from pointing out to "F. S. I." some little defects in the statements contained in his letter. In the first place, how can we reconcile, with the surprisingly poor returns he puts forward as representative of those from house property, the fact that interests in this class of property are at the present time being so largely entered into simply as speculations?

If the items for each deduction amount to figures such as mentioned in the letter, what equality can the returns be said to bear with the generally accepted percentage expected from house property? Take, for instance, the sum of the several deductions after the averages mentioned by "F. S. I.," and we should have:—

	Per cent. on the rental.
For repairs	25
Empties and bad debts—mean	
of 5 and 12	8½
Rates may be 33 per cent on	
the ratable value which	
equals, deducting ⅓th from	
the gross 33 per cent. on £84	27½

Or a total of 61
without adding anything for reserved or other rent, insurance, &c.

It is very easy to paint the picture black enough, yet house property is paying well and selling well in many districts; and, as showing that the views of "F. S. I." with regard to the matter of repairs do not tally with those of some others, I may quote from that little work on the Rights and Liabilities of Landlords, Tenants, and Lodgers, by De Morgan, in which he roughly estimates "For repairs, insurance, and other expenses (including the periodical expense of external and internal painting about every third and seventh year respectively) to be likely to amount to an annual average sum bearing the proportion of about one-sixth of the amount of the landlord's rent, e.g., a house at a rent of say, £50, may be roughly estimated to have cost at the end of the first seven years of the lease one-sixth of £50 × 7 = £56," this, of course, amounting to 16 per cent., which is to include insurance and other expenses. Mr. Curtis also puts 10 per cent. as the average deduction for house property (see Valuation of Land and Houses, 1899).

I agree with "F. S. I." that it is easy enough to instance particular cases where the repairs have cost nothing for a limited time; but the particular case he cites himself where the repairs for twenty-five years included one item of four times the gross rent and three or four items of half that amount, can only be referred to as very heavy, and showing bad workmanship, or else previous neglect. The large estimates mentioned, moreover, can never be included under the head of ordinary repairs.

With regard to empties and bad debts, as these vary to such an extraordinary extent with regard to the class of tenant and tenement, namely, from 2½ per cent. upwards, as "F. S. I." admits, I fail to see how anyone can venture to estimate a fair average without very precise indications of the value, class, and neighbourhood, etc., and for myself I decline to do so.

Finally, re the deductions for rates and taxes, if "F. S. I." is himself in doubt as to which should or should not be deducted, he will perhaps specify his difficulties more fully in the form of a query. Perhaps, however, having regard to the space which would here be required to enter into the whole question,

"F. S. I." will permit me to refer him to Mr. Curtis's little book on Valuations, and to the authorities and cases cited therein, where he may gather why property tax should not be deducted.

The deduction of £5 for rates and taxes again was merely a hastily assumed figure, not representative of any usual average. The rates to be deducted include:—Poor rate, general district rate, highway rate, school board rate, sewers rate, water rate, and special rates, such as those for lighting in towns, and sea defence near the coast. Taxes also comprise land tax (if unredeemed), Schedule B income tax, house duty, &c.

The local rates again vary to an extraordinary degree, from 2s. 6d. in the £ in some country districts (and half that amount, of course, on land) to three or four times that amount in many towns.

I may quote one example which may perhaps enable "F. S. I." to estimate the approximate average for any similar class of property:—The total rates in the town of Hastings come to about 33 per cent. on the ratable value, i.e., for a house of gross rent, say, £42 and ratable value (deducting one-fifth) = £36, the rating would be £12.

I trust this will suffice to show the folly of setting down any hard and fast rules for the guidance of readers as to the amount of deductions. Such a course would be as misleading to one as helpful to another. I trust also that it will convince "F. S. I." of the fact that the example of mine referred to was not given as one of an arbitrary exactitude in any way, but purely from a desire to furnish the querist with a simple, easily-understood indication of the lines he should follow.—Yours faithfully,
C. BRAND, P.A.S.I.

New Patents.

These patents are open to opposition until April 14th.

1899.—Radiators.—5,107. W. T. SUGG, London, S.W. In order to ensure good circulation, and to allow the parts of the radiator to contract and expand, supplemental tubes are placed inside and concentric with the ordinary pipes, one end being fixed and the other end being free and extending into a chamber at the top or bottom of the ordinary tubes. Expansion steam joints are obviated.

Exterior Lighting.—5,867. H. TALBOT. This invention relates to lanterns having incandescent mantles without chimneys. At the top of the lantern is supported a square enamelled metal plate, having a hole in the centre with a bar across it. It is formed to allow air to pass round its edges, and has an extension or chimney leading to the top of the lantern. By these means gusts of wind are kept out.

Latch Bolts.—6,185. C. R. HECKFORD AND H. BAGNALL; both of Wolverhampton. Instead of having the bolt in one piece, either cast or forged, the back end is made from sheet metal and riveted to the stem. In a modification the stem and back end are both formed of sheet metal. The bolt is claimed to be light and strong, and facilitates fitting.

Hot-Water Boilers.—7,217. B. G. SMITH, Halifax. The boiler consists of a series of large tubes, preferably arranged parallel to each other, with vertical side tubes at right angles. The boiler is covered with a perforated shield to prevent it becoming clogged with dirt and ashes, and screw plugs are provided to allow scale to be removed, which is the essential feature of the invention.

Door Bolts.—8,383. J. BANKS AND J. H. BANKS; both of Willenhall, Staffs. The bolt plate is made from a metal blank which is stamped and pressed out at certain parts to form the staples for the bolt to slide through.

Window Blinds.—13,095. A. W. LOVELAND, Norwich. The blind is made of a single piece of canvas or other fabric, and is creased in accordion fashion. Cords are threaded as in Venetian blinds, and counter-balance weights are provided.

The following specifications were published on Saturday last, and are open to opposition until April 21st. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—3,010, HERBERT and HARMER, lathe chucks. 3,064, HALL, portable theololites, levels, and other surveying instruments. 3,789, HALL, machinery for making slabs with plain or ornamented surfaces of plaster, cement, or composition. 4,057, BROOKES (*Jäger and Seifert*), construction of removable or portable buildings. 5,248, ANDERSON, appliance for recovering the unconsumed fuel from the deposit as it falls from any house fire-grate, effecting a considerable saving of fuel. 5,302, YINGLING, furnace grates. 5,456, JECKEL, method of constructing harbour moles, breakwaters, bridge piers, and other marine constructions, and blocks therefor. 5,526, GOLBY, (*Oertel*) measuring staff, capable of being used as a walking stick. 5,715, CARPENTER and FOWLER, method or apparatus for tunnelling. 5,880, NORTHOVER, bolt for the secure fastening of doors, cupboards and the like. 5,999, KNIGHT, glass-lined artificial stone manholes. 6,413, WEAVER, fastenings for gates, doors, and the like. 6,658 CRANDALL, padlocks. 6,892, ADAM, airing, drying, or seasoning of timber and such like. 6,933, BERGER, acetylene generators. 6,979, TENNANT and STOKES, means for purifying and filtering running water. 7,541, THORNTON, brick presses. 7,561, MORGAN and JEREMIAH, chimney pots. 7,640, GORTON, portable window seats for cleaning, painting, or repairing windows. 7,741, THOMPSON, building brick. 7,815, WILLIS (*Lowery and Billings*), window fasteners. 7,921, CORBETT, couplings for wire ropes. 8,280, OATES, waste-water closets. 8,309, SINGER and MADDOX, process of preparing and putting up colouring matters for use in small quantities. 8,926, STEEL, NUT, and JOSEPH HAMPTON, LIMITED, and HAMPTON, mitre cutting machines. 8,994, OATES, waste-water closets. 10,631, ROBINS, design and construction of wrought-iron and steel pipes. 12,948, LORENZ, stove. 13,626, ROBINSON, apparatus for cutting long shavings into chippings or adzings. 17,876, COOPER, making of moulds for casting metals. 24,148, LUHNE, electric furnaces for making glass and other analogous substances. 24,185, WILLIAMS, water-closet flushing apparatus and the like. 24,651, LAKE (*Woodbury*), flushing apparatus for water-closets and the like. 24,741, EGGEMAN, centrifugal testing machines. 25,027, ALEXANDER, brick-making and pressing machines. 25,195, PHILIPS, wheels or pulleys. 25,196, PHILIPS, wheels or pulleys. 25,361, ISBILLS, curtain fixtures. 25,492, NELSON, HOUGHTON and MILLER, acetylene gas lamp.

1900.—147, TETES and HEANY, electric water filters. 427, BROMHEAD (*Waterman*), process of enamelling. 508, GRAVILL, keyed tile. 819, JONES, roofing and similar tiles. 1,063, PAULS, flushing device for water-closets.

New Building for the Tower Garrison.

—The new building which has been erected for the garrison of the Tower will shortly be ready for occupation. It is five storeys high, fireproof throughout, and comprises a sergeants' mess-room, guard and orderly rooms, and a library and reading room. The building is hemmed in by the "Bloody Tower," the Wakefield Tower, and the White Tower. The style of architecture is Elizabethan and the cost will be over £20,000.

New Covered Market for Hull.—The scheme for providing covered accommodation for those who have stalls in the present open-air market is proceeding satisfactorily. It is proposed to purchase from Messrs. Easton and Sons the property in and behind Trinity House Lane, occupied by Messrs. Shipham and Co., for the purpose of providing further accommodation for the proposed covered market. The property comprises 1,100 sq. yds. and the price asked is £6,650, the vendors paying their own costs and charges in the matter.

Professional Practice.

Hull.—The Hull City Fine Art Gallery will be formally handed over to the Corporation shortly. It forms a sort of top flat to the Museum of the Royal Institution in Albion Street, and it was a condition—rather an awkward one for Mr. Jacobs, the architect—that this upper storey should be placed entirely out of sight, so that it should in no way disfigure the classic façade of one of the few architectural ornaments of the city. This has been admirably done, for the only evidence in the street of the existence of the Gallery is its main entrance, which is placed at the east end of the Royal Institution, and made so much in harmony with that building that it appears to be an extension of the original design. The Gallery is reached by a well-lighted staircase of short easy flights, with spacious mosaic-paved landings. It comprises a principal room, 75ft. by 25ft., and two lesser ones, each 33ft. by 19ft. They are all brilliantly illuminated, and a pleasing feature of the decorated ceilings are the panels supporting the skylights, upon which the city arms are modelled and made the centre of a device. There are, of course, the usual accessories—the secretary's room, the cloak rooms, and the ticket offices—as well as an outside emergency stair and a lift for dealing with heavy pictures.

London.—On Friday last the cheap restaurant in City Road, of the Alexandra Trust (which includes the Princess of Wales and Sir Thomas Lipton) was opened. It has been built from designs by Messrs. Mark King and Co., and its frontage is of Bath stone, with polished red Aberdeen granite. Entering, there is a handsome lobby, with palms, a flooring of mosaic, and the Princess of Wales' cipher and coronet in coloured inlay. In the centre of each hall is the bar and counter, fitted with bright electro-plated service, while pure water drawn from an artesian well 300ft. deep is supplied gratuitously. Three floors are thus similarly fitted, the glazed brick walls, the marble tables, and the mosaic and concrete floors being highly suggestive of cleanliness and sweetness. Women have been particularly well catered for throughout, and in the basement the toilet-rooms provided will be of the utmost convenience to those who come in from the suburbs for their day's work. There is a staff of a hundred waitresses. Each of the three halls can accommodate 500 people, so that 1,500 meals can easily be simultaneously consumed, and 12,000 meals can be provided during the day.

Sheffield.—A new Board school has been built at the top of Daniel Hill from designs by Messrs. Hemsell and Paterson, architects, of Sheffield. The south front faces Daniel Hill Street, from which the site slopes down rapidly, causing the north front to be lofty, and to appear very prominently over the other buildings in the neighbourhood. For this reason, as well as for convenience of plan, this front has been treated architecturally as the principal one. The school has two principal floors, and provides accommodation for 810 children. The ground floor, which is devoted to infants, contains a schoolroom for 120, four classrooms for sixty, and one for fifty, one of the classrooms being fitted up to be used when required for cookery classes for the girls. The upper floor, for boys and girls, contains a schoolroom for 120, three classrooms for sixty, and two for fifty. There are, in addition, three teachers' rooms and the necessary cloakrooms and lavatories. Rock-faced stone from the Bole Hill quarries has been used for the external walls, with Matlock stone dressings, and Westmorland slates for the roofs. The general contractor was Mr. A. Moore, of Sheffield. The heating, which is by hot water on the low-pressure system, has been carried out by Messrs. Wright Bros., of Attercliffe. The site, which is slightly over two acres in extent, cost £2,510, and the building, including fittings and professional charges, cost £9,800. The total cost has been £12,400, or £15 6s. 2d. per child accommodated.

Builders' Notes.

London County Council.—At last week's meeting of the Council the Water Committee recommended: "That, in view of the urgent reasons which exist against further delay in dealing with the question of London water supply, the First Lord of the Treasury be requested to receive a deputation with reference to the London Water (Purchase) Bill and the London Water (Welsh Supply) Bill." This was carried by seventy-two votes to twenty-nine, it being agreed that the words "having regard to the recent report of the Royal Commission" should be added. The Building Act Committee recommended: "That the order of the Council of February 6th, 1900, sanctioning the formation or laying out of two new streets for carriage traffic on the east side of Tottenham Court Road be varied so that the time within which the roadways of the proposed streets to lead out of Tottenham Court Road into Chenies Street and Store Street respectively were required to be clearly defined throughout by posts and rails, or so otherwise as the Council should permit, and thrown open to the public as highways, be extended to three years from the 6th day of February, 1900." This was agreed to.

Workmen's Compensation.—The recent case of *Rixson v. Pritchard and Benwick* was an appeal from an award of the Judge of the County Court of Kent, holden at Dartford. In the High Street at Dartford, next to the Bull Inn, which was a building over 30ft. in height, there stood two buildings less than 30ft. in height, which were formerly shops. The landlord had recently determined to demolish the two low buildings for the purpose of extending the main building of the inn. This work was undertaken by the employers, and the applicant, in the course of his employment, was wheeling some rubbish from the houses which were being demolished when he fell and sustained injuries. The sole question in the case was whether the applicant was employed on, in, or about a building which exceeded 30ft. in height, and was being demolished within the meaning of section 7, sub-section 1, of the Workmen's Compensation Act.—The Court allowed the appeal. Lord Justice A. L. Smith said that the applicant was engaged in pulling down the beerhouse, which was less than 30ft. in height. The only building which was over 30ft. in height was the Bull Inn, and that was not being demolished at all. No part of the building which was being demolished exceeded 30ft. in height. The communication between the beerhouse and the inn did not make the smaller building a part of the larger building.—Lord Justice Collins and Lord Justice Romer concurred. In another recent case, that of *Brady v. Cooper and Crane and Alfred Wright*, the question raised was whether Wright (a tiler and a sub-contractor) was responsible to indemnify the defendants, Messrs. Cooper and Crane, in respect of their liability to compensate the plaintiff, a widow, for the loss of her husband. Lord Justice Smith said the court had decided in the case of *Cass v. Butler* (see page 71 of last week's issue) without doubt that the sub-contractor did not come within the Act, because he could not be said to be the "undertaker," although the employer of the injured man. The only person who could be held liable was the "undertaker" who constructed, repaired, or demolished a building. That being so, Messrs. Cooper and Crane were undoubtedly "undertakers." Wright was simply a sub-contractor employed by them to tile the building which they had undertaken to construct, and, therefore, it was impossible, in his opinion, to hold that Wright was the "undertaker" within the meaning of the Act. This appeal must be allowed with costs. Lord Justices Collins and Romer concurred.

Electric Launches on the Venice Canals are being tried. They will be much more suitable than the old smoke-producing steamboats plying up and down the Grand Canal.

Surveying and Sanitary Notes.

Extensive Street Improvement Scheme at Paisley.—The Paisley Police Commissioners have decided to widen Causeyside, which leads from the cross to the south end of the town, to 80ft. The scheme will cost £82,300, including an improved gradient.

Development Scheme at Felixstowe.—The Coast Development Company are about to open up a large area of land at Felixstowe which has been purchased from Captain Pretymann, M.P. Plans have been prepared and the first portion of the land acquired will be offered for sale next Easter.

Leeds City Square Statues.—It is not probable that the statues for Leeds City Square will be unveiled this year, owing to the prolonged illness of the sculptor who has been given the commission—Mr. Brock. He has now, however, so far recovered as to be able to continue what he has determined shall be the greatest work of his life.

Inspectors of Nuisances.—The following resolutions were passed at a meeting of the Executive Council of the County Councils Association: "That it be represented to the Local Government Board that all inspectors of nuisances should hold certificates of efficiency before the approval by the Board of their appointment." "That it be represented to the Local Government Board that it is desirable that County Councils should have an opportunity of objecting to the approval by the Board, at his first appointment, of any sanitary officer to whose salary the Board contributes."

Holborn to the Strand Thoroughfare.—At a dinner held last week by the members of the Improvements and Finance Committee of the London Corporation, Mr. John Piggott pointed out that after all, in point of area, the city was only the size of a small farm, namely, some 700 acres. The chairman (Sir Robert H. Rogers) said that the County Council would acquire for the new street from Holborn to the Strand property of the value of £4,700,000, and expected to recoup themselves to the extent of £4,000,000. The ground rent of the surplus land would be £117,000, while the interest on the outlay would be only £132,000, and consequently there would be a difference to the credit of the improvement of between £12,000 and £14,000 per annum. It was estimated further that at the end of eighty years the Council would be in possession of eight millions through this improvement alone.

Trade and Craft.

Silicate Cotton.

The uses of silicate cotton are many and various, but for the architect it has special interest as a material for fire-, sound-, or heat-proofing floors, walls, partitions, &c., for lining roofs and for insulation purposes in cold stores. In matters of insulation it is as true as is everything else, that good quality is good economy, for if the insulating material is imperfect there will be a constant loss of power which might have been saved had there been a little less parsimony in first cost. British-made silicate cotton was patented and introduced by Messrs. Frederick Jones and Co., of Perren Street, Kentish Town, N.W., about twenty years ago, and it is made by converting blast furnace slag, whilst in a molten state, into fibres. By this process its bulk is increased twelve-fold, and it is directly, because the air it contains is "still," that it is such an excellent insulating material, as the larger the space the more the air moves—resulting in poor insulation. The other qualities of silicate cotton may be summed up thus:—It is fireproof, imperishable, vermin-proof, will not become musty, does not absorb moisture, does not (on account of its fibres) fall through the matchboarding and injure the refrigerated goods, does not "silt," and is reasonable in price. Its average density is about 12 per cent. less than flake charcoal. Out of a long list of cold-air stores where silicate cotton has been used, the following may be mentioned:—Edinburgh Ice Co., Edinburgh; Hagerup, Doughty and Co., Great Grimsby; Hastings Ice Co., Hastings; Venner and Sons, Southampton; North-Eastern Railway Co., Hull; Malvern Ice Co., Malvern Links; Worcester Pure Ice Co., Worcester; Exeter Ice Co., Exeter; Croydon Pure Ice Co., Croydon; and Sawers, Ltd., Glasgow. The firm has branches at Glasgow, Leeds, Liverpool, Newcastle-on-Tyne, Swansea, Middlesbrough and elsewhere.

William Black Memorial.—The plans are now out for the erection of the William Black Memorial Tower at Duart Point, on the Island of Mull, west coast of Scotland. The tower is intended to serve as a beacon for the guidance of mariners.

New Exeter Hotel.—The new Franklin Temperance Hotel, in Fore Street, Exeter, was opened last week. Mr. Harbottle Reed, of Exeter, was the architect for the alterations, and Messrs. Westcott, Austin and White were the contractors.

Keystones.

Almington Hall, a fine old mansion two miles from Market Drayton, Shropshire, was totally destroyed by fire on March 7th.

The Royal Birmingham Society of Artists has re-elected Sir W. B. Richmond, R.A., as president for the ensuing year.

New Sanatorium for Consumptives.—On Thursday last a sanatorium for consumptives, the first of a public character in the kingdom, was opened at Meathrop, Westmoreland.

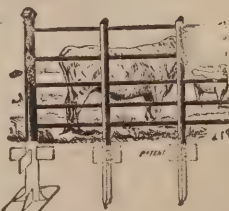
Archæological Discovery in Whitehall.—In the course of the excavations on the site of Carrington House, in Whitehall, for the new War Office buildings, the remains of several well-defined roads have been laid bare.

New Technical School for Burnley.—The Burnley Town Council has decided to proceed with the erection of a new higher grade and technical school, and to invite competitive plans. The total number of students to be accommodated in the new institution is 1,208, and the estimated cost is £40,000.

Architectural Museum, Westminster.—We note in the "Times" that Mr. Maurice B. Adams, F.R.I.B.A., honorary secretary of this museum, says in his reply to the statements of Mr. Max Judge (see page 75 of last week's issue): "If we kept the museum open without having the school of art in connection with it the annual deficit could not be less than £300. It is utterly untrue that the institution has fallen into decay . . . before we can overhaul or revise the collection we shall have to expend a considerable sum in repairing the roof, and subscriptions will be most welcome for that purpose. A little help is worth a lot of fault-finding."

Workmen's Compensation.—The case of *Fenn v. Miller* was heard in the Court of Appeal on Saturday. Mr. Miller was building some houses at Chingford, and Fenn was a workman, whose duty it was to assist in making the mortar. There was a steam engine in a shed for this purpose. Fenn went with a horse and cart to a brook to get some water, and, when returning, the horse took fright and Fenn was knocked down and injured—being then 487 yards from the nearest building in course of erection, and about 200 yards from the engine shed. The County Court judge found that the shed (owing to the engine) was a "factory," and that the accident happened "about" the "factory." The Court, however, did not agree with this, and allowed the master's appeal.

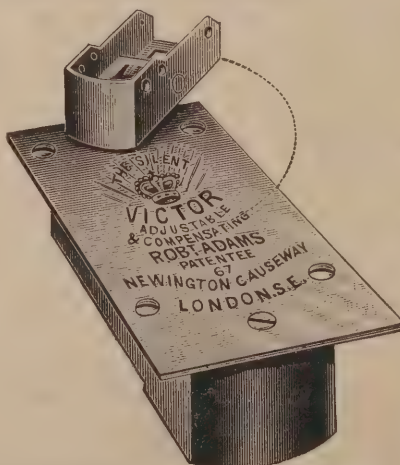
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Chichester Cathedral.—It is stated that a sum of £9,000 is still required to complete the rebuilding of the north-west tower.

The Royal Hibernian Academy opened its seventy-first annual exhibition of paintings on March 5th. There are 349 exhibits.

The death is announced of Chancellor Ferguson, of Carlisle. He was a zealous antiquarian, and took a great part in the excavations at Furness Abbey.

An Arts and Crafts Exhibition at Warrington has been opened in the Parr Hall, and will remain open during the greater portion of this month.

Improvements at Bournemouth.—The Bournemouth Town Council has appointed a committee to prepare schemes for the erection of a summer and winter pavilion at the shore end of the pier. The estimated cost is about £25,000.

Yost Typewriters.—A record shipment of nearly 120 Yost typewriters was effected a week or so ago to the order of H.M. Government. This breaks all previous records, and evidences the growing popularity of the typewriter in Government offices.

New Window at St. Paul's.—The window now in progress of erection in the north end transept of St. Paul's Cathedral is the gift of the late Duke of Westminster. Sir W. B. Richmond, R.A., K.C.B., has executed the design.

A new Presbyterian Church at Blackburn is being built at a cost of £5,000. The site is at the junction of Bangor and Troy streets. The nave of the church will be 64ft. long and 48ft. wide. The seating accommodation will be for 580 persons on the ground floor and 80 in an end gallery. The church will have an open timbered roof, and is in the Perpendicular Gothic style. Mr. Dixon is the architect.

British Association President.—The Council of the British Association has nominated Professor A. W. Rucker as president of the Glasgow meeting in 1901.

Bath's New Art Gallery.—The municipal institutions of Bath have been enriched by the taking over by the City Council of the art gallery, which is to serve as the city's permanent memorial of the Queen's Diamond Jubilee.

A new Parish Church at Glasgow has been built at the corner of Rutherglen Road and Rose Street at a cost of £7,000. Accommodation is provided in the church proper for 950 persons, and there is an adjoining hall with a seating capacity of 600.

Alexandra Palace.—The Wood Green District Council has decided to contribute £25,000 towards the Alexandra Palace and Park Purchase Fund. Hornsey and Wood Green have between them given £55,000 towards the £120,000 required for the purchase.

Homes for Convalescent Children.—At last Saturday's meeting of the Metropolitan Asylums Board plans were adopted for the Millfield Homes for 100 convalescent children, proposed to be erected at Rustington, near Littlehampton, at a cost of £17,975. The plans will be sent to the Local Government Board for approval.

Further Discoveries at Furness Abbey.—Further excavations at Furness Abbey, undertaken under the auspices of the Cumberland and Westmorland Antiquarian and Archaeological Association, have resulted in the discovery of three distinct floors in the chancel—first the early Norman, then a second 18in. higher, with a beautiful tiled floor, and a third floor, 3ft. higher up. The excavations prove how sound and perfect the red sandstone foundations of the building are.

Proposed New Lock at Grimsby.—A scheme is on foot for forming a deep-water lock at Grimsby at a cost of between four and five millions sterling.

Lincolnshire County Asylum.—At a special meeting of the Visiting Committee of the Lindsey, Lincoln, Grimsby, and Holland Asylum, held last week at the Asylum on Bracebridge Heath, it was reported that the existing accommodation was not available for more than 680 patients and attendants, and Mr. A. E. Gough, architect, had prepared two alternative sets of plans, each providing accommodation for a total of 1,000 in an extensive block of administrative buildings on the northern side of the existing buildings. The plant marked A, and roughly estimated to cost £55,000 or £60,000, was adopted.

Basement and Similar Lighting.—The legal battles fought over the question of ancient lights must surely be legion, but the attempt to produce more light is not so frequently heard of. A considerable success has, however, been achieved in this direction by the Union Plate Glass Co., Ltd., of St. Helens, whose advertisement in the current issue shows the change made in the appearance of a room when their "Refrax" glass is used in the windows. We have recently seen this glass in an experimental room, and can testify to the difference made when a window of "Refrax" is inserted in the frame in place of one of ordinary glass. The glass is already largely used for lighting basements, underground schools, &c., and its success is amply proved by the altered conditions under which work is carried on. In many places daylight now takes the place of the continual gas flare, solely owing to the use of this new glass. The effect it produces requires to be really seen, for, apart from actual demonstration, few would believe it possible to effect such an improvement in so apparently simple a matter as the lighting of a room.

The Architectural Review.

VOL. VI.

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The Comédie Francaise in Paris was destroyed by fire on Thursday last, and the loss in archives, valuable pictures, busts of famous dramatists and players, is considerable. The cause of the fire was the defective condition of the heating apparatus, the pipes being choked with soot.

Turner's Picture, "The Grand Canal of Venice," which was bequeathed to the Metropolitan Museum of Art in New York by the late Mr. Cornelius Vanderbilt, has been placed on exhibition. The sum of £20,000 is said to have been paid for it by Mr. Vanderbilt.

Westminster Abbey Crumbling Away.—In a lecture delivered on Thursday at the Chapter House, St. Paul's, Mr. J. T. Micklethwaite, the new surveyor of Westminster Abbey, stated that the old stonework of the Abbey was fast crumbling to pieces, owing to the fumes of the works on the other side of the river.

Drawings of the Recent Excavations of Pompeii.—The authorities of the Victoria and Albert Museum have specially lent to the Birmingham Museum and Art Gallery a collection of water-colour drawings by the well-known Roman artist, Luigi Bazzani, of the latest excavations at Pompeii, including the magnificent house of Vettius, and the very beautiful mansion known as the Nozze d'Argento.

COMING EVENTS.

Wednesday, March 14.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Professor Henry Robinson, M.I.C.E., on "Sewerage and Sewage Disposal," 8 p.m. Inspection and demonstration in the parish of St. George's, Hanover Square, at 2 p.m., conducted by Mr. Albert Taylor.

RUSKIN SOCIETY OF BIRMINGHAM.—The Rev. Canon H. Scott Holland, M.A., on "Oxford in the Forties and in the Nineties," 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Professor G. Baldwin Brown, M.A., on "The Sculpture of the French Gothic Cathedrals," 8 p.m.

BIRMINGHAM AND DISTRICT CLERK OF WORKS AND BUILDERS' FOREMAN'S ASSOCIATION.—Mr. T. G. Price, A.R.I.B.A., on "Rome," 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Annual meeting at 7.30 p.m., to view Students' Drawings, to receive Annual Reports, and to elect Auditors. Sir Benjamin Chapman Brown, D.C.L., will present the prizes to the successful Students.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of Examination and Literary Committee at 2.30 p.m., of General Purposes and Finance Committee at 3.30 p.m., and of Election Committee at 5 p.m. Mr. Wm. Strachan on "The Construction of Water-tight Sewers and House Drains in Water-logged Ground" at 7 p.m.

Thursday, March 15.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Connection of the Head with the Trunk; the Structures which Determine the Form of the Neck," 6.15 p.m.

ROYAL INSTITUTION.—Mr. Charles Waldstein, Litt.D., Ph.D. L.H.D. on "Recent Excavations at the Argive Heraeum (in Greece),"—III. 8 p.m.

Friday, March 16.

ARCHITECTURAL ASSOCIATION.—(Discussion Section.)—Mr. W. E. Dobson on "The Church of San Francesco, Assisi: a Study in Colour Decoration," 7 p.m.

ROYAL INSTITUTION.—Sir Benjamin Stone, M.P., on "Pictorial Historical Records," 9 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design,"—XI. 11.30 a.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. Charles Jones, M.I.C.E., on "Scavenging and Disposal of House Refuse," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Cathedral Works in progress at Ashley Place, Westminster, at 2.30 p.m.

Saturday, March 17.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Inspection and Demonstration at the Sewage and Destructor Works, Ealing, at 2.15 p.m., conducted by Mr. Charles Jones, M.I.C.E.

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—Mr. Tanner on "History of House Drainage," 7.30 p.m.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to the new Cathedral, Westminster, at 3.30 p.m.

Monday, March 19.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. J. Fletcher Moulton, Q.C., M.P., F.R.S., Mr. J. Douglas Mathews, and Mr. Beresford Pite on "Ancient Rights," 8 p.m.

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SURVEYORS' INSTITUTION.—Third Junior Meeting. First day of Students' Proficiency, Associates', and Fellows' Examinations, Divisions II., III., IV., and V., continued for next four days.

LIVERPOOL ARCHITECTURAL SOCIETY.—Paper on "Roofs and Roofing."

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. Reginald Duffield, M.A., M.B., D.P.H., on "The Practical Duties of a Sanitary Inspector," 8 p.m.

SOCIETY OF ARTS.—(Cantor Lecture III.)—Mr. E. Sanger Shepherd on "The Photography of Colour,"—III. 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XIX.—Renaissance Christian Art," 6 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Annual Report and election of officers.

Tuesday, March 20.

GLASGOW ARCHITECTURAL ASSOCIATION.—Lecture by Mr. Alexander N. Paterson, M.A., A.R.I.B.A.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Mr. G. M. Ross on "Domestic Water Supply," 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Mr. F. W. Bidder, M.I.C.E., and Mr. F. Douglas Fox, M.A., A.M.I.C.E., on "The Great Central Railway Extension: Northern and Southern Divisions," 8 p.m.

Wednesday, March 21.

INSTITUTION OF CIVIL ENGINEERS.—Annual dinner at Merchant Taylors' Hall, Threadneedle Street, Sir Douglas Fox in the chair. 7 p.m.

SOCIETY OF ARTS.—Mr. Samuel Rideal, D.Sc., on "The Use and Abuse of Food Preservatives," 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Lecture on "Factory and Workshop Legislation as it affects the Sanitary Inspector," 8 p.m.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

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Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
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	per load	£ s. d.	£ s. d.
Ash, Quebec	do.	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin. Cuba	per ft. sup.	0 0 44	—
Do. Honduras	do.	0 0 32/32	—
Do. Tobasco	do.	0 0 33	0 0 44
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 5 1/16	—
Do. African	do.	0 0 23	—
Do. St. Domingo	do.	0 0 33	—
Do. Tobasco	do.	0 0 44 0 0	6 15/32
Do. Cuba	do.	0 0 6 19/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	10 0	16 10 0
Walnut, Cuba (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 3 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

ABERYSTWYTH.—For the erection of two villas, Llanbadarn-road, for Mr. T. Owen. Mr. J. Arthur Jones, architect, 7, Queen's terrace, Aberystwyth:—
David Williams ... £2,400
Lewis Beattie ... £2,400
E. E. Jenkins ... 2,150
* Accepted on amended specification.

BURY (Lancs.).—For the execution of sewerage works, Blackford Bridge and Hampton Mills, for the Corporation. Mr. A. W. Bradley, C.E., Corporation Offices, Bank-street, Bury:—
John Moore ... £1,280 11 4
Smith & Boocock ... 3,680 4 7
T. and J. Foster ... 3,520 7 10
T. Turner ... 3,458 19 10
Freeman & Son ... 2,935 9 10
Fotherby & Son ... 2,817 17 10
Underwood and Brother ... 2,894 8 8
Ainscouth and Son ... £2,817 8 2
E. Tempest, 74A, Lancaster-avenue, Manchester* ... 2,835 1 10
* Accepted.

LEIGH-ON-SEA.—For making-up North-street, Victoria, Avenue, and Sea View roads, for the Urban District Council. Mr. Frank E. Smee, surveyor, 12, West Smithfield, E.C., and Leigh-on-Sea:—

NAME.	North-street.	Victoria-road.	Avenue-road.	Sea View-road.
W. Griffiths	£ s. d. 676 9 1	£ s. d. 638 7 9	£ s. d. 724 11 5	£ s. d. 612 11 2
Wm. Wadey	601 0 7 1/2	604 15 4	638 10 1	590 13 6
T. Adams	577 8 11	555 8 4	555 15 6	558 1 5
W. H. Wheeler	496 8 2	494 2 4	596 19 2	474 4 2
A. J. Catley	483 16 3	486 1 8	527 13 0	465 14 7
J. and J. Jones	438 0 9	446 4 9	520 16 11	463 9 4
Buxton and Jenner	—	549 17 11	620 9 10	522 4 3
Wm. Hles*	394 15 4	426 6 0	505 1 9	407 2 1

* Accepted for the four roads.

DROGHEDA (Ireland).—For the erection of six dwelling-houses at Stockwell-lane, for Mr. John Leland. Mr. Fred. Shaw, architect, Lawrence-street, Drogheda:—
S. F. Roche ... £1,687
Smullen and Son ... 1,393
B. McDonnell ... 1,340
F. Gogarty ... 1,200
B. Collins ... £1,120
P. McCann, Laurence-street, Drogheda* ... 1,115
* Accepted.

LONDON.—For finishing three houses in Burnaby Gardens, Chiswick, W., on the Sutton Court Lodge Estate. Mr. Edward Monson, architect, 22, Buckingham-street, Adelphi, W.C., and Acton Vale, W.:—
G. W. Bolton ... £1,720
Ferris Bros. ... 1,640
R. Nichols ... 1,300
W. Blackburn ... £1,185
J. W. Bryant, Chiswick* ... 1,084
* Accepted.

LONDON.—For the internal completion and decoration of Clerkenwell Town Hall. Mr. C. Evans-Vaughan, architect:—
Hampton and Sons ... £2,700 0
De Jong and Co. ... 2,565 0
Bartlett and Co. ... 2,150 0
Small and Sons ... 1,979 0
Simpson and Sons ... 1,920 0
Waring and Sons ... £1,804 10
De Jong and Co. ... 1,795 10
Campbell, Smith, and Co.* ... 1,717 0
* Accepted.

LONDON.—Improvements to Canal-road School, for the London School Board. Mr. T. J. Bailey, architect:—
Treasure and Son ... £15,013
Miskin and Sons ... 11,979
Gregar and Son ... 14,835
Johnson and Co., Ltd. ... 14,559
Chessum and Sons ... 14,536
Grover and Son ... 14,510
F. and F. J. Wood ... £14,260
Stimpson and Co. ... 14,180
Lawrance and Sons ... 14,079
C. Cox ... 13,900
Williams and Son* ... 13,537
Leslie and Co., Ltd. ... 12,176
* Accepted.

LONDON, N.—For the making of first portion of Colsterworth-road, Tottenham Green, for Mr. W. Hawley. Mr. Augustine C. Green, architect and surveyor, 43, Bruce Castle-road, Tottenham, N.:—
Thomas Adams ... £1,998
George Bell* ... 1,922
C. T. Catley ... £1,790
* Accepted.

LONDON, N.—Accepted for the erection of five houses and shops in Philip-lane, Tottenham, for Mr. D. Burnett. Mr. Augustine C. Green, architect and surveyor, 43, Bruce Castle-road, Tottenham, N.:—
William Hawley, Tottenham ... £1,850

LONDON, N.—Accepted for the erection of six villas on Mount Pleasant Estate, Tottenham. Mr. Augustine C. Green, architect and surveyor, 43, Bruce Castle-road, Tottenham, N.:—
William Hawley, Tottenham ... £1,740

PRITTEWELL.—For the erection of school chapel for

the trustees. Mr. Frank E. Smee, architect, 12, West Smithfield, and Leigh-on-Sea:—
F. Smith ... £895 0
Harris and Rowe ... 870 0
F. and E. Davey ... 847 0
F. Dupont ... £845 0
Ardley and Elvey* ... 778 10
* Revised tender of £730 accepted.

COMPETITION.

ADMINISTRATIVE COUNTY of the ISLE OF WIGHT, TO ARCHITECTS.

The Technical Education Committee of the County Council of the Administrative County of the Isle of Wight invite DESIGNS for a BLOCK of BUILDINGS, comprising a Public Library and Reading Room, Technical Institute Offices, Caretaker's Residence, &c. A lithograph plan of the site, with sketch showing approximately the accommodation required, and instructions to competitors, will be forwarded on application to the undersigned.



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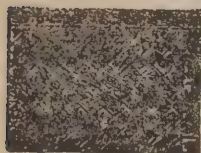
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The cost of the buildings is limited to about £6,000. Premiums of Fifty Pounds each will be given to the authors of the two Designs considered by the Committee as the first and second in merit, which designs will become the property of the Council. The author of the Design considered the best shall, if required by the Technical Education Committee of the County Council, furnish the necessary contract drawings, with details, and specification, for the purpose of obtaining Tenders to execute the work, for which, if so required as aforesaid, he will be paid 2½ per cent. on the estimated cost. If employed to superintend the works such 2½ per cent. and the premium of Fifty Pounds to merge in the usual

architect's commission of 5 per cent. on the cost, which shall include the necessary detail drawings, copies for contractor and clerk of the works, superintendence, and all expenses.

All designs to be sent, in accordance with the instructions, to the undersigned on or before APRIL 30th, 1900.

WILLIAM H. WOOLDRIDGE,
Clerk to the County Council.
County Council Offices,
Newport,
Isle of Wight,
February, 1900.



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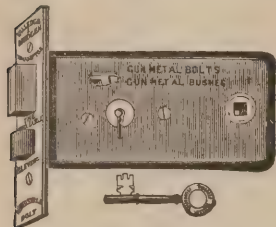
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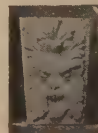
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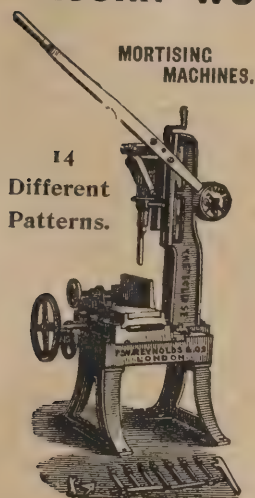
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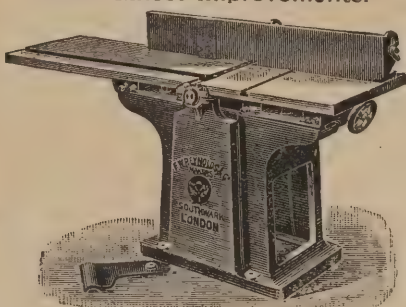
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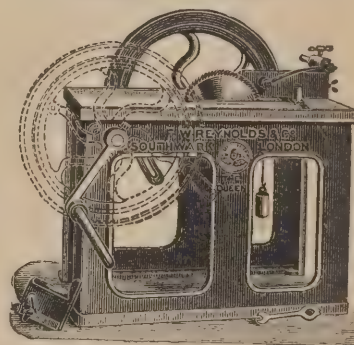
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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
March 16	Coventry—Cottages	Co-operative Society, Ltd.	G. and I. Steane, 22, Little Park-street, Coventry.
" 16	Shrewsbury—Sorting Office	Office of Works	The Post Office, Shrewsbury.
" 17	Blackburn—House	Blakey Moor, Co-operative Society	Simpson and Duckworth, Richmond-chambers, Blackburn.
" 17	Garvagh, Ireland—School	Presbyterians	W. J. and M. Given, Architects, Diamond, Coleraine.
" 17	Lintz Green, Durham—Church ... ..	.....	G. T. Wilson, 121, Durham-road, Blackhill.
" 19	South Ossett, Yorks.—School ... ..	.....	C. H. Marriott and Sons, West Park-street, Dawsbury.
" 19	Preston—Annexe ... ..	.....	Resident Engineer, Albert Edward Dock, Preston.
" 19	Holmes Chapel, near Crewe—Chapel	Corporation	W. Harrison, Saddler, Holmes Chapel.
" 19	Croydon—Repairs	Wesleyans	F. West, 23, Coombe-road, Croydon.
" 19	Wrexham—Baths	Union	Borough Surveyor, Guildhall, Wrexham.
" 19	Wrexham—Shed	Town Council	Borough Surveyor, Guildhall, Wrexham.
" 20	Stourbridge—Station	Town Council	The Engineer, G. W. R. Station, Wolverhampton.
" 20	South Kirby, Yorks.—Houses	Great Western Railway Co.	Garside and Pennington, Architects, Pontefract.
" 20	Barking, Essex—Additions	Colliery Co. Ltd.	C. F. Dawson, Public Offices, Barking.
" 20	Plymouth—Bathing House	Urban District Council	J. Paton, Borough Engineer and Surveyor, Plymouth.
" 20	Yealmpton, Devon—Cottages	Corporation	The Engineer, G. W. R. Station, Plymouth.
" 22	Workington—Drill Hall	Great Western Railway Co.	W. G. Scott and Co., Victoria-buildings, Workington.
" 22	Raiohill, Lancs.—Buildings	Asylums Board	J. Gornall, Clerk, Asylum, Rainhill.
" 22	Plymouth—Extension	Corporation	J. Paton, Borough Engineer and Surveyor, Plymouth.
" 22	Ovenden, near Halifax—Villas ... ..	.....	M. Hall, 29, Northgate, Halifax.
" 22	Londonderry—Reseating ... ..	.....	M. A. Robinson, Richmond-street, Londonderry.
" 23	Cork—Swimming Baths	Corporation	H. A. Cutler, City Engineer, Municipal buildings, Cork.
" 23	Blaengwynfy, Wales—Public Hall ... ..	.....	Alderman D. Evans, Gelly Hotel, Abergwynfy.
" 24	Carlisle—Farm Buildings	Mrs. Wise	G. Armstrong, 24, Bank-street, Carlisle.
" 24	Bradford—Fire Station	Corporation	Mawson and Hudson, The Exchange, Bradford.
" 25	Thorndon, Suffolk—Shed ... ..	.....	F. C. Foster, Thorndon.
" 27	London, S. W.—Dwellings	London County Council	Engineer, County Buildings, Spring-gardens, S. W.
" 27	Shirebrook—Chapels	Parish Council	Vallance and Westwick, Architects, Mansfield.
" 28	Tunbridge Wells—Lodge ... ..	.....	Borough Surveyor, Town Hall, Tunbridge Wells.
" 28	Lincoln—Buildings	Gasworks Committee	R. A. MacBair, Corporation Offices, Lincoln.
" 31	Solya, Pembroke-shire—Residence ... ..	.....	D. E. Thomas, Architect, Haverfordwest.
April 3	Gosforth—Additions	School Board	W. Beddington, 23, Eldon-square, Newcastle.
" 8	London, N.—Schools	Edmonton School Board	J. Moule, Brettenham-road, Upper Edmonton.
" 10	London, W.—Home	Paddington Guardians	J. W. Chapman, 18, Sutherland-avenue, Harrow-road, W.
ENGINEERING—			
March 17	Falmouth—Tanks	Guardians	Henderson and Son, River-street, Truro.
" 17	Birmingham—Boilers ... ..	.....	J. Cox, Engineer, Kent-street, Birmingham.
" 17	Warrington—Steel Mains	Corporation	J. Deas, Bank House, Warrington.
" 19	Barrow-in-Furness—Boiler	Corporation	Kin-aid, Waller, & Manville, 29, Great George street, S. W.
" 20	Mullingar, Ireland—Waterworks	District Council	E. R. Lonergan, District Council Offices, Mullingar.
" 21	Leeds—Dynamos	Tramway Committee	T. Hewson, Municipal-buildings, Leeds.
" 22	Cowes, Isle of Wight—Purifiers	Gas Committee	W. Halliday, 40, High-street, Cowes.
" 22	Rainhill, Lancs.—Electric Lighting ... ..	.....	T. L. Miller, 7, Tower-buildings, Water-street, Liverpool.
IRON AND STEEL—			
March 19	London, E.—Ironwork	Limehouse Board of Works	S. G. Ratcliffe, Clerk, Board Offices, Limehouse.
" 22	Valetta, Malta—Pipes and Fittings ... ..	.....	Crown Agent for Colonies, Downing-street, S. W.
ROADS—			
March 16	Bradfield, Berks.—Road Repair	Rural District Council	J. Forrester, District Surveyor, Theale, near Reading.
" 16	Barnard Castle—Materials	Rural District Council	W. Parkin, Surveyor, Barnard Castle.
" 16	Guildford—Materials	Rural District Council	W. S. V. Cullerne, Commercial-road, Guildford.
" 16	Repton, Burton-on-Trent—Granite	Rural District Council	C. F. Chamberlain, Union Offices, Burton-on-Trent.
" 17	Thorne, near Doncaster—Materials	Rural District Council	G. Kenyon, Clerk, Plantation-road, Thorne.
" 17	Wolverhampton—Street Works	Streets Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 17	Beverley, Yorks.—Whinstone and Gravel	County Council	A. Beaumont, County Surveyor, Beverley.
" 17	Epsom—Flints	Urban District Council	E. R. Capon, Church-street, Epsom.
" 17	Epsom—Granite	Urban District Council	E. R. Capon, Church-street, Epsom.
" 17	Morley—Materials	Urban District Council	W. E. Putman, Town Hall, Morley.
" 17	Southborough, Kent—Materials	Rural District Council	P. Hammer, Council Office, Southborough.
" 17	Stafford—Granite and Slag ... ..	.....	W. Morgan, 4, Martin-street, Stafford.
" 19	London, W.—Wood Paving Works	Hornsey Urban District Council	F. Dethridge, Vestry Hall, Harrow-road, W.
" 19	London, N.—Works	Rural District Council	E. J. Lovegrove, Southwood-lane, Highgate, N.
" 19	Aylesbury—Flints and Gravel	Rural District Council	F. B. Parrott, Bourbon-street, Aylesbury.
" 19	Bridge, near Canterbury—Flints and Gravel ... ..	.....	S. Sladden, Littlebourne, Dover.
" 19	East Retford—Granite	Parish Council	J. D. Kennedy, Borough Surveyor, East Retford.
" 19	Fryerning—Essex, Roads	Urban District Council	H. G. Warne, Tindal-square, Chelmsford.
" 19	Erith—Street Works	Paving Committee	Surveyor, District Council Office, High-street, Erith.
" 20	Bury, Lancs.—Street Works	Rural District Council	A. W. Bradley, Engineer, Corporation Offices, Bury.
" 20	Dowham Market, Norfolk—Materials	Town Council	H. Wayman, Clerk, Downham Market.
" 20	Dover—Materials	Rural District Council	E. W. Knocker, Castle Hill House, Dover.
" 20	Hull—Materials	Board of Works	A. Graeves, Surveyor, Hessele.
" 20	Lewisham—Making-up	Rural District Council	Surveyor, Town Hall, Catford.
" 21	Leamington—Stone	Rural District Council	C. H. Passman, 48, Bedford-street, Leamington.
" 21	Ipswich—Materials	Rural District Council	J. J. White, Surveyor, Needham Market.
" 23	Twotester, Northants.—Materials	Rural District Council	W. Sheppard, Surveyor, Bake-ley.
" 23	Eastbourne—Materials	Rural District Council	L. Jeffery, Trinity-chambers, Eastbourne.
" 24	Newbury—Repairs	Rural District Council	H. S. Talbot, District Surveyor, Cold Ash, Newbury.
" 24	Padiham—Various	Urban District Council	J. Gregson, Surveyor to the Council, Padiham.
" 26	Bridport—Repairs	Rural District Council	J. W. S. Bartlett, West Bay-road, Bridport.
SANITARY—			
March 16	Tarstock—Sewers	District Council	G. D. Bellamy, 6A, Courtenay-street, Plymouth.
" 17	Earlston, Scotland—Sewers	County Council	Thomson and Wright, 22, Rutland-square, Edinburgh.
" 17	Wilstone—Sewerage Works	Rural District Council	B. Asquith, Park-road, Tring.
" 19	North Staffordshire—Drainage Works	Infirmary	A. E. Boyce, Secretary, Infirmary, Stoke-on-Trent.
" 19	Walsall—Sewerage Works	Rural District Council	A. H. Lewis, 29, Leicester-square, Walsall.
" 19	Woolston, near Southampton—Disinfectants	Urban District Council	T. A. Collingwood, Surveyor, Council Office, Woolston.
" 19	Old Hill, Staffs.—Sewers	Urban District Council	D. Wright, Council Office, Old Hill.
" 20	Belfast—Pipes	Corporation	City Surveyor, Belfast.
" 22	London, S. E.—Drainage Works	St. Olave's Union	Newman and Newman, 31, Tooley-st., London Bridge, S. E.
" 26	Godstone—Sewerage Works	Rural District Council	T. C. Barralet, Surveyor, New Oxted.
TIMBER—			
March 19	Croydon—Firewood ... ..	.....	H. List, Union Offices, Mayday-rd., Thornton Heath, Surrey
" 19	London, W.—Wood Blocks	Paddington Vestry	Surveyor, Vestry Hall, Harrow Road, W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
March 23	Andover—Pavilion	£5 5s.	T. E. Longman, Town Clerk, Andover.
" 30	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor	J. B. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
" 31	Blackpool—Poster ... ..	.....	C. Noden, Town Hall, Blackpool.
April 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 23	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight—Buildings	£50, £50	W. H. Woodbridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
" 31	Riviera—Villa for Sir William Ingram	£78 15s., £23 5s., £5 5s.	"Architectural Review."
No date.	Glasgow—District Hospital	£150, £100, £50	J. R. Motion, 33, Cochrane-street, Glasgow.



MARCH 21, 1900.
No. CCLXVII.

EFFINGHAM HOUSE,
ARUNDEL STREET,
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An Architectural Causerie.

The Gothic House. IN the days when Gothic revivalists were full of hope and enthusiasm, there was one aspiration shared by all of them alike which none could claim to have realised; all believed that the modern Gothic house was possible, and several tried to build one; but they never came within measurable distance of success. Nobody is likely to make such an attempt to-day; and, if anyone should, it is not likely that he would be satisfied with the result. With churches it is very different; they may be cold, uninteresting and formal, but the application to them of Gothic forms does not seem anything unreasonable. It may be of some interest then to enquire whether there is any substantial reason why Gothic work seems suitable in a church and unsuitable in a house; for, seeing that people in the Middle Ages had houses as admirable in one way as their churches were in another, it seems at first glance remarkable that we should not be able to imitate both equally well.

From one point of view the period which elapsed between the supersession of Gothic architecture in the sixteenth century and its revival in our own shows a gradual assimilation of modern building to ancient forms. Certainly Chambers' work is more Roman than that of Elizabeth's time; and as the years have removed us further and further from the period when Gothic architecture was living, and archæological research improved our knowledge of ancient building, our work being inspired rather by ancient precedent than present need has perhaps become less straightforward and less sensible. No doubt there is much that is true in this view, but the progress of formalism did not altogether preclude a substantial advance in the arts of designing and building. Indeed, there are many ways in which the Classical style introduced from Italy rather furthered than otherwise the development of a system of planning and construction which should be suitable to our altered requirements.

So the modern designer inherits a number of expedients whose aid he will not willingly forego, but, seeing that these expedients have been introduced under the patronage of Classical art, they will be likely to clash with Gothic forms, and this is, in fact, what generally happens; designers attempt to combine the advantages of a Classic building with the forms of Gothic work, and the birth, as might be expected, is usually monstrous.

The enthusiastic Goth, perhaps, will hardly allow that Classic architecture introduced any

features of substantial utility, nor, indeed, would that incorrigible theorist Fergusson. They regard Classic art as a system of designing envelopes into which rooms and staircases have somehow or another to be squeezed. But may it not be the case after all that the arrangements which suit the classic envelope are in many ways an improvement on those of the middle ages? Take, for instance, the low-pitched slated roof to which the Gothicists object so strongly. It has the undeniable advantages of lightness and cheapness; yet in all probability it would not have been used so commonly in this country but for the Classic style to which a low-pitched roof is proper. Again, everyone will admit that the flat plaster ceiling is the best thing for an ordinary living-room with another storey above it, and though I am not aware that the Romans used such things, the builders of the seventeenth and eighteenth centuries treated

which shall be definitely Gothic; to give up sash windows, plaster cornices and ceilings, architraves and door-linings; then we may get such a house as might really have been built in the Middle Ages, dry and archæological, perhaps, but at least having the merit of consistency.

The other course, and the one generally taken, is to preserve the useful features which Classic architecture has given us and try to make them look Gothic; sash frames are hidden behind stone mullions; flat plaster ceilings with cornices are used, but the cornices given a quasi-Gothic section; all that is altered, is, in fact, the merely ornamental part of the building, so that the house is Gothic only skin-deep; the main lines of its construction are Classic. The inevitable result of these conditions is an incongruity which debases the Gothic style itself; so that it is now fallen into such disrepute that good house architects avoid it like the plague. Yet I cannot doubt that if anyone should have the courage to build a house that was Gothic in its principles as



HIGH STREET, CHIPPING CAMPDEN. FROM A PENCIL DRAWING BY ARTHUR J. GASKIN, STUDENT OF THE BIRMINGHAM MUNICIPAL SCHOOL OF ART.

them so well that they became an integral part of the style. Sash windows, too—who would be without them; and there is no doubt that the square-headed Roman openings take them far better than the arched Gothic ones. But to multiply examples is tedious; after all, it is not unnatural that improvements in building should have accompanied a constant rise in the standard of comfort, and, if the Classic style had been incompatible with these improvements, surely it would not have endured so long.

The Classic builders, then (working, of course, on materials supplied them from the Middle Ages), have equipped us with an excellent method for dealing with most of the features of a house. Hence, if we wish to design a Gothic house, we must take one of two courses; we may reject these methods and use no feature not known in the Middle Ages. This, surely, is the true way of designing if we set out to build something

well as in its trimmings, that feeling would be altered; perhaps we might return to the idea of basing our work on Gothic rather than on Classic; for base it on something we assuredly do and shall.

E. B. S. S.

Four Doomed Theatres.

WITH the beginning of the County Council's Holborn to Strand improvement will come the end of four London theatres—the Opera Comique, Globe, Olympic, and the Gaiety. That these will all be replaced we do not know, but that the Gaiety will rise again is certain, because the Council has agreed to provide a new site for the reincarnated house presently to be demolished. It is not too much to say that London will gain by the sweeping away of these four

houses of entertainment. They—even the best of them, the Gaiety—have outlived their time, and are alike inconvenient for the audiences they are supposed to accommodate, and dangerous for all who frequent them, by reason of being hemmed in by property liable at any time to become the scene of a great conflagration. The Opera Comique and the Globe both date from 1868, and are remarkable for being, alone among London theatres, built back to back, a party-wall only serving to separate their stages. Like their near neighbour, the Olympic, they are certainly not acquisitions to London street architecture, and no one need deplore their coming destruction. It is perhaps little known that the frontage of the Opera Comique to the Strand is, in point of fact, a false one, and that it is only the opening of a long passage which dips down under Holywell Street and conducts to the theatre, itself situated in the block of houses between Holywell and Wych Streets. The sum of £40,000 has been awarded by the arbitrators from the Council to the freeholders, who claimed £60,000. What would they have claimed had these things come to pass in the days of the little theatre's prosperity, from 1877 to 1882, when the early operas of the Gilbert and Sullivan series were drawing the town and bringing crowded houses? When the Savoy was opened, towards the autumn of 1882, the Opera Comique fell on less prosperous and more chequered days. The Globe has been more successful. Built in the vast pit dug for the foundations of a projected (and eventually unsuccessful) scheme for a gigantic Strand hotel, it did not, it will thus be seen, start with the best kind of omen. Fronting on to Newcastle Street, its first tier of boxes is underground, just below the level of the pavement. Despite the many tinkering and re-decorations it has undergone, the interior of the Globe is barn-like and draughty.

The Olympic is the second theatre on that site. The first was built at the beginning of the century on the ground just previously occupied by the old mansion of Craven House, and was curious as having been largely constructed from the timbers of a captured French battleship, the *Ville de Paris*, in which William the Fourth had learnt seamanship in his youth, as a midshipman. That house was built by Philip Astley, of Astley's theatre, as the "Olympic Palace." Perhaps it was because the public did not understand the allusion to the classic Olympian games that this half theatre—half circus—failed to pay. Some years later, it was taken by Elliston, and in the thirties and the forties became the scene of the many triumphs of Madame Vestris. Burnt down, it was speedily re-opened, but lost its favour, and has had but short and fitful gleams of prosperity since then. There is an air of sordid wickedness about the exterior of the Olympic and the neighbouring purlieus of Wych Street, Newcastle Street, and Drury Lane, which leads the Londoner to rejoice that the end of the district is at hand.

Of the Gaiety, which was reconstructed out of the old Strand Music Hall so far back as 1868 by the late Mr. J. S. Phipps, there is little to be said, save that it does not, at this time of day, come up to the requirements of the public. It is one of Phipps' earliest and least successful designs. He had an extraordinarily successful career as an architect of theatres, London and provincial, and practically held the monopoly of this exceedingly specialist work; but although there are some not unpleasant works of his, there are none of them quite in accord with modern ideas, save perhaps his last—Her Majesty's, in the Haymarket. The new street, with the new theatres that will doubtless be built, should serve to give the younger men their chance.

C. G. H.

On Reflection.

The Abuse of Street Facades.

IT is sad to look at the majority of modern street frontages. To any one possessing an artistic perception they are a mass of incongruity and discord. Putting aside the question of architectural design, what need is there to destroy a possible charm or accentuate a very probable eyesore by covering the front of our street buildings with huge and hideous letters? These are the days of gigantic monopolies, and the spirit has infected commercialism and business to such a degree that nothing that is less than a colossus in some way or other can expect to attract attention; and the idea is thus prevalent that unless a shopman covers the front of his premises with letters several feet long he will be lost in the crowd and will lose custom. But things have come to this climax, that as everyone's name is set forth in these large letters a newcomer who would make himself prominent must have his name in letters larger than any around him. A competition in big letters ensues, and see the result! Take a walk down the Strand, for instance (and this is by no means an exceptional example), and you will find it hard to discover a house that is not marred by this miserable lettering fever; and, to make things worse, the letters not only extend along the top of the great sheet of plate glass that forms the base front of the building, but are distributed wholesale over the entire façade. If you want a glaring example of this modern bad taste, compare an engraving of Ludgate Hill from the Circus a hundred years ago with the Ludgate Hill of to-day, and you will see that the former had a rest and harmony of its own, while the latter is chiefly composed of an ugly railway bridge and signals and a range of great letters. There is only one consolation; that is, these letters serve in many cases to cover over the bad architecture. But there is only little comfort in this, and it will be a happy day when small shop titles take the place of those which we now see on every hand.

Reflection in Art.

A MAN'S work without reflection is an empty thing, a hollow ball, a shell without its kernel; so that the presence of the reflective spirit is essential in all that can claim to be of real value. There are, however, limitations to reflection, stages at which it should cease, and it is with these points of arrest in art reflection that it is now the object to deal. Reflection ought always to follow knowledge if it is to end in good results, for, if a man keep thinking in ignorance of that which he would abandon with greater knowledge, his time is indeed ill-appropriated. Shakespeare gives a good example of the evil effects of over-reflection in the much-debated character of Hamlet, who, it will be remembered, keeps putting off the act of vengeance which he clearly recognises to be his duty by morbidly thinking of this and that when he ought, following his convictions, to have been acting. Artists (using the word in its wide meaning), being of a temperament which tends to make them men of thought rather than men of action, require to exercise a special surveillance in order that they may not fall into this mistake. Napoleon's was a good test

in many ways when he demanded first of every man "what he had done." It is to be regretted that the number of the "might be's" is so large, for we all know of persons who either from too much or too little reflection slide down with the human tide either as brilliant bubbles on the surface or heavy logs below. How many are the architects who are for ever planning some glorious structure of which never a stone is laid; while, all the time, the accomplishment of a humbler idea is within their reach. It is, of course, quite possible that this want of action may be due to weakness in character, but even amongst strong men the same characteristic is seen, and it is then generally the result of over-reflection. The true ideal of all, especially artists, architects and craftsmen, should be one of fact, not a flimsy, misty creation with no bottom on the earth. Of what use is the poet whose fancies, however delightful or elevating they may be, lead him to keep the pen away from the paper when it ought to be working there? And an architect of a similar type, the man who dreams away a practice, is he not much at fault? Yet it is the men of this type who never cease to sneer at his more matter-of-fact brethren who are doing something. Of course, the other extreme, that taken by those men of action whose work is unimaginative, tasteless, and lacking in reflection, is equally (if not more) deplorable. But there is a happy medium which the really great must always reach, where the fact and the fancy are mingled in well-judged proportions, and neither is allowed to drag the other into a region of poetical unreality or "earthy" commonness.

Small Gardens.

WHILE architects of note have devoted much time to the designing of gardens for their mansions and palaces, the humbler architect does not apply the same spirit to the smaller buildings erected under his supervision, and it thus happens that we rarely see a small house with a tastefully laid-out garden. This is to be regretted, for the minor practitioner has here a chance of effecting a most appreciable and pleasing change. It is a common plan when, for instance, an estate is being laid out, to divide up the land into rectangular plots, put up a house at one end of each, and leave the rest to Time and a piece-work gardener, and many a house is in this way robbed of a charm which it might possess were its surroundings more in keeping with itself. The argument against this practice is that laying-out the gardens of small houses costs money, and the property cannot stand the expense; but the extra cost would be little in excess of that now incurred, the improvement being effected simply by a judicious and artistic arrangement of the paths, beds, and shrubs, together with such woodwork as might be required to shut off certain parts of the gardens. Again, it is a common thing now to see a row of houses each with a small front garden that is quite too small to be effective. In these cases it would be more satisfactory if all the divisions between these tiny gardens were removed and a long patch of green set out along the whole front of the row, with paths leading to every door. This has been done in many cases, and with good results—through the foresight of the architect; and it would be well if back gardens received the same care, and so became a great deal more artistic than they generally are at present. It is certainly a mistake to think that because they are small they are not deserving of special attention.



DESIGN FOR PANEL. BY GERTRUDE M. BRADLEY.

BIRMINGHAM MUNICIPAL SCHOOL OF ART.

By E. PRESTON HYTCH.

(Concluded from page 85, No. CCLXVI.)

IT is an important circumstance that many of the teachers at the Birmingham Municipal School of Art are directly connected with local industries. At the present time eight of the teachers of the branch schools are engaged in the metal trades, five are architects, two lithographers, three stained-glass workers, two book illustrators, and one is a wood-worker. The headmaster, Mr. Edward R. Taylor, acts as referee for the teaching of drawing in the two high schools and the seven grammar schools of the King Edward's Foundation; and every year examines in drawing all the pupils of those schools. Most of the art teachers in those schools have been trained in the Birmingham School of Art.

At the Central School, morning, afternoon, and evening classes are held, on five days a week, for forty weeks in the year; there is also a class on Saturday afternoons, mainly intended for such students as wish to work in colours, and as could not otherwise receive instruction by daylight. The curriculum includes all branches of drawing, shading, painting, design, and modelling; geometry, perspective, and sciography; architecture and building construction. In addition to these subjects, qualified students are enabled to carry out their own designs, and to receive the necessary technical instruction in the following processes: Repoussé and kindred subjects, e.g., niello, chasing, etching and engraving on metal, damascening, filigree, and metal casting; enamelling: cloisonné, champlevé and Limoges; wood and stone carving, drawing for book illustration, wood engraving, embroidery and other needlework, terra-cotta, silver casting, die-sinking, encaustic painting, leather-work, the making of decorative cartoons, and working in fresco, gesso, tempera, oils, sgraffito, lithography, &c. Craftsmen, designers, architects, and others thus have the opportunity, not only of studying design, but of actual practice in executing their designs in the respective materials. Apart from the ordinary class meetings, thirty lectures on different branches of art are every week given in the Central School.

As to the class of students in attendance, all the students of the branch schools are artisans; and the great majority of them

directly apply to their trades the knowledge which they acquire in the classes. Most of the students of the Central School also are artisans. The students there include architects, builders, designers for all local manufactures, artists in stained glass, brass-workers, iron-workers, die-sinkers, modellers, lithographers, draughtsmen, house-painters and decorators, persons in training to become art teachers, &c.

The total number of individual students under instruction during the autumn term, 1884, was 846; in the autumn term, 1885, on the transfer to the Corporation, it was 1,439; and this number has gradually increased until during the session 1899-1900 it has reached 4,100.

Much help is given to deserving students by the schemes of free admissions and scholarships; and it is possible for a pupil not only to be taught drawing and kindred subjects without the least conflict of method, from the most elementary to the most advanced stage, but to receive that instruction practically without cost to himself. At the present time there are more than 600 free admissioners to the branch schools under the scheme for the award of free admissions to the older pupils and to the ex-pupils of all public elementary schools within the city; twelve free admissioners, under the "William Middlemore" bequest, to the evening classes at the Central School; the following free admissioners and scholars under the scheme provided by the late Miss Ryland, namely: forty free admissioners to the branch schools, fifty free admissioners to the evening classes at the Central School, twenty free admissioners to all the classes at the Central School, and fourteen scholarships, with free admission to all the classes at the Central School, of a total annual value of £170; and one scholarship, with free admission to the Central School for three years, given by Sir Richard and Mr. George Tangye, in memory of the late John Skirrow Wright, and of the total monetary value of £180. A "J. S. Wright" scholar has recently studied for one year in Paris, agreeably to the conditions of that scholarship. In addition, the Committee have adopted a scheme under which they award, in each year, twenty-five free admissions, tenable for two years, to all the classes at the Central School; the competition is limited to such pupils or ex-pupils of the public elementary schools within the city as are under sixteen years of age, and as are exempt from attendance at day schools.

The finished studies executed in the schools are annually forwarded to the Government Department of Science and Art, South Kensington. In the national competition of all the

schools of art in the United Kingdom, 1899, the Birmingham School obtained, for the ninth successive year, a larger number of awards than any other provincial school. Each of the advanced departments in the school is usually represented in the list of national awards. To take a typical year: in 1896, Messrs. H. H. Armistead, R.A., T. Brock, R.A., G. J. Frampton, A.R.A., W. Goscombe John and Hamo Thorneycroft, R.A., the examiners in modelling and modelled design, gave twenty awards in these subjects to students of the Birmingham School. Twenty awards were gained for design, drawn or painted. The Hon. John Collier and Messrs. E. Crofts, A.R.A., A. Hacker, A.R.A., Seymour Lucas, A.R.A., and W. F. Yeames, R.A., awarded fifteen medals and prizes for drawing and painting from the life and antique; Professor G. Aitchison, A.R.A., and Mr. T. G. Jackson, R.A., no less than seven silver and two bronze medals and three national book prizes for architectural drawing and design. For painting from still life and for interiors, Messrs. E. F. Brewtnall, R.W.S., G. D. Leslie, R.A., and W. F. Yeames, R.A., gave four awards; whilst three were obtained for pen and ink sketches, and two for studies of historic ornament. Further, in the personal (or time) examinations in art 3,230 successes were obtained in 1899, against 2,429 in 1896.

It will be seen from the above-mentioned facts that the work of the school, affecting all classes of the community, has not only a great educational influence on the city, but has a direct bearing upon the value and prosperity of the manufactures of the district. Indeed, the scope of the work done gives to the school a position absolutely unique in Great Britain. The gross annual expenditure on the central and branch schools is £15,211; the annual income from fees, grants, and other receipts amounts to £6,373; and the sum of £8,838—of which £1,454 is ear-marked for interest on loans and sinking fund—is thus left to be provided out of the municipal funds. On the permanent staff there are in all one hundred and nine teachers or other officials, eighty-four of whom devote to the school varying portions of their time—according to the duties in which they are engaged. Twenty-five officers are wholly in the service of the school.

Of inestimable value to the school is the active assistance of the Birmingham Jewellers' and Silversmiths' Association, and of other employers. To Councillor Charles Green, an ex-chairman of that Association, is due the credit of suggesting the establishment of the Vittoria Street branch school. On his proposal a special class for jewellers and silver-

smiths was opened in 1888 at the Ellen Street branch, and so successful did that class prove that in the following year the City Council sanctioned the acquisition of the building in Vittoria Street. The School of Art Committee have let to the Association, for the teaching of processes, a room in that branch school. Students are admitted to that room, called

School Sub-committee Mr. William H. Lord is chairman. The Birmingham Architectural Association is also allied with the Central School; the Midland Association of Flint Glass Manufacturers annually offer prizes to glass workers in attendance at the branch schools; the class for house painters and decorators is supported by the trade organisa-

urge young artisans to attend. There had been branch schools in the jewellery district before the establishment of the Association, and the schools had been well advertised. Now, however, that the jewellers and silversmiths have personally advised their employees to attend, the number of students every year is at least 200 more than it would otherwise be. If, in any term, as large a number of students as formerly is not in attendance from any works, enquiries are made, and it often happens that the decrease is due to the fact that the manufacturer has not taken the usual steps to urge his employees to attend. The direct monetary return from studying drawing, design and modelling, comes eventually both to employer and employed; but it must not be expected too speedily, or without care and attention on the part of the student. Some years ago there was a large increase of students in one of the classes—an increase mainly due to some published remarks as to the value of drawing and design in a local industry. Several middle-aged men joined, under the impression that in about a month they could obtain from their teacher an artistic recipe for increasing their wages without much effort on their own part; and they left, disappointed. On the other hand, a local manufacturer received from London so many orders for an article of a certain trade number that he enquired who had designed it; he found that it was designed by a young student who had studied plant drawing and design at a branch school, and readily adapted to his trade the knowledge thus acquired. The manufacturers who purchase designs from outsiders often complain that those designs are unworkmanlike; but if they would do all in their power to increase the study of drawing, modelling and design amongst their own employees, who are daily experienced in the technical requirements of their industry, they would soon find qualified designers within their own workshops. This study would immeasurably increase the value of the large and beautiful collection of objects of industrial art at the museum and art gallery; for the artisans would then be able to see for themselves in what the beauty of those objects consists, and would possess skill enough to begin to follow the best masters in their respective crafts. The essential purpose of the Municipal Schools of Art is to make workmen better workmen.

A review of the work of the last decade would be incomplete did it not record the stimulus, guidance, and encouragement afforded to the students by the examiners for local awards, and by those who have from time to time addressed the students. Amongst the examiners are Mr. J. Aumonier, R.I., the late Sir Edward Burne-Jones, Bart., Mr. Jethro A. Cossins, Mr. Walter Crane, R.I., M. E. Lanteri, Mr. W. J. Wainwright, A.R.W.S., the late M. Willms, and Professor Bertram C. A. Windle, M.A., M.D., D.Sc., B.Ch., F.R.S. Those who have delivered addresses include: The Right Hon. Joseph Chamberlain, M.P., Professor Sir W. B. Richmond, R.A., Sir Charles Robinson, F.S.A. (Crown Surveyor of Her Majesty's pictures), Mr. G. H. Boughton, R.A., Mr. Thomas Armstrong, C.B., (formerly Director for Art of the Government Department of Science and Art), the Right Hon. Sir William Hart Dyke, Bart., M.P. (then vice-president of the Committee of Council on Education), Mr. J. Thackray Bunce, Mr. W. Holman Hunt, R.W.S., the late Mr. William Morris, Mr. T. G. Jackson, R.A., and Mr. E. Onslow Ford, R.A. Mr. Wainwright, an ex-student, whose devotion to the school is only equalled by its pride in him, and who had for several years prepared for the Committee most valuable reports on the work, was in February, 1895, invited to distribute the prizes and to address the students. His eminence alike as an industrial designer and a painter justified the selection. He said that he regarded the invitation as an act of recognition from the Committee to the old students, and continued:—"Some of us are practising our art far away from the scenes of our youthful studies; others are still in the city, and of these many are here present. And I ask you, my old fellow-students and colleagues, to call



PANEL, 'THE SINGERS,' IN THE TOWN HALL, BIRMINGHAM. BY HENRY A. PAYNE

the Technical Room, on conditions jointly adopted by the committees of the School and of the Association, and intended to secure an adequate training in drawing, design and modelling; and the instruction given in it is under the control of the Association, of whose Art and Technical

tions; and Mr. Thomas Cond, Alderman Cook, and Councillor Davis, all local manufacturers, yearly give prizes. Much more could be done in this direction. It would be of great service if employers and foremen, encouraged by the success which has attended the work in Vittoria Street, would

my voice your own. And we will raise it, first, in affectionate tribute to those city fathers to whose unwearying zeal in the cause of art the community owes so much, to Mr. Alderman William Kenrick, to Mr. John Thackray Bunce, and their colleagues, past and present. Those names, so heartily received to-night, will be held in honour so long as art shall be esteemed, and unselfish devotion to public duty accounted a virtue in our midst. To them we owe the advantage of having had the early guidance of our revered master, Mr. Taylor (around whom we are gathered to-night), and who must see in all this a recognition of his labours. He has been to us a good master. Ever, by example and precept, has he shown us what it is to be an artist; and wherever our subsequent steps may have taken us, his early influence has never been effaced, and can never be forgotten."

MODERN HOSPITALS.*

By WILLIAM HENMAN, F.R.I.B.A.

THE subject of this paper is an extensive one, capable of being treated in a variety of ways and at considerable length; but it will only be possible here to make a general survey of the numerous classes of buildings employed for hospital purposes. Yet in making that survey I may be able to direct your attention to the principles of design and construction which experience has so far indicated to be essential, and to note some details which have proved serviceable, as well as to indicate the direction in which further improvements may reasonably be expected.

Several eminent authorities have written exhaustively upon the history of hospital design and development. To one of the most modern and comprehensive works, entitled "Hospitals and Asylums of the World," by Sir Henry C. Burdett, I am indebted for the facility of examination and comparison which are afforded by the large number of plans of hospital buildings therein set forth. The late Sir Douglas Galton's publication, entitled "Healthy Hospitals," also contains much valuable and fairly up-to-date information in a condensed form.

Presuming you are all more or less acquainted with the literature upon the subject, we will proceed to enquire why it is that hospitals are a necessity, and what are the principles which should guide us in their design and construction. Primarily, they are required because in many homes serious illness or accident cannot be properly attended or treated. Secondly, the larger of them form

centres for medical, surgical, and nursing instruction. The art of medicine and the science of surgery, particularly the latter, have made great strides of advancement during the last half-century, and it is impossible to bring to the bedside of all who might benefit by them the various means and appliances which science and art have devised for the alleviation of suffering or the cure of disease. Unfortunately it is the lot of many to have had experience of serious illness in their homes. Let us suppose such happens in a family consisting of several members. One of the loved ones being stricken down with disease or hurt, a room has to be set apart for the patient. Someone, may be a paid nurse, has to be in attendance, for whom another room, as sleeping apartment, may have to be given up, while someone else watches by the bedside of the patient. Those rooms must be periodically cleansed and dusted. Fires have to be kept up in cold weather. Additional work is thrown upon the kitchen, special foods and nourishment having frequently to be prepared and regularly supplied. The physician or surgeon, sometimes both or more than one of each, comes and goes and may even at times have to remain in the house and be provided for. Medicines and appliances have to be procured and administered. Members of the family may have to relinquish their ordinary avocations or recreations so as not to disturb the patient. Children must be kept quiet, and everyone moves about the house as noiselessly as possible.

Under such circumstances, is it a wonder that illnesses cause considerable inconvenience and often tax severely the capabilities of even the best arranged houses of well-to-do people? How much more then is that likely to be the case in small and badly arranged houses occupied by the families of the poor.

The foregoing words not only give reasons enough why hospitals are required, but indicate the main principles which must guide us in designing a workable hospital. I say a "workable hospital" because it is essential to realise that a hospital is not merely a ward or even a series of wards for the reception of patients. The ideal of a perfect hospital would be a building, or set of buildings, in which a number of sufferers can collectively be attended and nursed with as much safety, ease, comfort, and convenience as a single patient could be in a detached house specially designed and constructed for his particular requirements, regardless of expense.

What I have so far endeavoured to indicate is that sufferers from ill-health, accidents, or disease are more or less helpless individuals who require trained nursing under the watchful care of physicians or the skilled services of surgeons.

Comfort and quiet have to be secured in the wards; their construction and fittings must be such that they may be maintained in a clean

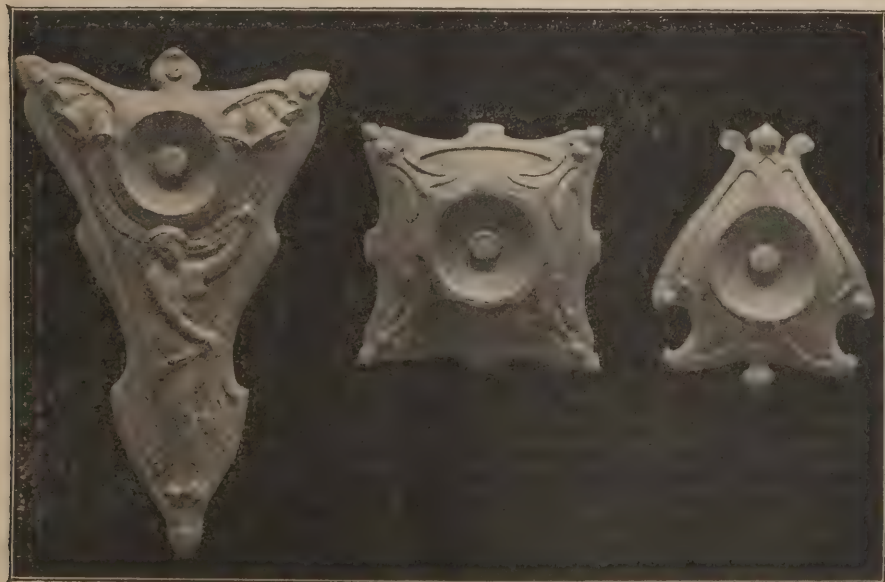


FINGER-PLATE, COPPER CHASED PEACOCKS.
BY W. FRENCH.

and healthy condition with the least possible labour and without inconvenience to the patients. Sanitary and ablutionary appliances must be near at hand, cautiously arranged and fitted so that neither nuisance nor danger to health can result from their proximity. A well and evenly-lighted room for surgical operations should be equipped with every useful appliance and instrument which skill has devised. Suitable day and night accommodation must be set apart for the medical and surgical staff, for the nurses, maid-servants and male attendants, and in the larger institutions for house governor, secretary, matron and other officers necessary for the management. There must also be a dispensary and space for ambulance requirements. Kitchen accommodation and appliances must be adequate, with ample space for stores of all descriptions. A well-appointed laundry is required, and there should be a decent place for the reception of the dead, with post-mortem examination room adjoining.

When a clinical school is attached to a hospital, further provision has to be made for lectures, post-mortem examinations, pathological and chemical research, also common rooms, cloak rooms, and conveniences for the use of the teaching staff and students. Additional floor area is also required in the wards around the beds when the students are numerous. Connected with most large hospitals are out-patients' departments, which, although useful and necessary in populous localities, are not essential adjuncts.

With the exception of those which are provided and maintained by medical or surgical practitioners for their own use, hospitals are public institutions erected and supported out of public moneys, by individual generosity, or by subscribed funds. In either case they should be designed and constructed with a view to true economy, not only in the first outlay upon the site, building and equipment, but also as regards the labour and expenditure daily incurred. Externally the buildings



MODELLED DESIGNS: SET OF BELL PUSHES, METAL REPOUSSÉ. BY W. MORRIS.

* A paper read at the Carpenters' Hall on March 8th, 1900.

should certainly not be mean, much less repulsive, in appearance. If small, they may be homely in character; if large, they should be dignified in their architectural treatment; but whatever style may be adopted, it should never be permitted to interfere with convenience of plan or the appropriate requirements of the buildings.

The architect must ever remember and the builder, as well as every workman, should be made to realise that, apart from the knowledge and skill of the physician or surgeon and the watchful care of nurses, there is much in the design and construction of buildings intended for hospital purposes which may either add to or detract from the comfort and chance of recovery of patients, as well as either secure or impair the health and convenience of the staff. The physician, the surgeon or the nurse who by ignorance or neglect jeopardises the life of a single patient is justly condemned; how much greater then is the responsibility of those who, having been entrusted with the design or construction of the buildings, may through acts of commission or omission endanger the health of many, or cause inconvenience and discomfort, so long as their work is permitted to exist.

Some buildings have been badly designed, others improperly constructed, adapted or added to, others inadequately maintained or cleansed, and in others the sanitary appliances and drainage are defective. Such buildings are liable, in the course of time, to become infected to such an extent that patients would often recover more quickly or with greater certainty in an ordinary dwelling.

In view of these facts, and because our soldiers during the Crimean War, when wounded or stricken with disease, made better progress towards recovery in temporary huts, and even in the open, than when nursed in permanent buildings—most of such buildings, by the way, not having been designed or properly equipped for hospital purposes—a cry is raised from time to time that all hospitals should be temporary structures which should frequently be destroyed and renewed. This however is an exaggerated idea, for there is no real reason why a properly designed and suitably constructed permanent building should not continue serviceable if adequately maintained and periodically cleansed.

Temporary buildings, if frequently destroyed and replaced by new ones, are far too expensive; the best of them will not compare in comfort and convenience with those that are of more permanent construction, and, as a matter of fact, the so-called temporary buildings are too often permitted to exist and be used long after they ought to have been destroyed. There are many occasions, no doubt, when temporary hospitals become a necessity to meet the requirements of epidemics or other emergencies, but the most reliable authorities rightly advocate that hospitals should generally be of a permanent character, carefully designed and constructed on the best known sanitary principles. It then rests with those who are responsible for their maintenance whether or no such buildings remain healthy and permanently suitable for hospital purposes, because it is a fact that, without constant care and attention to cleanliness, the bringing together under one roof of a number of persons in bad health is liable to contaminate the buildings with germs of disease, which may become a source of danger to the health of both patients and staff; consequently, one of the problems which architects are expected to solve is how best to design and construct buildings which, by ordinary means and reasonable care, may be proof against the lodgement of these injurious germs, or whatever it may be which causes an unhealthy condition of the buildings.

Although during recent years science has done much to enlighten us with regard to the propagation of disease, still there is much that remains obscure; and, although architects can only be guided by what is definitely known or generally accepted as essential, they may by personal observation and minute attention to details apply such knowledge and experience with more or less advantage to the health and comfort of those

who occupy the buildings with which they are entrusted.

The late Sir Douglas Galton, in the concluding remarks to his generally excellent treatise, entitled "Healthy Hospitals," enumerates *light, air, and warmth* as the three essentials of hospital design, but I venture to suggest that *warmth* is not always required, and prefer to substitute for it as the third essential, *purity*—for that is a constant necessity. Having before me, whilst writing, the publication to which I have just referred, my eye was attracted by the last paragraph, which seems to me somewhat unjust to architects and uncalled for. It runs thus: "It is hoped that by bringing together this information, the erection of large palatial hospitals in towns or other localities which are not suited to them will be discountenanced and that the hospital architect, instead of seeking to erect a monument of his skill and taste in architectural design, will be content to provide simple structures, abundantly supplied with light and air, in which the interests of the patients and their recovery will be not only the first, but the only consideration."

It sounds very plausible, but it is reasonable to ask why the skill of architects should be at all employed on such buildings if their art is to be ignored; for, as a matter of fact, and it would be to the advantage of all if everyone would remember, it does not follow that, because a building is architecturally pleasing it is consequently more expensive or less appropriate for its intended purposes than is one devoid of architectural merit.

It would not be difficult to point to hospital buildings, in the design and construction of which neither cost nor trouble has been spared in the endeavour to make them perfect in the interest of the patients and their recovery, the external appearance of which, to say the least, is unsightly; and yet, so far as I can learn, the patients progress no better in them than they might do in buildings less costly but designed with some degree of architectural taste.

With regard to the General Hospital, Birmingham, completed in 1897 from my designs, whatever opinions may be formed of its architectural treatment for a city hospital built and supported by voluntary contributions, it is within my knowledge that, if the external design had been stripped of every architectural feature, the material employed being terracotta, no greater sum than from £5,000 to £6,000 could have been saved. Do you suppose that the citizens of Birmingham begrudge so comparatively small a sum out of a total of £210,000 which they have provided for the site, the buildings, and their equipment?

Is there not even more than a probability that, out of the hundreds who will reside in those buildings, either as patients or those who minister to them, there may be many who will be cheered by the evidence constantly before them that, in addition to providing for their comfort and wants, thought and consideration have been bestowed upon the artistic design of the buildings in a manner to mark the nobleness of the work performed in them? At least, I know that the friends of the patients, the staff, and the general public are favourably impressed by the architectural character of the buildings, and that visitors to Birmingham, of every grade, are taken to view them among the sights of the city.

Apart from the broad treatment in architectural design of hospitals, there are minor matters of detail worthy of attention. For instance, sanitary conveniences are required throughout hospitals, therefore soil and waste pipes are a necessity and have to be provided in numerous and frequently prominent positions. In some cases they are hidden away in such a manner as to be difficult of access for inspection or repair, but more frequently nowadays it is the custom to exhibit on the exteriors of hospital buildings elaborate examples of the plumber's art; yet I venture to believe you would give preference, so far as appearance is concerned, to the inoffensive arrangement of such pipes at the General Hospital, Birmingham; and, judging from results, there is not the least reason to suppose that the unsightly exhibition of the bare bones of plumbing requisites are one whit more

serviceable, and certainly no less costly nor more easily kept in suitable repair.

Other matters of detail in which, by a little art, the common requisites of everyday hospital use might be made more sightly and even pleasing in appearance could be enlarged upon, but we must return to general principles.

In order to secure the three essentials of *light, air and purity*, it is necessary to have a suitable site, ample in extent. It should stand high and dry with an inclination preferably towards the south, and the axis of all long wards should run as near north and south as the nature of the site and surroundings will permit, and be so arranged as not to overshadow one another; by these means good light may be secured, and, although the chance of supplying fresh air from without is thereby facilitated, it is a difficult matter in our changeable climate to ensure an adequate and constant change of air within the buildings, for whatever construction may be employed as a protection from the outer elements, it must of necessity more or less impede the free movement of air which takes place in the open, by which purification of the atmosphere is to a large extent effected. It is generally recognised that air soon becomes vitiated even in buildings continuously occupied by a number of people in reasonably good health, and unless frequent change of atmosphere is by some means brought about an unhealthy condition results. In hospitals it is of still greater importance to have a constantly changing atmosphere, because contamination of the air more readily takes place around those suffering from disease or hurt.

I may again revert to this all important subject of ventilation, but will pass on now to the third essential *purity*, without the two former *light and air*. *Purity*, or in other words cleanliness and freedom from defilement, can scarcely be attained. In the manner of building frequently adopted, although wards, rooms, and corridors about a hospital may be well lighted and provision be made for continuous change of atmosphere within, there are plenty of cavities and void spaces where impurity may lurk and be little suspected. Consequently the air supply to such buildings becomes contaminated. Although it is advisable to avoid all inaccessible places where impurities may accumulate, I must warn you against an error into which some have fallen by supposing that all walls, floors and ceilings should be of hard and impervious materials. If so constructed, rooms or wards are far from being pleasant places of abode. It is more difficult to properly temper and ventilate them; condensation takes place upon the more exposed surfaces in cold weather; sounds reverberate in a distressing manner; and, being unyielding in their nature, such materials are liable to crack, and are then difficult to repair or make good. Some suppose such buildings to be fire-resisting in the highest degree, but experts demonstrate that materials more pervious have greater fire-resisting qualities.

Although advocated by many authorities, it is, to my mind, questionable whether it is advisable to coat all walls and ceilings with a non-pervious material in buildings where natural means or exhaust methods of ventilation are depended upon. Doubtless the lower portions of walls, where they are liable to become dirtied or splashed, should be coated with a washable material and be frequently wiped over. The floors also should be of non-porous material. Teak or oak boarding, tongued and grooved, grounded with paraffin wax and wax polished, makes a most comfortable, and at the same time, a most efficient flooring. It can be kept clean without having to be wetted, and is less hard, cold, and unyielding than marble terrazzo, now frequently employed. That material, however, is, perhaps, the best available for corridors, operating and similar rooms, but when employed on large surfaces its unyielding nature causes irregular cracking, which cannot be satisfactorily repaired.

Following in importance the three essentials of *light, air, and purity* come suitable temperature, cheerfulness, and quiet, all of which may be secured by care in design and construction. Other requirements are—perfect sanitary and ablutionary appliances, ample

and well distributed hot and cold water supplies, and also good artificial lighting (the electric light being preferred, because it does not contaminate the atmosphere). Provision must be made for cooking suitable food for both patients and staff; washing and laundry apparatus are necessary, and also means for distributing meals and other requisites, including lifts, when buildings are of two or more storeys, are also needed.

It being conceded that hospitals are a necessity of the times, naturally some kind of classification must be adopted. First, as regards individuals, they will be divided, men, women and children; then as regards their complaints, when the numbers to be accommodated under one roof suffice, broadly into medical and surgical, which may be subdivided into non-infectious, contagious and

In addition there may be small-pox and fever hospitals, hospitals for the treatment of paralysis, epileptics, cancer and consumption, also workhouse infirmaries and military hospitals. The following may also be classed among hospitals:—Homes for incurables, convalescent homes, homes for inebriates, idiot and lunatic asylums, and prison infirmaries. It would evidently be impossible on the present occasion to lay before you all the various differences and details necessary to be attended to in the design of these many classes of hospitals, for not only will each require special treatment, but in each case the conditions of site, its surroundings, and the number to be accommodated will greatly influence the plan and style of the buildings; yet the general principles necessary to secure healthy hospitals and the reasonable comfort

avoided by employing the Plenum system of ventilation, and by adopting an arrangement of plan such as that devised by him for the Royal Victoria Hospital, Belfast, he pointed out how facility of administration was secured, together with greater comfort to the patients and the convenience of the staff.

Correspondence.

New Street from Holborn to the Strand.

To the Editor of THE BUILDERS' JOURNAL.
SOUTHAMPTON.

SIR,—I am interested in the proposal of the "Architectural Review" to arouse the attention of the profession with regard to this



MODELLED PANEL, "BASKERVILLE." BY FRED MASON, STUDENT OF THE BIRMINGHAM MUNICIPAL SCHOOL OF ART.

infectious, serious accidents, burns and minor hurts.

Locality will also determine the number, size and character of hospitals; for small towns and villages, the cottage hospital will suffice; sparsely populated districts will combine to provide isolation hospitals for infectious diseases; but in larger towns a general hospital may be required, and in cities there may be more than one general hospital as well as hospitals for special purposes, such as orthopaedic, ophthalmic, throat and ear, skin and urinary, lying-in, women and children, dental, &c.

and convenience of both patients and staff are in all cases similar.

Mr. Henman, by means of a number of lantern slides exhibited upon a large screen, then illustrated various points in connection with hospital design and construction by plans and views, and explained the details of various sanitary appliances manufactured by Messrs. Morrison and Ingram, of Manchester, which incorporate suggestions he has made with the intention of ensuring simplicity and cleanliness; also, by plans of several recently erected large hospitals he demonstrated how the excessive length of corridor might be

undertaking of such colossal magnitude. I should like to suggest that, by way of "overture" you publish a plan (ordnance scale) marking by a red or strong line the best known extent and position of the proposed remodelling, and I feel assured the London County Council will not fall into the not unusual error in such matters of being too "cheese-paring"—this will be an occasion for doing something for that which has done nothing for us—posterity.

When the plan I have suggested is prepared I should like to have noted on the "doomed" area all buildings of historical note and architec-

tural or antiquarian interest, and I would suggest that careful sketches of all of such buildings should be preserved, and, in special cases, even models made. I have long since advocated that in order to hand down to posterity an interesting and valuable "History of England" there should be found someone in every city, town, and hamlet to keep a faithful record of all that is ancient and interesting, and if we only pause for a moment to think of the sites that have been cleared throughout the country which were formerly the homes of our greatest artists and literary men, how bitter is our regret for our callousness towards them.

WILLIAM BURROUGH HILL, F.S.I.

[We have already published a plan showing the extent and position of the proposed improvements. We commend to the London County Council our correspondent's suggestion, which strikes us as an admirable one, that an official record should be prepared of all the interesting buildings that are to disappear.—ED.]

in your columns (see p. 75 of your issue for March 7th, and p. 100 of last week's issue), I send you copy of a letter I have sent to Mr. Maurice Adams, in which I say:—

"It so happens that my letter to the 'Times' was my first attack on the Architectural Museum, as it was written before the letter which appeared in the 'British Architect' of March 2nd. I am sorry you look upon it in the nature of an attack, as my purpose was simply to call attention to the existing state of things (which I maintain are as I described them) with a view to give the museum a new life. In your letter to the 'Times' you say that 'the taste for mediæval art was for a time out of fashion.' This I am afraid is true, but why? I believe it is because the work commenced was not carried on. When Gothic was perhaps in full favour; there appeared those delightful little manuals on Gothic ornament issued by Parker, at Oxford. These were just what were wanted to stimulate interest, and at the end of the second manual I find a notice of the Architect-

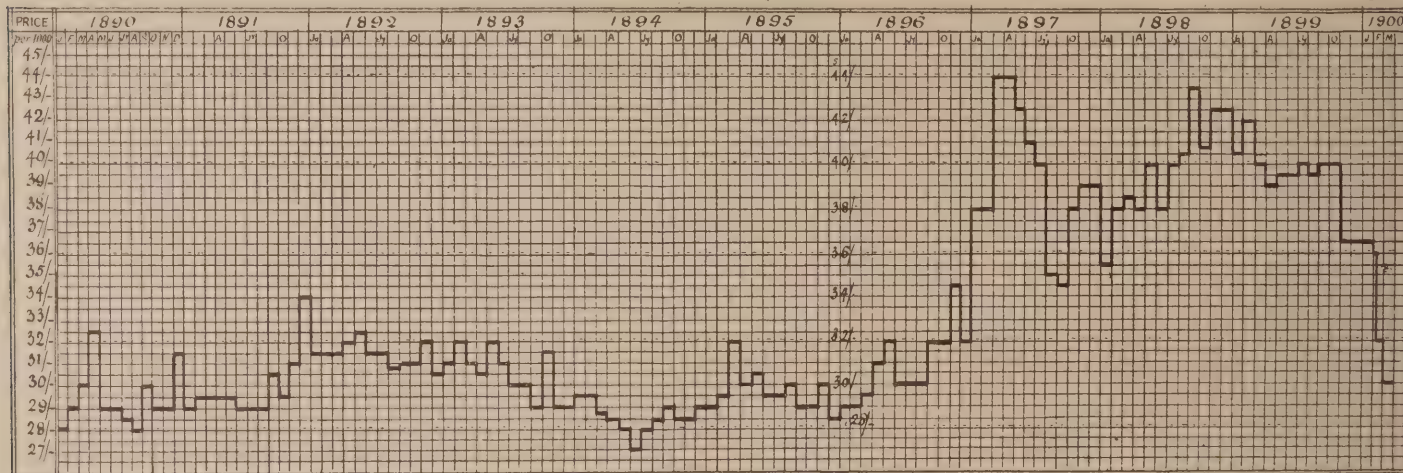
become a subscriber and endeavour to get others to help. As regards Ruskin's casts, though unable to find important specimens, I am glad to hear that they are all in a satisfactory state, and hope to see them before long properly classified and hung."—Yours faithfully,
MAX JUDGE.

Ellipse by Compasses.

To the Editor of THE BUILDERS' JOURNAL.

HERSHAM ROAD, WALTON-ON-THAMES.

SIR,—I will not presume to encroach more than necessary in reply to Mr. Percival's letter in last week's issue. I fully recognise that I am bound in courtesy to your readers generally (especially to those who may be interested in the matter) to substantiate the claim made in the issue of December 6th, 1899, and since. This I can do, and with regard to Mr. Percival not being able to work out the ellipse satisfactorily, I have this proposition to make. I will take Mr. Percival's own figures—namely, major axis 3ft., minor axis 2ft.—



PRICES OF STOCK BRICKS. A MONTHLY RECORD OF THE LAST DECADE.

Price of Bricks

To the Editor of THE BUILDERS' JOURNAL.

BALHAM, S.W.

SIR,—On page 370 of your issue of January 17th I drew attention to the extraordinary reply of your expert R. W. C. on the above subject. I feel that, having made the complaint, it would be ungenerous of me to leave the question where it stands (as R. W. C. has not replied), so I submit a record of prices during the ten years asked for by the original querist (page 340, issue January 3rd last), which will, I trust, be as useful to your readers generally as to him. Monthly prices are given throughout each year, but where the prices varied within the month the average for that month is given. These prices are taken from the books of one of our principal London brick merchants and have been carefully checked by those of another. As such a mass of figures as this represents would be tedious to follow, I have adopted the more telling graphic form by which the behaviour of the market is seen at a glance. The prices given are for stocks per 1,000 "alongside" in the river in London. The price of bricks delivered to any job could be ascertained by adding for wharfage, unloading and cartage, 4s. 6d. to 6s. 6d. (or more), according to the distance from the nearest wharf. The prices of bricks obtained from other sources, such as Cowley stocks via Paddington basin, would be governed by river prices. It is worth while to note the recent great fall in the prices of bricks after three years of high prices; at this time of the year such a fall is, perhaps, unprecedented.—Yours faithfully,
J. D.

The Architectural Museum, Westminster.

To the Editor of THE BUILDERS' JOURNAL.

7, Pall Mall, W.

SIR,—With reference to the correspondence about the above museum which has appeared

in your columns (see p. 75 of your issue for March 7th, and p. 100 of last week's issue), I send you copy of a letter I have sent to Mr. Maurice Adams, in which I say:—
"It so happens that my letter to the 'Times' was my first attack on the Architectural Museum, as it was written before the letter which appeared in the 'British Architect' of March 2nd. I am sorry you look upon it in the nature of an attack, as my purpose was simply to call attention to the existing state of things (which I maintain are as I described them) with a view to give the museum a new life. In your letter to the 'Times' you say that 'the taste for mediæval art was for a time out of fashion.' This I am afraid is true, but why? I believe it is because the work commenced was not carried on. When Gothic was perhaps in full favour; there appeared those delightful little manuals on Gothic ornament issued by Parker, at Oxford. These were just what were wanted to stimulate interest, and at the end of the second manual I find a notice of the Architect-

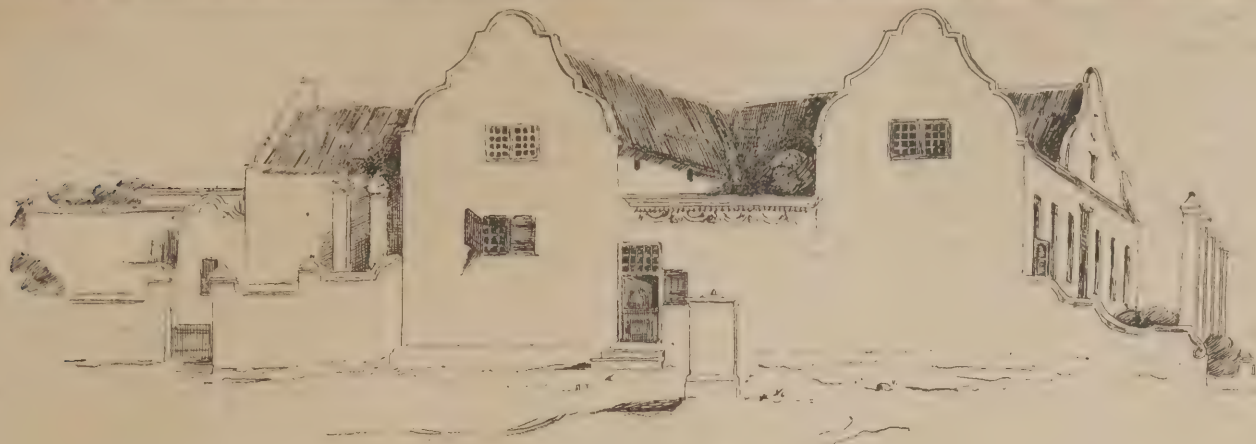
ural Museum. Unfortunately, there is no date to the edition, but it was at the time of the museum's location at Cannon Row, and I was delighted to come across it; for, besides a few lines in Baedeker's 'London,' it is the only information I have ever been able to find in any publication. There is no mention of it in the 'Year's Art,' at least, of recent years; nothing in the Kalendar of the Institute. No wonder that subscriptions are not forthcoming, for the simple fact that most people are unaware of the existence of the museum. I was not exaggerating when I said that this museum should be to Gothic what the British Museum is to Classic. You admit that the collection of English Gothic casts has no equal; the casts are there, the thing is to let people know it, and, when they do know it, to have the contents of the museum so arranged that they may be studied. An appeal should be sent out to the architects and artists of London; to the members of the Royal Institute of British Architects as a body, and individually; and to the other architectural societies. Have they been so appealed to before for the furtherance of the study of Gothic? We want more of those manuals of Parker's, of which three made their appearance. Little pamphlets would do more good on Gothic architecture than the great works which are for ever appearing. And as to the proper arrangement and numbering of the casts a great change might be effected by voluntary help if it was applied for in the right direction. I shall be glad if this correspondence wakes people up, and I hope it will be the means of starting the museum afresh. But we must first awaken that interest for Gothic among students and workmen that undoubtedly did exist not so very long ago. I should be glad to receive a copy of the last annual report, with the present constitution and list of subscribers, and I shall only be too glad to

set out the ellipse and post it to him, if he will send me his address, on the condition that he will frankly and conscientiously report the result in your correspondence column. As to the query, "Why are eight segments of circles necessary to complete a true ellipse?" this is, I think, sufficiently seen in the figure and explained in the article of December 6th last.—Yours truly,
R. RAMM.

Royal Society of Painter Etchers.—The eighteenth exhibition of this society is pleasing, but not remarkable.

Church Building Society.—The Incorporated Society for Promoting the Enlargement, Building, and Repairing of Churches and Chapels have made the following grants for new churches: Cardiff, St. Stephen, £75; Knowle, Bristol, £1,000; Notting Hill, W., £250; Calmore, near Walsall, £1,000; and Plumstead, Kent, £150. Towards re-building: St. Mary's, Nevin, Carnarvon, £60; and St. John's, Sidecup, £100.

"Giotto and the Legend of St. Francis" was the title of the Rev. John S. Carroll's recent lecture at the Glasgow Corporation Galleries. He first dealt with the frescoes attributed to Giotto in the Upper Church of St. Francis in Assisi, the birthplace of the saint. They are twenty-eight in number, and represent various scenes taken probably from the life of St. Francis by the great Doctor of the Order of Franciscans, St. Bonaventura. There was a natural fitness in Giotto thus painting the legend; for just as Francis set aside the unrealities of the theology of his day, so Giotto swept away the sombre conventionalities of Byzantine art, and painted the world more nearly as it exists. The lecturer concluded with a reference to the four great frescoes, undoubtedly by Giotto, in the vaulting over the high altar in the Lower Church at Assisi.



MEERLUST AT EERSTE RIVER.

OLD CAPE HOUSES.*

THIS book makes its appearance at a most opportune time—a time when the attention of everyone is directed to South Africa. It is not an unusual thing in history for the arts of Peace to have gained by association with War, and perhaps in this present instance the direction of attention to the subject of this work may impress a good many persons with a better idea of the many useful hints to be gained from remote quarters of the globe. One thing it should effect—the detestation of the modern corrugated-iron roofed homes in Cape Colony, which are but one instance of the many importations that have no interrelation with the country and which have been destructive of every colonial industry.

These old Colonial reed-thatched buildings at the Cape are characterised by their extreme simplicity, yet are pleasing and home-like in appearance. They are of blunt-edged plaster-work and stand with dignity within the white-walled inclosures of the country or cheek-by-jowl with the modern town warehouse. These old buildings were erected by the early Colonists—who seem to have been their own architects—of the Dutch East India Company's settlement at Table Bay, and lie within a radius of about fifty miles from Cape Town. This very fact of having been built without the aid of an architect seems to have told in their favour, for with all due deference to the architect of the present day, modern designs of domestic work are

* "Old Colonial Houses of the Cape of Good Hope." Illustrated and described by Alys Fane Trotter; with a chapter on "The Origin of Old Cape Architecture," by Herbert Baker, A.R.I.B.A. London: B. T. Batsford, 94, High Holborn, W.C. 10s. 6d. nett.

largely of a most excrescent kind, tawdry, overlaboured, self-conscious, and inharmonious with either the inhabitants or the surroundings. And these characteristics seem about to be carried with our boasted civilisation into countries where a style of architecture exists which is traditional and is suited to the needs and climate of the country. What a contrast is it to see how these old Dutch settlers, carrying their preconceived ideas and traditions into a new and 'strange' country, have modified their notions and forms of construction under the influence of climate, country and needs into a new and artistic style, seemingly made specially for South Africa.

The authoress, Miss Alys Fane Trotter, has produced a most interesting, well-written and useful work, and her efforts have been enhanced by the liberal and astute publisher, Mr. B. T. Batsford, who is now so well-known for his publications affecting the architectural and engineering professions and building trades. The illustrations—some twenty-six crayon and pencil drawings by the authoress and eight photographic reproductions—are excellent, and well express the great charm these buildings possess with their white sun-scorched and sun-gilded walls, surrounded by the everlasting hills, and cannot fail to suggest to the architect many hints of treatment that might be adapted to this country. An able and interesting chapter on the origin of Cape architecture is contributed by Mr. Herbert Baker, A.R.I.B.A., the architect of the Rt. Hon. Cecil J. Rhodes's house, "Groote Schuur," a remarkable and most beautiful design in the same style as the old settlers' buildings; in fact, Mr. Baker in this house gives us an example of what can be done by refined and traditional treatment in a style adapted to the country—worthy of emulation by all his fellows, both in Cape Colony and in this country.

Little is known about the actual building of the houses; slave labour was employed, this being imported from Madagascar. Teak and ebony were brought from the Dutch Company's possessions in India, and in the furniture and woodwork colonial products, stinkwood, yellowwood and ironwood, were also used. Bricks and tiles were then made at the Cape, it was also the custom of the Dutch Company to send bricks and tiles from Holland to their various settlements, and these are doubtless the small red bricks still found in good preservation and mentioned in the Diary of the Company as "Amsterdam bricks."

There is no exact prototype of the spacious colonial homestead, either in the small, low, tile-roofed sheds of the Holland marshes, or in the many-storied, narrow-fronted houses of the cities. In these colonial dwellings there is to be

found a large hall and a broad "stoep," or raised platform, surrounding the house, adapted for primitive life and open hospitality. The two plans on this page (Figs. 1 and 2) are almost universal in larger Cape houses; Fig. 1 shows the form most common in the Cape Peninsula, where suitable materials could more readily be obtained for building the back part of the hall with a flat roof; Fig. 2 shows the form which prevails beyond the Peninsula. It is the gable, the most distinctive feature, that must be looked to when comparing the architecture of Holland and the Cape. Here we find that distinctive feature of Dutch architecture, the curling scroll, but at the Cape it becomes much more bold and simple, due doubtless in great part to the material and economy of labour, and is much preferable to the distressing finical and rococo prototype. For this comparison Belgium must be looked to as well as Holland. The Cape gables seem to be of general types, of which Fig. 3 is an example. This has as its most distinctive feature two vertical bordering lines, with spreading scrolls at the side. This form is undoubtedly adapted from the gable which nearly every eighteenth-century house in Amsterdam possessed. The Amsterdam houses had no basements owing to their being built in wet mud, and therefore the roofs were used as storage lofts. The gable surrounding the doors to these lofts was carried up in brick, with a stone pediment and side scrolls; the vertical lines formed by the edge of the brickwork represent walls which run back into the roof behind the scroll, forming an ornamental buttress. A few instances of this gable are to be found in Cape Town, but plaster here takes the place of brick and stone. In the country this scroll



FIG. 1.—TYPE IN CAPE PENINSULA.

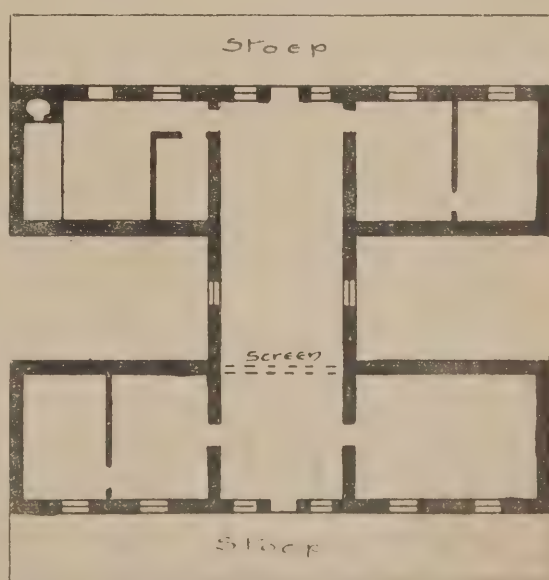


FIG. 2.—TYPE OF COUNTRY HOUSE.

widens out into a wall screen to cover the spreading thatched roof behind, but the now meaningless vertical lines still remain; a true gable is thus formed, as distinct from a loft-door dormer. If we eliminate the conditions under which the Flemish merchant built his house, with its great height, its many windows and its narrow front, and replace his conditions of life by those of the Colonist, with his simpler standards and at his disposal unlimited ground space, the Cape houses will not be found dissimilar.

It is an interesting fact that though the form of gable with square projections and no moulding (asin "Meerlust," illustrated on the previous page) is seldom seen in Holland or Belgium it is very common on the south-east coast of England in the brick cottages and farm-houses, the building of which is attributed to Flemish refugees. There is another kind of gable with pilasters and other classic features and ornaments that occurs frequently in the districts settled by the Huguenots, and this seems to associate these gables with French influence. There appears to have been an eastern influence in some of the old Cape work, such as the panelled and louvred screens that divide the long halls, due probably to the Malay slaves in the service of the company.

"Meerlust," illustrated on the previous page, is one of the largest and most ornamented of the farms. The numerous sheds and out-buildings are covered with plaster ornament. The house has two halls, and the front has been rebuilt. The flooring is of square red tiles, small red bricks and teak.

The early casement with transoms and lead glazing, so characteristic of the Netherlands, is not to be found at the Cape, but is replaced there by tall wooden-barred small-paned sash windows; this seems to point to the settlers having taken with them the latest invention—so establishing a precedent—while the older forms died slowly at home.

It seems somewhat strange, though frequently occurring in other countries, that, although doing so well in simple domestic work, when a monumental piece of work was attempted the builders should have failed so ignominiously as in the Town Hall at Cape



MEERLUST HEN HOUSE.

Town; it is a great contrast to go from this Town Hall to the noble and bold wall of the river at Elsenburg, or the basin of the Swimming Bath at Constantia.

D.

Under Discussion.

History and Art—a Florentine Outline.

With this as his title, Mr. James A. Morris, F.R.I.B.A., before last Wednesday's meeting of the architectural section of the Glasgow Philosophical Society, began by elucidating the statement that as heredity in the human family indicated weakness or strength of individual character, so the history of a nation to a certain extent illustrated its art. This was very well brought out in connection with Italian art, where the crowning glory belonged to the Tuscan, which was the mother and sweet matron of all art, and which specially flourished in Florence, the fair city of lilies. Treating of the history of art, he pointed out that it might be safely taken that from the time of Cimabue to the close of the sixteenth century there was little or no divorce between the arts; and proceeded to contend that just as it was as true to-day as ever it was that "life was more than meat and the body than raiment," so it was their duty to know and understand the life and the needs of our own day and the wants of our fellow men, and knowing these and knowing also our art, he urged them not to be afraid to go forward though none else followed. The lecture was illustrated by lime-light views of Florence and Florentine art. The annual meeting of the section was afterwards held, when office-bearers were appointed as follows: President, A. Lindsay Miller, architect; vice-presidents, James Chalmers, I.A. (architect) and W. D.

Horne (decorator); hon secretary, Ninian Macwhannell, I.A. (architect), 58, West Regent Street, Glasgow; hon. treasurer, William Howatt, I.M. (measurer), 146, Buchanan Street Glasgow, together with a Council.

Fifteenth Century English Architecture.

Mr. C. M. Hadfield, A.R.I.B.A., read a paper on "Architecture of the Fifteenth Century and the Early Tudor Period" before the Sheffield Society of Architects and Surveyors last week. He said the epoch of English national architecture, which flourished and developed for some four hundred years, came to an end in the midst of the sixteenth century. Its further progress was curtailed by the Renaissance, from the advent of which movement the practice of architecture as carried on at the present day commenced. The methods and ideas of the Renaissance prevailed unquestioned down to the present century, in the course of which strenuous efforts had been made to make architecture once more an original and progressive art. These efforts had to a great extent proved abortive, accomplishing only a mere succession of revivals or fashions, with the ultimate result that at the end of the century we found ourselves reverting to the so-called "classic" traditions which were in vogue at its commencement. The persistent study of our native architecture, and fidelity to its teachings and methods, were the only means of making architecture once more progressive. The work of the fifteenth century represented the latest and most fully-developed phase of English structural art. It was distinctively English, and solved all the essential requirements of a civilised and cultured state of society. It took its place unquestioned at the head of the art of its day, marking out the bounds of their work to designer and craftsman alike. Mr. Hadfield dealt with the history of the rebuilding of Gloucester Cathedral, and with the erection of the celebrated nave of Winchester, by William of Wykeham, as showing the gradual and continuous development of architecture during the period. He described King's College, Cambridge, as a classic monument of English art, and reviewed various examples of ecclesiastical work, calling attention also to the high level of all-round craftsmanship attained. In describing the domestic architecture, he took examples from the collegiate work of Oxford and Cambridge, Hampton Court Palace, &c., and traced the origin of the type of an English public hall or interior to the same period. In conclusion, he

urged on those who had devoted their life's work to the production of buildings to apply the knowledge gained by the studies and researches of the last hundred years in the light of the principles embodied, remembering the proud past of English architecture and striving to resume the broken continuity with the days when their craft represented the progress and commemorated the achievements of the English race.

Scotch Ecclesiastical Architecture.

Following up his series of lectures on "The Ecclesiastical Architecture of Scotland from the Twelfth to the Sixteenth Century" (reports of which will be found in our two preceding issues), Mr. Thomas Ross, in his fifth discourse, referred to Dunblane Cathedral as a building well preserved, and, being of one age, it possessed a unity of style not often found in our large churches. It was remarkable in Scotland for the remains of its woodwork, its stalls being almost the most complete remnants of ecclesiastical furniture. The collegiate church of Rosslyn had been quite misunderstood. Some said it was built by

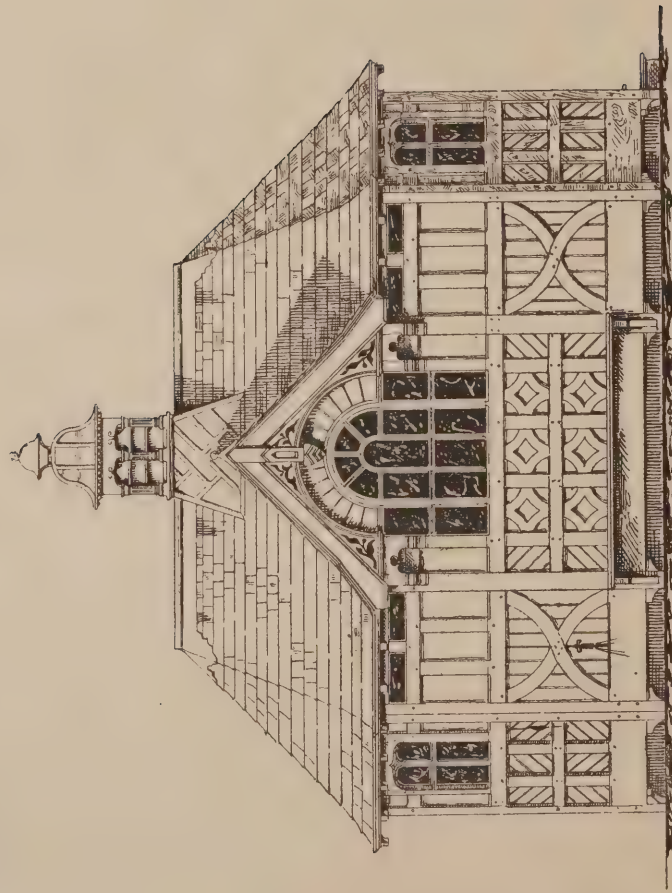


FIG. 3.—COMMONEST FORM OF GABLE IN AMSTERDAM, FROM WHICH CAPE TYPE, FIG. 4, IS ADAPTED.

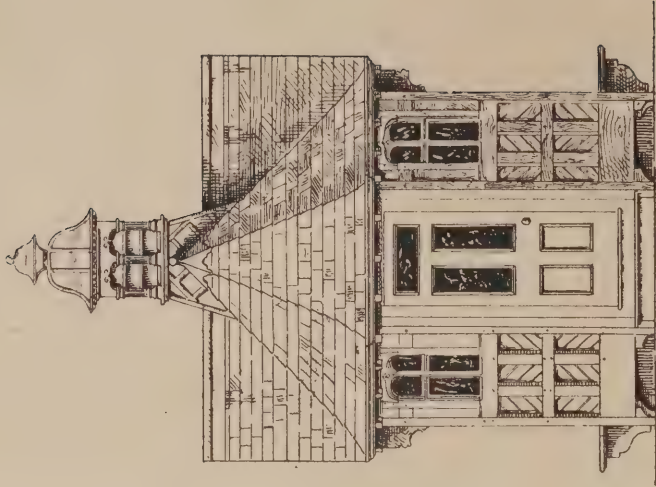


FIG. 4.—"ECHOONGEZICHT," STELLENBOSCH: THE COMMONEST CAPE TYPE OF HOUSE.

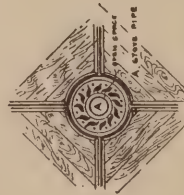
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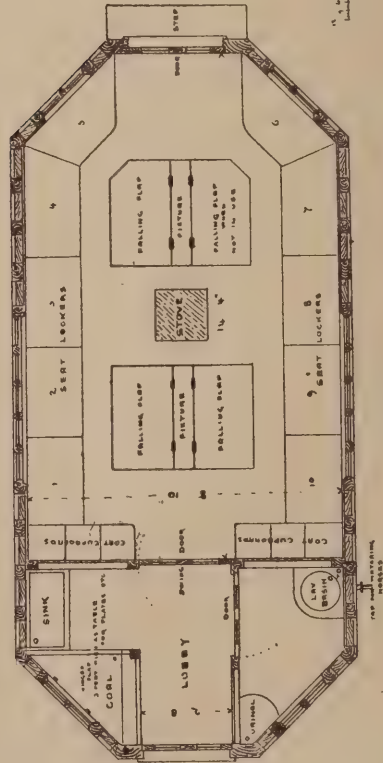
SIDE ELEVATION



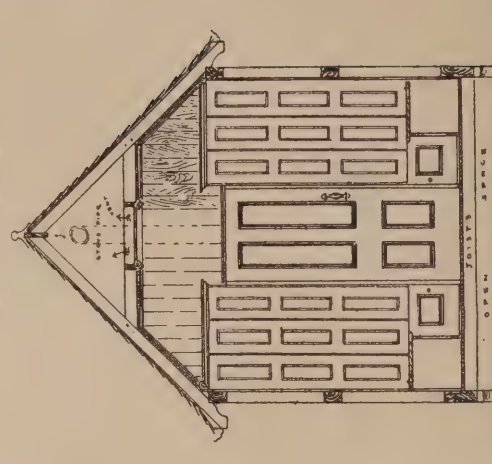
END ELEVATION



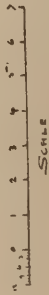
OUTLET VENT IN CEILING



PLAN



SECTION



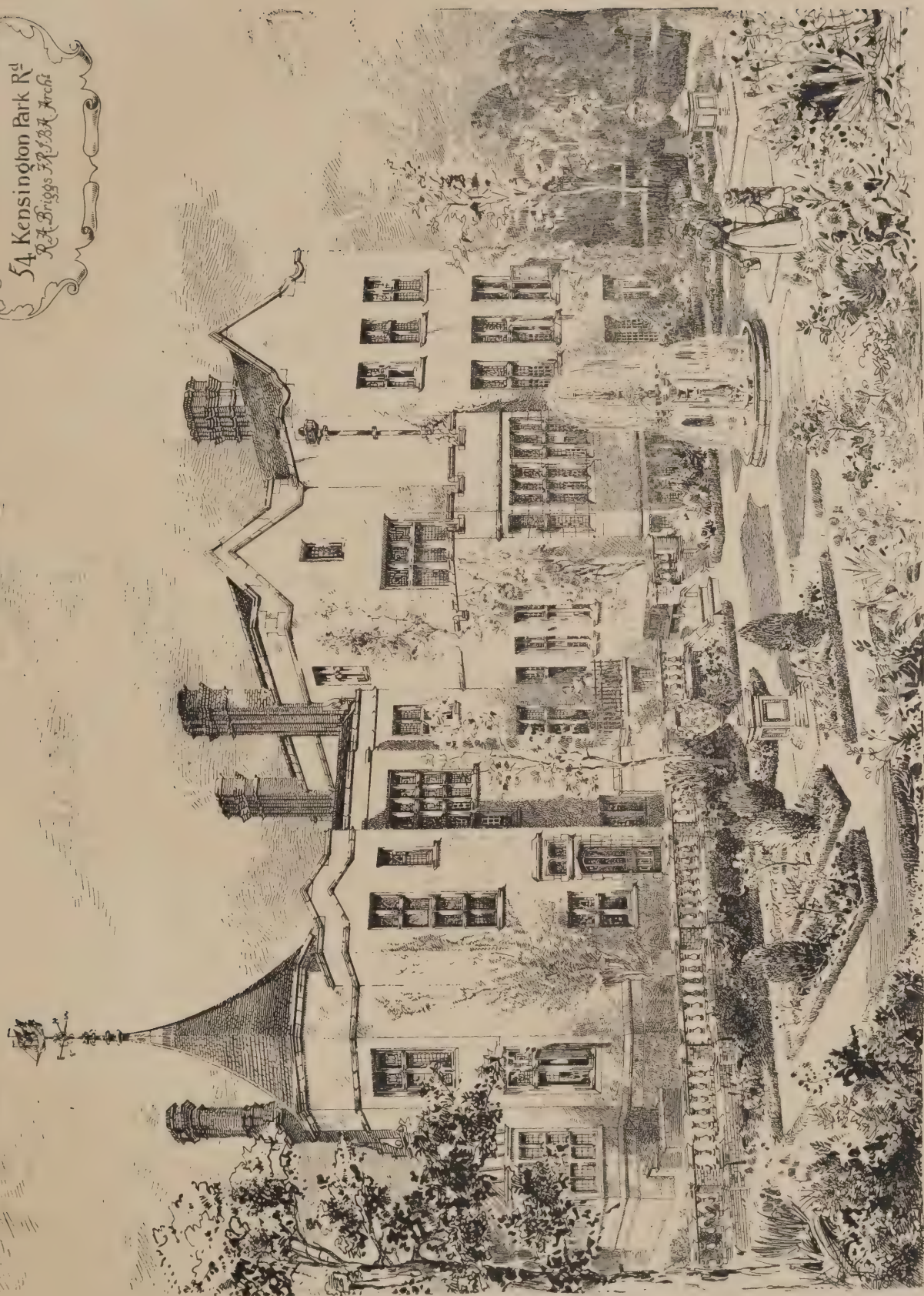
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IVOR PRICE

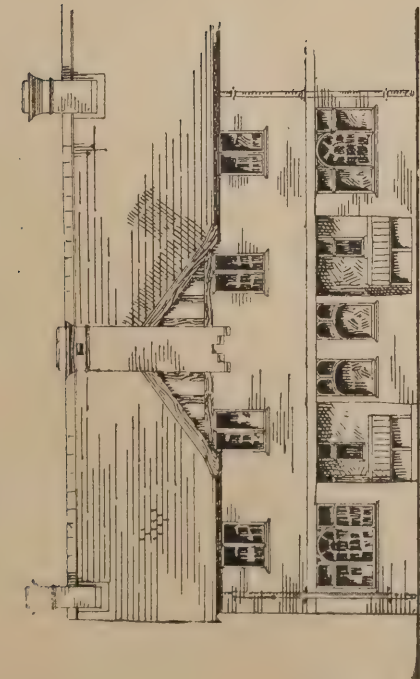
DESIGN FOR PUBLIC BATHS AT CHURCH STRETTON, SALOP. IVOR PRICE, ARCHITECT.

54 Kensington Park Rd
R. A. Briggs F.R.S.B.A. Archt

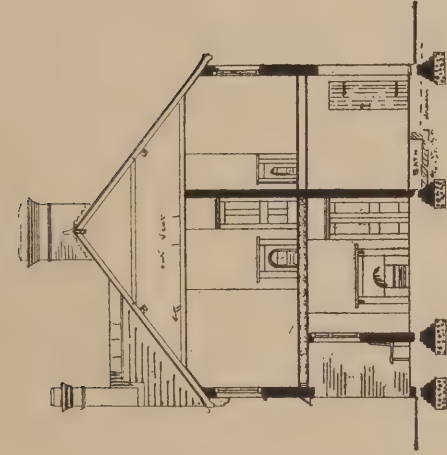


HOUSE IN KENSINGTON PARK ROAD, LONDON, W. R. A. BRIGGS, F.R.I.B.A., ARCHITECT.

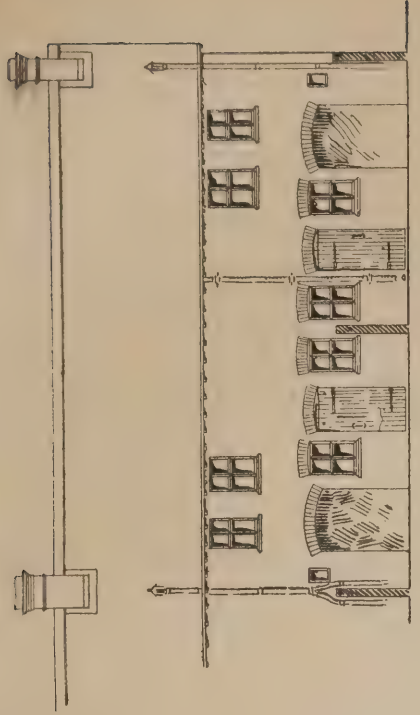
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FRONT ELEVATION



SECTION

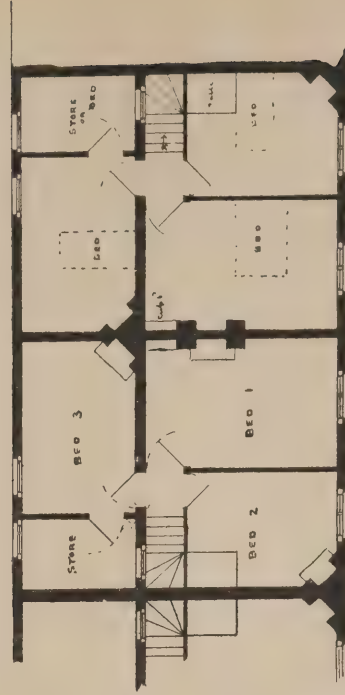


BACK ELEVATION



GROUND PLAN

Bath built of brick in cement, and cemented inside; size 4ft. by 3ft., flush with floor; cover of wood in two parts, hinged against wall when in use; drain into sink gully; depth of bath 15in. Wash-house and w.c. under main roof, but no connection with rooms.



BED ROOM PLAN

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Spaniards, and others that it was Scottish work, but, making a minute examination, it was shown that almost every individual detail could be referred back to some Scottish church or castle. It was this period, coinciding in a general way with the reign of the Stuart Kings, which formed what might be called the strictly Scottish period, when, through the infusion of ideas from the castle, Scottish ecclesiastical architecture assumed a national character. The founding of large monasteries had now almost ceased and collegiate churches were taking their place. These churches were small compared with the cathedrals and abbeys, and the favourite plan was a cross with aisles, with a low central or western tower, of which fine examples exist at Dunglass, Crichton, Seton, Whitekirk, St. Monans, Tullibardine, Biggar, Corstorphine, Dysart, and elsewhere. Apical ends were frequent, but unlike those of Norman times (which were circular on plan) were composed of a part of a polygon. At the opening of his sixth and concluding lecture Mr. Ross said that the cathedral of Dunkeld and the abbey of Paisley bore a considerable resemblance to each other, but while Dunkeld stood in a glorious situation on the banks of the sparkling Tay, Paisley Abbey stood on the foul and muddy Cart, and was in part used as a store for bottling ale and stronger liquors. Founded about 1163, the abbey was burnt by the English in 1307. Its principal restorer, Abbot Thomas Tervas, raised the money in part by selling wine within the monastery, a custom, as they had seen, well kept up. The whole of the west front, which was very majestic, very noble and dignified, represented between its lower and upper parts a period of about two hundred years. In the interior there was great complication and confusion in joining the later with the older work at the west wall. The Chapel of St. Mirren on the south side of the nave was a charming example of the architecture of the period. It was not possible to say how much of the monastery buildings remained, but that they were pretty well represented by the present buildings was, he thought, probable. The church of St. Giles, Edinburgh, well illustrated the growth of our mediæval buildings. What it originally was like we could not tell, but within what might be called historic times we could trace its rise from a comparatively simple, low-roofed, three-aisled building to a lofty and many-aisled church. It was the widest of all the Scottish churches, and was remarkable in this respect, that every part of its vast area had been at some period stone vaulted. Its best known feature was the tower, with its crown-like spire. Certain other towers of the same class had all perished, except that at the west end of King's College, Aberdeen, and there was rather a fine tower of the kind which belonged to the old Tolbooth of Glasgow, still standing, where everything else was changed, at the corner of High Street and the Trongate. It might almost be claimed that this form of lantern tower was of Scottish origin, or, at all events, that it reached its fullest development in Scotland. Although he had frequently given credit to certain buildings on account of their size, even the largest of the Scotch cathedrals and abbeys were small when compared with those of England and of foreign countries, but when we considered that no building had been erected since on such a scale of magnificence and thoroughness as the great Scotch cathedrals with their palaces, and the abbeys with their wide extended courts, there was no reason to be ashamed of what Scotland did during those great ages. Turning to a building of very small size, he regarded the chancel of Lincluden as a perfect specimen of genuine Gothic architecture. There was hardly in all Scotland anything more impressive than this little fragment. In conclusion, the lecturer said they had seen that the style of architecture during the period under review was imported, in all probability from England, that it was round-arched in its construction, and that the building activity was great, so great in the supply of small parish churches that it sufficed for the wants of the country for many generations. He had tried to show how the round-arched style

of the twelfth century grew in the following years into the Gothic style; that on towards the end of the thirteenth century the architecture of England and Scotland was on the same lines; that a breach occurred for about one hundred years, and that when the building of churches began again with the advent of the Stuart Kings up to the Reformation, there was a style of architecture practised in Scotland which was peculiar to it, having distinctly national features. Probably the great abbeys and cathedrals round which all that was best in Scottish public life centred for four hundred years were not the least of the great inheritances which had come down from the middle ages.

An Apology for St. Paul's Cathedral.

Canon Scott Holland delivered a lecture with this title before the Birmingham Ruskin Society on March 14th. The story of St. Paul's was simply the story of a succession of churches which had risen (the first one in 604) and been destroyed and risen again on the same space. With regard to the present cathedral, the lecturer pleaded that if they wished to examine its style and see its beauty they must not go with a mind trained in Gothic beauties, because they would be hopelessly repelled. St. Paul's aimed at exactly the opposite. What was aimed at was space; it aimed at giving a sense of brooding calm, not springing grace, so that mere proportion of space should tell on the imagination. If they looked at what it offered they would find out its beauties, but if they looked for the beauties which they found in Westminster Abbey they would not get them. Wren lived during the whole of the time in which it was built. There again was an intense contrast with a Gothic building. The Gothic building grew, and one never knew who built it; whereas on St. Paul's there was one mind who determined the fashion and shape of every single stone of the building. It had the impress of a master mind and genius. St. Paul's had no particular charm in its decoration, nor depended upon colour. Wren certainly meant it to be coloured, for he left parts of the building simply stucco on brick, but he was prevented from carrying out his wish. Their aim should be, he said, to present in the cathedral a perfect service, and the building should be made beautiful as the country's thanksgiving to God.

French Gothic Sculpture.

"The Sculpture of the French Gothic Cathedrals" was dealt with by Professor Baldwin Brown, M.A., at a meeting of the Edinburgh Architectural Society on March 14th. At the outset he mentioned the superiority of the French western façades and frontal entrances to those of England or Italy. In Germany the western façade was usually occupied by the apse, and the doorways were accorded less prominent positions. In the French examples the doorways usually possessed deep ingoos ornamented with figures in profusion, and had an inviting aspect. In English mediæval work little sculptured work was expended on the façades of the cathedrals, but was to be found only in tombs and monuments. Professor Brown, with the help of lime-light views, gave a sketch of the origin and development of the columned and figured frontal. Some views of semi-classical examples in the south of France were also exhibited. At Chartres Cathedral, erected about 1130 or 1140, the doorways were treated more timidly, and a shallower ingo than in the later examples. The statues were worked on the faces of the columns, and were supported upon small corbels. This treatment gave the appearance of suspension and insufficient support to the figures. The statues and reliefs of the cathedrals of Amiens and Rheims, which were built during the first half of the thirteenth century, were very fine, but were not so interesting as the earlier sculpture work, such as was to be found at Chartres. The tympana over the doorways usually possessed some very interesting sculpture work; a favourite subject for this position was the scene of the Last Judg-

ment. During the latter half of the thirteenth century there appeared a decline in the quality of the sculpture work.

Recent Excavations in Greece.

Mr. Charles Waldstein, Litt. Doc., Ph.D., L.H.D., Slade Professor of Fine Art at Cambridge University, gave his third and concluding lecture on "Recent Excavations at the Argive Heraeum in Greece" at the Royal Institution last Thursday afternoon. Summarising shortly the previous lectures he has given, he outlined the development of Hellenic civilisation and art and emphasised the fact that to the Greeks the world owed the picture and the statue, besides the drama, the poem, philosophy and science. They gave us the picture and the statue not as serving mere ancillary functions of decoration, &c., but as made for their own sake alone, without question of use or ultimate purpose. Phidias was the greatest sculptor of the Greeks; he was the culminating point of the whole great national system and movement. But besides Phidias we had another great sculptor, Polyclitus, of Argos, who lived from about 460 B.C. to 410 B.C. Going on to compare the characteristics of Polyclitus with those of his older contemporary Phidias, the lecturer quoted Quintilian's criticism that the former displayed great finish and feeling for formal beauty, but was wanting in the spiritual grandeur of thought found in the latter. Illustrating next the square and massive canon of proportions adopted by Polyclitus, and contrasting his style with that of some later sculptors, the lecturer gave some particulars of the famous statue of Hera by this sculptor at the Argive Heraeum—a huge figure of gold and ivory seated on a throne. An idea of its appearance was obtained from Argive coins, and many attempts had been made at its identification, but he claimed that he had had the good luck to find in the British Museum a figure previously considered to be a bust of Apollo, which, though of late Roman date, was a distinct and definite reproduction of that type of Hera, and when viewed in profile was almost identical with a head on an Argive coin illustrated at the lecture. Dr. Waldstein then discussed the sculptures that formed the decorations of the second temple at the Argive Heraeum, and illustrated his remarks with lantern illustrations of the architectural fragments which he had excavated there. In these he thought it obvious that we had the art of Polyclitus, whose relation to the Heraeum was the same as that of Phidias to the Parthenon. Some of the architectural work was unsurpassed in delicacy and finish of modelling by any piece in the Parthenon, and as a proof of the naturalistic truth exhibited in the sculpture he mentioned that in one of the torsi he discovered a muscle which his anatomical friends pronounced an anomaly but which had since been found to be developed in professional athletes. Contrary to what seemed to be implied by the description given by Pausanias, he argued that the temple must have had pedimental figures, and, showing several well-preserved heads both from the pediments and the metopes, he maintained that the art possessed the characteristics of Polyclitan style and was not Attic, as had been suggested by Professor Furtwängler. Finally, he showed a head which, whether it was of Hera or not, he thought was the best preserved specimen of fifth century art that had come down to us.

The Opening of the Paris Exhibition is stated to have been fixed for April 15th.

A new Fire Station at Wednesbury has been built at a cost of £2,150. An isolation hospital has also been built in Dangerfield Lane at a cost of £1,315.

All Saints' Church, Blackrock, Dublin.—Two memorial windows, a brass inscription, and brass communion rails have been erected in this church to the memory of the late Canon Stokes. The work has been executed to the design of Francis Robert Davies, K.J.J., F.R.H.S., M.R.I.A., by Messrs. Heaton, Butler, and Baines, of 14, Garrick Street, London, W.C.

R.I.B.A.

ANCIENT LIGHTS.

A MEETING of the Royal Institute of British Architects was held on Monday evening last, when the president (Mr. William Emerson) occupied the chair. After the minutes of the special general meetings held on March 5th had been read and confirmed, three papers on "Ancient Lights," by Mr. J. Fletcher Moulton, Q.C., M.P., F.R.S., Mr. J. Douglass Mathews, and Mr. Beresford Pite were read.

Mr. Moulton's Paper.

In the first place, said Mr. Fletcher Moulton, it is desirable to express clearly what is the measure of an owner's right in respect of ancient lights. The Prescription Act provides: "When the access and use of light to and for any dwelling-house, workshop, or other building shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible." It is, therefore, very clear that in order to measure the light to a continuance of which the owner is entitled, one has only to measure the light actually enjoyed during the twenty years' term. Nothing could be simpler or more definite than this rule. But acting under cover of the doctrine that the law does not heed trifling invasions of right, the Courts had in practice treated plaintiffs as though they were only entitled to a reasonable enjoyment of light, no matter how complete their enjoyment in fact had been, and it had come to be considered that reasonable requirements were satisfied if the owner of the privileged windows got an uninterrupted view of forty-five degrees of sky from the zenith. Thus the question whether the encroachment is to be taken seriously or not is a very real and possibly troublesome question, even in a case where considerable encroachment may have been actually made. Mr. Moulton then went on to suggest the lines upon which it seemed to him their new legislation should proceed. An end should be put to the technical rule that damages cannot be given for a threatened injury of this kind. The High Court might safely be given the fullest discretionary power, in every case where an injunction to restrain the darkening of ancient lights can be granted, to substitute for the injunction, in whole or in part, a money payment by way of damages, so that, if the merits of the case demanded it, there would be no difficulty about authorising a definite encroachment upon equitable terms, while at the same time restraining some further threatened encroachment by an injunction. In any proposed change of the law power should be preserved to the Court to keep the rights of the easement owner intact, and to protect them as amply as at the present time by injunction. Mr. Moulton anticipated that a detail of the remedy suggested might incur the censure of lawyers, namely, that features of the building design, such as the use of white bricks, which tend to minimise the inconvenience, should be taken into account in adjudicating upon the relief. Though the suggestion had been scouted by judges, and the arguments against it were cogent, yet legislation might do much to alter the conditions so as to favour the use of white bricks. Even if allowed to become soiled they improve the lighting of closely built-in areas, and the law should encourage their use. The sooner the plaintiff brings his action to trial the better. An injunction cannot issue too early, if it is to issue at all. But there need be no hurry about assessing damages. Although the proposal took the shape of a legal reform, the question at bottom was not so much a legal as a practical question; the legal difficulties would be easily surmounted if a practically

useful way of estimating damage, and of distinguishing the easement owner's essential interests from his merely technical rights, could be arrived at.

Mr. Mathew's Paper.

Mr. J. Douglass Mathews proposed to confine himself to the difficulties experienced by architects in erecting or altering a building dominated by ancient lights, and the unsatisfactory methods now adopted to settle differences. He contended that if certain simple rules could be laid down, such as that no erection should be permitted above a line drawn at an angle of 45deg. from the horizon from the sill of an existing window, or within certain angles laterally, there would be no greater difficulty in complying with them than with Building Acts or sanitary by-laws. As matters stood, an unscrupulous person had an opportunity of preventing his neighbours from using their property to the best advantage, except by payment of compensation (often blackmail), and the law afforded no means except by mutual agreement to alter old lights in a way beneficial alike to the owner of the dominant light and to the person erecting his new building. Since the passing of the Prescription Act, nearly seventy years ago, such vast changes had taken place that what was a reasonable law then had now become arbitrary and the fair use of valuable property was interfered with. A new Act was therefore called for. New legislation, whilst carefully guarding the rights of ancient lights, should treat them more in the nature of easements and, provided that an equivalent be given, the particular merits of the case should be taken into account, rather than the hard and fast rules of law. Mr. Mathews gave it as his opinion that the proposals of the Science Committee of 1893 (see R.I.B.A. "Proceedings" for March 22nd, 1888) would be found practicable with certain alterations and conditions, one of which should be that before a building is taken down or any alteration made in an old one it must be measured, and plans, elevations, and sections drawn, which should be verified and certified by the district surveyor in London, or by the borough or other public surveyor elsewhere; and that such drawings should be available for inspection by interested parties on payment of a small fee. By this means no doubts would arise as to the extent and height of the original building, the settlement of differences would be expedited, much expense saved, fairness and equity would be secured to dominants and servients alike, and the risks and expenses incurred in stopping the progress of works, and in altering and pulling down buildings when erected, would be avoided. He hoped the Council would at once take steps to obtain an alteration in the law. As the Surveyors' Institution was as much interested in the question as the Institute, the co-operation of that body should be invited, and a Bill drafted.

Mr. Pite's Paper.

Mr. Beresford Pite first considered the restrictions on the height of buildings contained in the London Building Act, sections 15, 41, 47, 48, and 49. Briefly, the restrictions are as follows: (1) A general regulation of the height of the back of houses to ensure an angle of forty-five degrees of light. (2) An extreme limit of 50ft. in height in all buildings. (3) In streets laid out subsequent to 1862, of a less width than 50ft., a restriction of height to width ensuring an angle of forty-five degrees of light; and (4) A right of appeal granted to owners within 100yds. distance against any consent to exceptions to these limits granted by the London County Council. Though this legislation has limited the freedom of building owners, the freedom of adjoining owners to interfere has been left unfettered. Therefore, with restriction of height, might there not have been secured absolute permission to build up to that height? The author next considered restrictions of height which are not statutory, and not exercised on behalf of the sanitary interests of the community. They are the private and personal rights to preservation of access of light, when once conferred by prescription,

over the land and buildings of adjoining neighbours. These rights once acquired are indefeasible, and are superior to the statutory law, the limited height granted in the interests of the community being restrained and denied by the prescriptive right of the individual. The communal desirability of sanitary regulation in building heights is admitted; but no common or public interests are furthered by the prescriptive right of restraint. Its existence is inimical to municipal improvement, and unworthy of retention. The use that is made of claims for rights of light for delaying building operations in order to extract heavy compensation has become a serious abuse. A seldom-used window acquires an unlimited fictitious value if it is in a position to control, by delaying until a trial in court can take place, any part of an important new building. A question first suggested is whether the abolition of the private right of restriction is equitable; and, secondly, whether it is practicable. In discussing the equitableness of its complete abolition, the author referred to the general safeguards provided by statutory regulation, and enumerated various exceptions existing by waiver or covenant upon the right by prescription, as tending to show that such conditions are not unduly harsh or restrictive, nor is the property subject to them affected in value. A natural alternative to restriction or depreciation of the right to build, and one usually to be economically effected, is the simple expedient of enlarging the window or means of lighting the obstructed tenement. In discussing the possibilities of statutory reform, Mr. Pite referred to French, Swedish, and Scotch law upon the matter, observing that any of those systems—the French of no property at all in light over another's land, the Swedish of registered agreement of any such charge of right of light, or the Scotch of the recognition of a right of light where the grant by consent or implication can be proved, but denying acquisition by prescription—would be an ideal worthy of sustained effort. Two reforms advocated by the Science Committee, namely, (1) of relief from impending dominant lights by a technical obstruction, and (2) of procedure by removal from the courts to three surveyors for award of all complaints, were, Mr. Pite considered, open to the objection that, as legislation is required to effect them, it would be better to seek a more drastic method of dealing with the whole law of ancient lights, which Parliament could as easily accomplish, and which probably would avoid the necessity of any reform of procedure. The first suggestion would provide a new element of complication and conflict of doubtful advantage, the non-repeal of the Prescription Act in its application to lights ensuring a still ample field for conflict. By the second suggestion this conflict was to be removed from the courts of law to a tribunal of surveyors. Were surveyors competent to try facts which must depend on the testimony of witnesses—title, history, user, and the new technical obstruction, its fact, title, and history, all having to be proved by evidence before the simpler technical matters could be reached? As the possibility of remedy by legislation seemed remote, something might be done apart from appealing to Parliament. The removal of some of the uncertainties and want of harmony in the decisions might be secured by the gradual recognition and establishment as a precedent of a readily applied system of measurement of obstruction; this would prevent many unreasonable claims and deter claimants whose professional advisers could readily apply an accepted and customary rule to each case.

Money damages for obstruction of light should be for proved damage, and *pro rata* diminution of rental, market, or other value, or for increased cost of lighting. The effect of requiring proof of actual damage, of awarding money compensation, and of refusing to delay by injunction, except in special cases, would be to deprive claimants of improper gain through delaying building operations, and afford, on proof at trial, proper compensation, the amount of which would bear relation to the injury done.—A discussion followed.

Experimental Bacterial Treatment of the London Sewage.

AS the result of the report of the Massachusetts State Board of Health about seven years ago, experiments were made in this country with regard to the bacterial treatment of sewage, and on Thursday evening last, at the Sanitary Institute, Margaret Street, W., Professor Frank Clowes, D.Sc. (Lond.), F.I.C., gave the general conclusions derived from the experimental bacterial treatment of raw sewage in coke beds at the outfalls of the London sewage into the Thames. Professor Ramsay took the chair.

The results obtained were as follows:—

(1) The sewage was allowed to flow into large tanks which contained fragments of coke about the size of walnuts. As soon as the level of the liquid had reached the upper surface of the coke bed, its further inflow was stopped, and it was allowed to remain in contact with the bacteria coke surface for about three hours. It was then allowed to flow slowly away from the bottom of the coke bed. This out-flowing liquid constituted the "sewage-effluent." After an interval of about seven hours, the processes of emptying and filling the coke bed were repeated with a fresh portion of sewage. The coke bed was usually filled in this way twice in every twenty-four hours. (2) A purifying action was produced by the coke bed. This depends upon the introduction of bacteria from the sewage, and the maintenance of the purifying action is secured by the continuous presence of bacteria or their enzymes upon the coke surfaces, and by the frequently renewed contact of these surfaces with oxygen. (3) The aeration of even the lowest portions of a deep coke bed (see table) seems to be satisfactory in the above method of working, since the air present in the interstices of the coke between two fillings with sewage usually contains 75 per cent. of the amount of oxygen present in the air. (4) Raw sewage, which had been deprived of its larger particles by screening it through coarse gratings, lost practically the whole of its suspended matter by remaining in such a coke bacteria bed for two or three hours. It appears that the suspended particles of fecal matter undergo liquefaction by the bacteria, and do not collect upon the surface of the coke. (5) The sand and grit and finer mud, arising mainly from the wear of road surfaces, however, were deposited upon the coke surfaces, and gradually reduced the capacity of the coke bed. (6) Hair, fibrous matter, and woody fibre, derived from the wear of wooden street pavements, and particles of chaff and straw, mainly derived from the dejecta of horses employed in the street traffic, are also deposited upon the coke surfaces, and

gradually choke the coke bed. These substances, which consist mainly of cellulose, are apparently only acted upon by bacteria with extreme slowness under the above conditions. They arrive, however, in a water-logged condition and rapidly settle down from the sewage if its rate of flow is reduced. (7) In dealing with the sewage of the metropolis, it seems best to allow the roughly-screened raw sewage to undergo a somewhat rapid process of sedimentation, in order to allow these matters (5, 6) to subside; and then to pass the sewage direct into the coke beds. The dissolved matters and the small amount of suspended matters which are still present in the sewage are then readily dealt with by the bacteria of the coke bed and practically no choking of the bed occurs. (8) The sewage effluent from the coke bed is entirely free from offensive odour, and remains inoffensive and odourless even after it has been kept for a month. It is clear, except during heavy rain, when a turbidity is produced by fine mud particles. Many pond and river fish have been kept in this constantly renewed effluent for a month, and were found to be perfectly healthy at the end of that period. (9) The chemical character of this effluent may be briefly indicated by stating that on an average 51.3 per cent. of the dissolved matter of the original sewage, which is oxidizable by permanganate, has been removed by the bacteria, and that the portion which has been removed is evidently the matter which would become rapidly offensive and would rapidly lead to deaeration of the river water if it were allowed to pass into the river. The above percentage removal (51.3) was effected by coke beds varying from 4ft. to 6ft. in depth. A similar bed, 13ft. in depth, has proved more efficient, and has for some time produced a percentage purification of 64 per cent., while an old bed, 6ft. in depth, has given a percentage purification of 86 per cent. A repetition of the treatment of the effluent in a second similar coke bed has produced an additional purification of 19.3 per cent., giving a total purification of 70.6 per cent. It should be noted that the above purification is reckoned on the dissolved impurity of the sewage: the suspended solid matter is not taken into account. (10) The bacteriological condition of the effluent corresponds in the main with that of the raw sewage. The total number of bacteria undergoes some reduction in the coke beds, but the different kinds of bacteria which were present in the sewage are still represented in the effluent. (11) The introduction of such a sewage effluent into the Lower Thames appears to be unobjectionable. The river water at this part is uniformly muddy; it is always brackish and frequently salt to taste, owing to the presence of tidal sea-water. It is, therefore, not capable of being used for drinking purposes. The effluent will certainly cause no deposit

upon the river-bed, and will ordinarily tend to render the muddy river water more clear by mixing with it. No offensive smell can be emitted by the effluent as it is discharged, and the bacteria which it contains will slowly and inoffensively remove the remaining dissolved organic matter from the effluent after it has been introduced into the river. The effluent will be suitable for the maintenance in the river of healthy fish-life.

A discussion followed, in which Dr. Rideal, Mr. Collins, Mr. Dibdin, Mr. Archibald, Mr. Osborne Smith, Mr. Ackerman, Mr. Dennis, and Professor Ramsay took part, and, in reply to questions, Dr. Clowes stated that chemical productions were often present in quantity in the Thames, but they did not influence the treatment materially. They had found that rapid sedimentation did not check the process, soap and grease did not interfere with the beds, neither did sunshine (which killed bacteria), because the liquid was opaque enough to prevent the rays penetrating more than a few inches. The matter of the manurial value of the sludge did not come within their province, and the quantity of the London sewage was too great to put on the land.

THE ROUBAIX PROCESS OF SEWAGE DISPOSAL.

THE chairman (Mr. R. Johnson), the deputy-chairman (Mr. J. T. Riddiough), and the engineer (Mr. J. Garfield) of the Bradford Sewage Committee paid a visit some time ago to Roubaix, France, for the purpose of inspecting a system of treating wool-combing suds in use in that place. On the occasion of the visit the committee had the opportunity not only of seeing the Roubaix sewage treatment in operation, but also the experimental treatment of a large quantity of the Bradford sewage, which had been conveyed to Roubaix for the purpose. The sewage of Roubaix is very nearly of the same nature as that of Bradford, and when it was reported that Roubaix and Tourcoing had discovered a method of dealing with their sewage in a manner not only efficient, but calculated to produce a considerable profit, derived from the recovery of the grease from the sludge, a deputation was appointed to visit and report upon the scheme. The apparatus by which this object is effected is the invention of a local woolcomber, M. Jules Delattre. The principle underlying the method is simple. The sludge is first treated in precipitating tanks with sulphuric acid, and the grease is then washed from the sludge thus obtained with benzine, which is subsequently recondensed. The sludge, deprived of its grease, is saleable as manure, and according to statistics which are set out in detail, the cost of the treatment of 4,868,000 gallons was £42 0s. 10d., and the receipts were:—From grease, 12 tons, saleable at £4 per ton, £48; and fertiliser, 29 tons, saleable at 8s. per ton, £11 12s.—total, £59 12s. There was thus a gross profit of £17 11s. 2d., equal to a profit or £81 a day on the estimated daily flow of the Roubaix and Tourcoing sewage. The management expenses, interest, and depreciation are not taken into account in the calculation. During the visit, some twenty-five tons of Bradford sludge were passed through M. Delattre's apparatus. Twenty-two and a half tons, after the addition of a little sulphuric acid to set free the saponified grease, were passed through the apparatus in twenty-eight hours, and from it were recovered 5½cwt. of grease containing 11 per cent. of foreign matter, and 15½cwt. of filter press cake containing 27 per cent. of moisture. The grease was valued at £9 a ton on the spot. M. Delattre said the extraction of grease from such a watery sludge would not pay, and that it would be necessary to reduce the bulk to about one-fifth in the process of precipitation. The method of grease recovery invented by M. Delattre can only be applied economically to a very dense sludge. If ferric sulphate is to be used for the precipitation of the sewage (says the report), it would be necessary to adopt

Relative Impurity as Estimated by Permanganate.

		Percentage of purification calculated on clear raw sewage.
Raw sewage deprived of its suspended matter ...	3.696	—
Effluent from chemical treatment ...	3.070	16.9
Effluent from single bacterial treatment ...	1.799	51.3
Effluent from double bacterial treatment...	1.137	69.2
River water, high tide ...	0.350	—
River water, low tide...	0.429	—

Experimental Proof of Aeration of Deep Coke Beds at Crossness.

Samples of air were drawn off from the interstices of the coke at varying depths from the surface of the coke bed and at varying intervals after the outflow of the sewage effluent; these samples gave the following results:—

Date.	Depth of feet from surface of coke bed.	Number of hours since effluent was removed.	Percentage of Oxygen in the air.	Percentage of Carbon Dioxide in the air.
Oct. 30, 1899.	13	2	19.1	0.8
do.	13	48	14.2	3.5
do.	13	104	18.6	0.2
Nov. 13, 1899.	13	4	19.0	0.8
do.	13	5	19.0	1.0

further treatment of the sludge by acid in order to set free the saponified fat. On the other hand, if the sewage were to be precipitated by sulphuric acid, it would be necessary to put down, in addition to the plant adopted at Roubaix and Tourcoing, such a system of tanks and filters, &c., as are usually required to treat the sewage of a manufacturing town uncomplicated by the difficulty due to the special character of the Bradford sewage. To treat the sewage of Roubaix it is estimated that twenty machines will be required. The cost of a machine is about £1,000, and the royalty on each machine is £600. In addition to this, M. Delattre is to receive 40 per cent. of the profits, which are estimated at £16,000 a year.

Surveying and Sanitary Notes.

Clones Sewerage.—The urban sanitary authority at Clones has decided upon carrying out a sewerage system for their town at a cost of £3,300.

New Italian Hospital Buildings in Queen Square, Bloomsbury, W.C., were opened by the Italian Ambassador on Wednesday last. The architect was Mr. W. Cutler.

Sheffield Sewage.—The Barnsley Sewerage Committee paid a visit on Thursday last to the Sheffield City Council's experimental plant at Wincobank for the bacterial treatment of sewage. The Council propose to purchase sixty acres of land, at a cost of about £250,000, for this purpose.

Plymouth Main Drainage.—The Plymouth Borough Council has decided to accept the tender of £20,997 of Messrs. Pethick Brothers for the construction of the main sea outfall in connection with the main drainage scheme, subject to an examination by their engineer of the figures on which the tender is based.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on March 14th the following gentlemen were elected:—As Members: A. R. Hutson (Gravesend), J. P. Jenkins (Penryn) and L. W. Wentel (Cape Town, S.A.). As Associates: J. E. Entwistle (Farnworth), H. Greening (London), J. H. Harris (Melton Mowbray), H. Maydue (Macclesfield) and W. A. Millward (Llandrindod Wells).

Bradford Sewage: The Frizinghall Experiments.—The members of the Bradford Sewage Committee visited the sewage disposal works at Frizinghall on March 6th. They inspected the works which are being carried out for the construction of a mixing-tank for the sewage. It is found that sewage entering the works from different parts of the town and at different times of the day differs materially in quality, being at some times heavily charged with dye waters and trade effluents, and at other times comparatively dilute. This variation occasions great difficulty in regulating the addition of the precipitation chemical, and makes it almost inevitable that an excess of the chemical should be added to ensure that the work should be done effectively. With the view of securing a sewage of a certain average quality and in a quantity sufficiently great to allow an experimental test to be made to ascertain the exact quantity of chemical to be added, a tank capable of containing a million gallons is being constructed at a cost of £700, into which the sewage shall flow immediately on reaching the works, and in which it shall be effectively mixed. The idea of the tank has been suggested by the city analyst, who estimates that the saving of precipitant effected by its use will be ten grains of sulphate of copper per thousand gallons treated, which would mean a saving of several thousand pounds sterling per annum to the city. These tanks are expected to be completed within a month or so.

"BUILDERS' JOURNAL" SHILLING FUND.

IT will be seen that our shilling fund on behalf of the Homes for Discharged Soldiers to be erected at Bisley now exceeds 2,000 shillings, but we feel sure that there are many who have not yet subscribed who will still further swell this total, and we hope that those of our friends who have taken collecting sheets will send them in at the earliest opportunity.

Our offer of a copy of the current issue of "Specification," the invaluable reference book for all connected with the building trades, sold at 5s. nett, is still open to anyone who collects twenty shillings for our fund.

The following subscriptions have been received since the publication of our last list:—

	Shillings.
Previously acknowledged...	1,983½
Per W. A. Osborne, 150, Old Street, London, E.C. (2nd Instalment):—	
J. W. Anfield, New-castle-on-Tyne	20
Mrs. E. G. H. Hall, New Brighton	1
W. A. Osborne	2
Mrs. Osborne	2

Per H. D. Simpson, collected from the building trade in Kilmar-nock:—

T. Wyllie	1
J. W. Craig	1
I. S.	1
John Foy	1
G. and W. Rome	1
John Inglis	1
R. Stevenson	1
W. S.	1
M. H.	1
A. M.	1
F. Elder	1
E. McQuaker	1
R. Herries	1
R. Simpson	1
W. Whyte	1
R. Wilson	1
A. Hamilton	1
M. Muir	1
T. L.	1
A. N.	1
M. D.	1
H. D. Simpson	1

Per W. J. Pople, contractor, Burnham, Somerset, contributed by his employees:—

W. Emery	1
A. Applin	1
J. Manley	1
C. Dyer	½
F. Lee	1
S. Washer	1
A. Sealey	½
W. Cosway	1
F. Trevelyan	1
G. Priddy	1
T. Snell	½
W. Banwell	½
A. Dyer	1
G. West	½
B. Lee	½
J. Thomas	½
W. Counsell	1
F. Banwell	1
R. Hancock	1
W. J. Pople	4½

Per C. Pallett, of Messrs. Williams and Son, Limited, brick-makers and contractors, Langley Brickfields, Langley, Bucks, contributed by employees:—

Bricklayers:	
H. Snapes	1
G. Morton	1
T. Plinright	1
C. Winterton	1
C. Stevens	1
J. Maslin	1

Carpenter:	
J. Wilson	1
Labourers:	
W. Baker	1
H. Blinco	1
H. Ketley	1
C. Clark	1
Boat Loaders:	
W. Leeney	1
H. Akerman	1
W. Greary	1
Engine Drivers:	
J. Partridge	1
O. Ward	1
C. Blackman	1
Wallage	½
Patterson	½
C. Pallett	2
F. H. W., Islington	2½
Inspector, Rock Ferry, Cheshire (2nd contribution)	1
Total	2,074

The following additional contributions in money and kind have been received at the offices of the executive of the gift:—

FOR THE ENTIRE SET OF BUILDINGS.
Messrs. S. sons, Brothers and Co. (Hull).—Distemper.
FOR INDIVIDUAL SECTIONS OF THE WORK.
Messrs. J. Stiff and Sons.—Terra-cotta copings, sills, and air bricks for one Home.
Mr. Thomas Beck (Derbyshire).—The stone sills for one Home.
Mr. Walter T. Chapman (Cleethorpes, Grimsby).—The terra-cotta sills for a service block.
Mr. Ch. Burnley (Sittingbourne).—Fifty tons cement.
Messrs. Fredk. Walton and Co.—Dadoes of Lin rusta-Walton throughout the halls, staircases and landings of the Homes.
The Wall Paper Manufacturing Co.—Dadoes of Analagya throughout the living rooms, corridors, and lavatories of the Homes.
Messrs. Starkie Gardner and Co.—Art metal work to the value of £50.
The St. Pancras Iron Co.—Two iron stair cases.
Messrs. Richmond and Co., per Mr. W. Sapcott.—Six gas cooking stoves.
Messrs. T. and R. Pote.—100 yards flooring tiles.
Messrs. Farmer & Bindley.—20 yds. sup. marble paving.
The National Opalite Glaze Brick and Tile Syndicate, Ltd., per Mr. W. Griffiths.—500ft. super white opalite tiling.
The Meadow Foundry Co. (Mansfield).—Four manhole covers and frames.
Mr. Samuel Wright (Hackney).—Fibrous gornices to the value of £10.
Messrs. George Caston and Co.—Wrought-iron grilles and fancy work.
Messrs. Nash and Hull.—Wrought-iron ornamental grills with metal letters.
Messrs. George M. Callender and Co.—Bitumen sheeting for the whole of the verandahs, covered ways, and also for tanks.
The Burmantofts Works (Leeds).—Four fire-places in Faience.
Messrs. John Shelbourne and Co.—The architraves for one Home.
Messrs. J. Young and Co.—Eye inspection covers for the whole of the drainage system.
Messrs. Lawford and Co.—Asphalte paths.
Messrs. H. and F. Boenten.—Wrought-iron mouldings for entrance gates.
Messrs. A. J. Arrowsmith and Co.—One pine chimney piece.
The Accrington Brick and Tile Co. (Accrington).—2,000 red facing bricks.
Messrs. Candy and Co. (South Devon).—5,000 brown glazed bricks.
Mr. H. A. Ball.—A 4ft. 6in. double oven kitchen range.

SUBSCRIPTIONS.	£. s. d.
2127 Workmen of Messrs. John Mowlem, Burt, and Co.	80 7 9
Mr. John Mowlem Burt	52 10 0
Mr. George Burt	52 10 0
Mr. W. B. Freeman	52 10 0
Workmen of Messrs. G. H. and A. Bywaters and Sons, per Mr. F. Isaacs	21 0 0
Workmen of Messrs. Higgs and Hill, per Mr. C. Hays	15 6 3
Workmen of Messrs. J. Grover and Sons	11 18 9
Mr. E. Yates, per Mr. Marsland	10 10 0
Mr. J. Bullers (Bermondsey)	5 5 0
Mr. T. W. Haylock	5 5 0
The Seyssel and Metallic Lava Asphalt Co.	5 5 0
"C." (Blackheath)	5 0 0
Workmen of Mr. John A. Hunt (Hoddesdon)	4 3 0
Workmen of Messrs. John Outwaite and Son	3 11 3
Workmen of Messrs. John Shelbourne and Co.	2 17 3
Messrs. J. H. and F. Dyer (Alton, Herts.)	2 2 0
Mr. Charles Thornett (Clapham)	2 2 0
Workmen of the Expanded Metal Co. (West Hartlepool)	2 2 0
Workmen of Messrs. Beaven and Hodges, per Mr. W. H. Pritchard	1 16 4
Workmen of Mr. E. C. Christmas (Forest Hill)	1 7 0
Workmen of Messrs. D. Dakers	1 6 6
Mr. Thomas Boye and Workmen	1 4 0
Workmen of Mr. Walter Ford	1 1 0
"A Friedl," per Mr. T. F. Rider	1 1 0
Workmen of Mr. J. Bullers	1 0 0
Workmen of Mr. Charles Thornett	0 19 0
Workmen of Messrs. Rider and Son, per Mr. R. George	0 10 6

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Were it not wonderful, had Orpheus or Amphion built the walls of Thebes by the mere sound of his lyre? Yet tell me, who built these walls of Weissnichtwo; summoning out all the sandstone rocks, to dance along from the Steinbruch; and shape themselves into Doric and Ionic pillars, squared ashlar houses and noble streets?"

* * * * *

"Is that a wonder which happens in two hours; and does it cease to be wonderful if happening in two million? Not only was Thebes built by the music of an Orpheus, but without the music of some inspired Orpheus was no city ever built, no work that man glories in ever done."—CARLYLE.

The Theatre Francais. M. LEYGUES, Minister of Public Instruction and Fine Arts, introduced a Bill in the Paris Chamber last week proposing that a credit of two and a half million francs should be opened for the reconstruction of the Théâtre Français. The Bill was referred without comment to the Budget Committee, though there is little doubt that the credit will be granted. Certain deputies who are noted for their opinions on art are likely to cause delay, as they propose to discuss the advisability of rebuilding the theatre as it existed, with the simple addition of a few extra exits. M. M. Stanislas Ferrand, the Seine deputy, and an architect by profession, announces his intention of asking that there shall be a competition among architects for the design, and he is also of opinion that the theatre should be completely isolated, which could easily be done by making short streets on the Rue Montpensier and Council of State sides of the Théâtre Français. In this way the theatre and the Palais Royal would be both completely isolated; but it is feared that the proposal would entail too much delay, and that there are many other difficulties which must prevent its adoption. The work of shoring up parts of the ruins of the old theatre is being proceeded with. The great cupola is still intact, but the architect, M. Guadet, fears that it will have to be destroyed, as also the facade on the Rue Montpensier.

A new American Palace. A NEW mansion has been built at the corner of Fifth Avenue and Sixty-eight Street, New York, for Mr. William C. Whitney. About £200,000 has been spent on the decoration of the two lower floors. Mr. Whitney said he would never have selected the Italian Renaissance as the period of the decorations if he had known the difficulties of the work. All the decorations had to be brought from Italian palaces, and that is difficult to-day. The entrance of the house, which is now on Sixty-eighth Street, leads down a flight of marble steps to a broad, low hall. Through a carved marble archway is the hall to the servants' quarters. On Fifth Avenue are Mr. Whitney's office and a reception room done in Rococo fashion, with grillings of gold on mirrors, in the centre of which are paintings, ornately framed in gold. A broad marble stairway leads to the main hall, which occupies a quarter of the main floor. The white marble walls are hung with a set of Italian tapestries that are said to be the most valuable in America. The ceiling came from the Barberini Palace in Florence. It is divided into sunken squares of blue and gold. The mantel which stands in this room is of elaborately carved white marble, and is famous in the history of European architecture. It is Italian, but came directly from Paris. A winding stairway in white marble leads up to the living rooms. On the Fifth Avenue side of the house on the main floor are a drawing-room and library. The former is hung in gold and maroon silk and velvet tapestry brought from a Florentine palace. The drapery covers the walls except for the

spaces occupied by the few paintings. Adjoining this room is the library. Superb carved black oak bookcases are about the walls, and the mantel is of delicately carved white marble. The walls of the dining-room, which also boasts a ceiling from the Barberini Palace, are entirely covered with paintings brought from a palace outside of Genoa. The conservatory is decorated with marbles brought from an Italian garden, and leads from the dining-room into the ballroom, which is the most beautiful apartment in the house. The walls as they stand came from the chateau of Phœbus d'Albert, near Bordeaux. It was built by this nobleman, who was one of the favourites of Louis XIV. In the time of Louis Philippe the walls, which are of polished oak, exquisitely decorated in a design of gold, were brought to Paris. The decorated ceiling alone is new. The dark brown oak, with the gold decorations, contrasts exquisitely with the draperies of light maroon. It is approached not only through the dining-room and conservatory, but by a long hall done in varicoloured woods, imported from an Italian palace.

Forum Excavations. A LARGE well, with its mouth sharply cut in the Etruscan manner, has been discovered in connection with the Forum excavations. Five of the broken columns of the Basilica Æmilia are being pieced together; and the opinion gains ground among serious students that when Pliny wrote "Phrygian" he intended the marble nowadays called "Africano." Not a single chip of Phrygian marble has been found during the excavations on this site; while the other precious marble has literally abounded; and lo, here are several columns of it belonging to the inner naves of the building! This is rather a blow for those who theorised that the columns of the former Basilica of S. Paolo outside the walls had been taken from the Basilica Æmilia in the Forum, by Theodosius and Valentinian. The fact is that the columns destroyed in that church in 1823 were of dimensions far larger than even those of the outer porticoes of this pagan Basilica, so that theory may be dismissed.

Smoke Abatement. THE Coal Smoke Abatement Society has completed the first year of its existence. Sir William Richmond (as president) says, in the first report (for 1899), that the Society's sphere of action is (1) the enforcement of existing legislation against smoke nuisances through the Public Health Act (London), 1891, and the amendment of that law where necessary; and (2) investigation into the causes of, and remedies for, this evil in general. Their chief work during the past year has been to put into action the machinery already provided by the law for the prosecution of offenders by the competent local authorities. The first step towards this was the appointment of Mr. Petty as inspector, who has reported no less than 1,250 observations. He has been instructed in 680 cases to present to the vestries official complaints, which have led to their giving statutory notice in a large number of cases, and taking proceedings in sixty-two, with the result that in thirty the nuisances have been entirely suppressed, and in thirty-two others very much lessened. The small proportion that convictions bear to complaints is owing partly to the inevitable opposition from interested parties, and partly to defects in the Acts of Parliament which magistrates have to apply. This opposition, there is reason to hope, is gradually being overcome, and to remedy the state of the law a short, but sufficient, Smoke Amendment Bill has been drafted, and will be introduced into the London County Council by a member of the Committee of the Smoke Abatement Society. Besides these direct consequences of activity, it is difficult to estimate the good which has undoubtedly been done by educating public opinion and stimulating interest in this matter. This has been evinced by the increased energy and independent action on the part of the local authorities, and still more by the salutary deterrent effect traceable in the number of chimneys and furnaces which now

take steps to conform to the law, but a large portion of which would otherwise be still offenders.

The Work to be done. THE disappointing fact, says Sir William Richmond, that no more than 400 persons have become members of the Society (though the subscription is only 5s. a year) can only be explained by the difficulty there is in getting the public to understand that this first part of the programme is really attainable, if only the limited circle of subscribers can be enlarged. There still remains untouched the other larger, and harder, part of the task, which is no less than to discover some means of obviating the evil from the smoke of the vast number of chimneys of the private dwellings of London; and this has not been neglected by the society. At the Building Trades Exhibition in May last the Society organised a separate section of smoke preventing appliances, and offered prizes for the most efficient. The competition was considerable, and medals were awarded to the best inventions, but none were found altogether satisfactory. A technical committee has been formed to examine and report on the means of preventing smoke from private dwellings—without any extra expense for fuel—a condition of success which, for the present at any rate, seems to be indispensable.

A Discovery of Frescoes. AT Bosco Reale, near Naples, where for some time past excavations have been slowly going on in the grounds of a villa called Voua, belonging to the De Prisco family, an important and interesting discovery of frescoes has just been made. A huge peristyle and four large chambers have been discovered, on the walls of which are about twenty frescoes of large dimensions, rich colouring, and of a design hitherto unequalled in any brought to light in the Pompeii district. Most of the figures are full sized and more carefully executed than any hitherto known. Rich mural decorations, fresh in colour and perfect in drawing, cover the parts of the walls not occupied by the main frescoes. Unfortunately for students of art, it is feared that exposure to the air and the light will cause these magnificent paintings to fade as quickly as those at Pompeii and in the Naples Museum. Every effort is being made to preserve them as long as possible, but lovers of art are taking advantage of the opportunity to see this unrivalled example of pre-Christian mural decoration before it fades.

London's New Boroughs. THE Commissioners appointed to determine the metropolitan boroughs under the London Government Act, 1899, have now practically finished their task. Areas which once had 200 or 300 vestrymen on three or four separate vestries, with district boards intervening, are now linked up into one borough, and given some forty or fifty representatives only. Now the hundred odd districts of London have been swept into twenty-eight large and compact boroughs. This simplifies matters a good deal. For instance, the East-end, instead of having three district boards and about a dozen vestries, will consist of two boroughs only. From the City to Burdett Road will be the new borough of Stepney, and from Burdett Road to the Lea will be the new borough of Poplar. Most of the Central district, where formerly were the vestries of Clerkenwell and St. Luke, together with portions of the Holborn District Board, including the Liberty of Glasshouse Yard, will be the Borough of Finsbury. The multiplicity of parishes and "liberties" around St. Giles become with Gray's Inn and Lincoln's Inn the borough of Holborn. South of the river, Bermondsey will take in all the parishes of the St. Olave's district, part of St. George the Martyr, and the whole of Rotherhithe. The outer areas for the most part remain the same. Nearly all the outer boroughs have enormous areas. Wandsworth has an area of 9,285 acres, Islington an area one-third smaller; yet Islington has the largest population of any of the boroughs, and Holborn, with 67,490 inhabitants, has the smallest.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Tenancy Agreements.

HARPENDEN, HERTS.—A. H. S. writes: "Can I legally prepare an agreement of tenancy for a period of six years—(a) for a client, making a charge for it; (b) making no charge; (c) for some of my own property?"

(a) Yes, if it be under hand only; if under seal, it is illegal to prepare it, the penalty being £50 (Stamp Act, 1891, section 44). (b) Yes, whether under hand or seal. (c) Same answer, if gratuitous or not under seal. H. P. B.

Books on School Buildings.

SOUTHEND-ON-SEA.—A. H. S. writes: "Which is the best book published on the planning of public elementary schools? Also, the price and publishers."

These are good books:—"Technical School and College Buildings," by E. C. Robins, F.S.A. Price, 18s. net. "School Architecture," by Palliser, Palliser and Co., architects, New York. Price, 4s. 6d. net. "Modern School Buildings," by W. R. Briggs, F.A.I.A. Price, 17s. net. These are obtainable from Mr. B. T. Batsford, 94, High Holborn, W.C.

French Technical Publications.

SOUTH TOTTENHAM, N.—E. C. D. writes: "(1) Do you know of a French journal dealing with the building and allied trades? I should like to know if there is one giving special attention to sanitation. (2) Can you recommend an English-French technical dictionary?"

(1) "La Construction Moderne" (weekly) will doubtless suit your requirements. It can be obtained for £1 15s. per annum, post free, or for £1 10s. if called for at Messrs. Grevel and Co., 33, King Street, Covent Garden, W.C. Subscriptions start only from April 1st and October 1st. (2) We are not aware of a dictionary exactly similar to the one you desire, but there is the "Technologische Wörterbuch" (Part 2, English-German-French), published by Tolhausen, of Leipzig, at 10s. 6d. This can also be obtained from Messrs. Grevel and Co.

Acknowledgments and Lapses.

HORTON, BRADFORD.—F. L. S. T. writes: "Owner A agrees by deed to pay B 5s. every half year as acknowledgment for B allowing A to take his w.c. waste to B's cesspool. Owner B agrees by deed to pay A 5s. every half year as acknowledgment for A allowing B a right of way over A's property. The deeds are dated March 20th, 1882. Neither party possesses any receipts for acknowledgments paid, and A says none were paid. Please say when the rights will lapse if no payments are made."

Having regard to the fact that the two deeds were executed contemporaneously, and that the half-yearly payments were identical in amount, we think that the parties must be taken to have agreed that these payments should be taken to have been made, without going through the form of each handing over to the other the amount due from him. We do not think that the rights will lapse by reason of the want of actual payments in cash.

H. P. B.

Roof for Billiard Room.

LORKS.—AN ARCHITECT writes: "I should be glad if you would inform me whether there is any danger of leakage, either from condensation or other causes, on to the billiard table from the skylight, illustrated on page 25 of your issue of February 14th, or is it necessary to put in a counter light to obviate this?"

Also, is there any objection to a lead flat and lantern combination? Would you recommend the following form of roof (sketch not reproduced)? The skylights in this case would, I presume, require to open for ventilation, or would there be sufficient air from the side windows?"

There should be no danger from leakage or condensation if the skylight is properly made. There should be an internal gutter all round in the cornice. There would be no objection to a lead flat and lantern, but it would have to be carried by rolled steel joists of large size. The alternative suggested, of a collar-beam roof with skylight in the sloping sides, would be very unsightly. HENRY ADAMS.

Value of Country Architect's Practice.

WINDERMERE—NORTH COUNTRY writes: "Can G. A. T. M., or another of your experts, give me an idea of the value of a country architect's practice in a growing neighbourhood which is bringing in about £750 a year?"

An architect's practice is so largely personal that its value is extremely difficult to determine. As a general rule two years' purchase is the utmost that can be obtained, but it may be worth as much as three years' purchase if it depends upon several appointments which are likely to be of a permanent nature even after the incoming of a new partner, and to yield a definite income. On the other hand, if the practice depends upon one man's artistic reputation, a share in it may not be worth very much, and any sum put into the business ought to be covered by a life policy. To purchase a practice right out without several years' introduction as a partner would be most unwise. G. A. T. M.

Wires in Levels.

RYDE, I.W.—X. Y. Z. writes: "I have just received a 'Troughton' level on tripod (18in. telescope, 11in. spirit-tube, 4in. compass) and find that there are + wires at the eye-piece end only of the telescope, and at the object end no wires at all. Will you kindly say if this is right? I see no provision for wires at the object end, unless a brass ring directly behind the lens is missing."

The cross wires of level are placed in the diaphragm or brass frame near the eye-piece, at the point of intersection of the foci of the eye-piece and object glass. Although called wires, they are made of spider web strained across the opening. In the smaller levels there is one horizontal wire and one vertical wire crossing the optical axis; in the large levels there is a similar horizontal wire, but instead of a single central vertical wire there are two vertical wires, spaced so as to show the level staff between them. When the level is to be used for reading distances, two other horizontal wires are inserted, spaced to read, say, 1ft. on staff at a distance of 100ft. No telescopes have wires at the object glass.

HENRY ADAMS.

Income Tax Returns.

LITTLEHAMPTON.—INCOME TAX writes: "I should be glad to know, being connected with a small builder's business, how to prepare a statement to show what is required in a return under schedule D. I keep a profit and loss account, and I prepare a balance sheet of assets and liabilities. Can I determine from these what is required?"

Persons assessed under schedule D income tax must subscribe their names to a statement of the profits of their trade, forms of which are to be obtained from the surveyor of taxes for the district. It is not quite clear what you require, but if you only require a form of account on which to base the statement you will make as to the profits arising from a builder's business only, then your own accounts, showing the net profits arising from the business, will do for this, taking care not to make any deduction for household or living expenses, as you are assessed on the profits arising from your business, which latter has nothing to do with your living. These profits you subscribe your name to on one of the forms supplied by the surveyor of taxes as stated.

If, on the other hand, you have not hitherto been assessed under schedule D, but under schedule B, as a farmer, you must be prepared to sign a statement of the whole of the profits arising from any and every trade you are connected with, on a special form to be obtained from the surveyor, and if you can prove that your profits have fallen short of the sum previously assessed under schedule B within three months of the year of assessment, the excess paid under schedule B will be certified to be repaid to you. C. BRAND.

Liability of Tenant to Repair Drains and Closets.

HASTINGS.—W. T. R. writes: "A tenant occupies an old house on a repairing lease, and the drains and closets are scarcely sanitary. Should they be condemned by the borough authorities, would the tenant be compelled to reinstate a modern system under his covenant to repair, or would it be the duty of the owner to do so? If not actually condemned, could the owner in any way be compelled to replace existing closets with effective appliances?"

The occupier is not obliged under his covenant to repair to put in a modern system of sanitary arrangements. Under section 23 of the Public Health Act, 1875, if a house is without a drain sufficient for effectual drainage, the local authority may, by notice, require the owner or occupier within a specified time to make a proper drain, and, if this notice is not complied with, may do the work and recover the expense from the owner. Similar provisions are by section 36 made with respect to insufficient water-closets. Unless such a notice was served, I do not think that the owner could be compelled to replace the existing closets with effective appliances. H. P. B.

Requirements from an Architect.

BATH.—R. M. E. C. writes: "I am desirous of becoming an architect. What are the subjects I should be acquainted with? Are geology and advanced mathematics necessary? What age should I be?"

A knowledge of geology may be of the greatest possible value to an architect, but it is by no means essential. The same may be said of almost any other branch of education. A man who is master of trigonometry and the calculi is sure to find them of great use to him, yet he will probably never miss them, never know that he has lost anything, if he knows no more of mathematics than is contained in the first two books of Euclid and the elements of algebra. In short, the better educated a man has been the better architect he is likely to become, other things being equal; but, above all things, draughtsmanship is necessary, and should be cultivated from early school days. In most cases, it is best to sign articles between the ages of seventeen and nineteen, for three years, and then to pass as an assistant from office to office, to acquire varied experience, during the next few years. G. A. T. M.

Charges for Preparing Valuations.

LONDON, W.C.—E. B. writes: "What are the charges for preparing a valuation for purchase by a company of a freehold factory (about £30,000)? Also the charges for preparing schedules and valuation of the trade fixtures, furniture, plant, horses and carts, &c."

The amount of the valuation and the percentage charged for preparing it will be different if the company has powers to purchase under compulsion to the amount and charge made otherwise than under compulsion; but, unless it possess compulsory powers, a company is charged as a private individual. You do not state that the purchasers have powers of compulsory purchase. The following is the scale of charges of the Royal Institute of British Architects for the valuation of freehold, copyhold or leasehold properties:—On the first £1,000 the charge is 1 per cent.; thence to £10,000, $\frac{1}{2}$ per cent.; and on the residue above £10,000, $\frac{1}{4}$ per cent. For preparing a valuation of fixtures, &c., the professional charges are:—5 per cent. on the

amount up to £500, and 2½ per cent. on the remainder, in addition to stamp and expenses. The preparation of schedules is the usual accompaniment of the preparation of a valuation list, and is included in the charge. Horses are different, the charge made for valuing them being similar to the usual charges for other farm live-stock. You must bear in mind that, although it is unwise and indeed unfair to other valuers to depart from the recognised scales in ordinary cases, a reduction is often arranged between the parties in dealing with very large amounts which entail less labour in proportion to the amount of the claim. With regard to this you must use your own careful discretion.

E. BRAND, P.A.S.I.

Piling Foundations.

GREENOCK.—J. R. writes (and the answer given is also in reply to "Alpha," Northampton): "What method of pile foundations is required for a building 170ft. by 130ft., the walls of ground floor and basement being 2ft. 6in. thick. The soil is an estuarine deposit about 50ft. in depth. Will thin internal walls and piers also require piling? How would I arrive at the cost of such foundations? In cubing the building must I take half-way down the piling?"

The best method to employ can only be determined by an inspection of the site and a full knowledge of all the requirements of load, &c.; but, approximately, if the deposit has solidified and is thoroughly dry, the method described and illustrated on page xlii of the supplement to the BUILDERS' JOURNAL for September 13th, 1899, would be suitable. If, however, the deposit is unstable, it would be imperative to sheet pile the whole site so as to retain the soil, depositing a sufficient depth of concrete on the wall foundations. A cross row of piles under the principal interior wall might be used with advantage to tie together the boundary piling. More exact information would decide whether it would not be more economical to sink brick or concrete piers down to the firm subsoil and throw girders across their heads for the foundations.

G. E.

In preparing an estimate for a building on pile foundations, the building would be cubed in the ordinary way and the cost of piling added separately.

HENRY ADAMS.

Openings in South Africa.

PAIGTON.—PRACTICAL writes: "I have served nearly five years with an A.R.I.B.A.; have a certificate in "The Principles of Sanitary Plumbing" from the London and City Guilds Institute (Ordinary Grade); have also attended the local technical class for two winters in carpentry and joinery, and am accustomed to prepare plans from rough sketches and to survey sites, &c. I consider I have a fair practical knowledge of building construction. Do you think I might get a better chance in South Africa after the war? What branch of the building trade would you advise me to apply for work in? An open-air life is preferred—as much as possible. I shall have excellent testimonials. My idea is to become a builder, being a small capitalist."

We think it would be better for our enquirer to wait until the war is over before making up his mind. There will no doubt be a large amount of building done when things have somewhat settled down, as the country is by no means largely developed. We consider the idea of starting as a builder and contractor with a small amount of capital, considering the knowledge our correspondent has acquired, a good one; but he will, no doubt, be able to form his own opinions as to the opportunities of the country from the able paper by Mr. John Begg, which appeared in our issue for March 7th.

R.I.B.A. Testimonies of Study.

CULLEN, N.B.—S. W. C. writes: "In studying for the R.I.B.A. Intermediate Examination, what subjects would you suggest for testimonies 3 and 6 (Classic and Gothic Ornament)? Are you supposed to make one

complete study or several in these sheets? Will you publish any more 'Model Answers'?"

It is best that both these sheets should be measured. A very favourite subject for the Classic Ornament is the well-known frieze from the Erechtheion, now in the British Museum, and a cast of which can be obtained from Brucciani, plaster modeller, Drury Lane, W.C. Many students, however, make up this sheet of fragments copied from such books as Spiers' "Orders." A carved capital or a bench end from some local Gothic church would form a good subject for the sheet of mediæval ornament. Such a thing is to be found in almost every English village, but more rarely in Scotland, Ireland and Wales. Brucciani might again be consulted, and a cast obtained, say, of one of the spandrels in Stone Church, Kent.

G. A. T. M.

[The "Model Answers" we have already given would we think be useful to architectural students generally as well as to candidates for the particular examinations dealt with, and to give model answers for all the examinations that appeal to students in architecture and the various building trades would make too great a demand on our space.—ED. B. J.]

Architect's Fees for Work not Carried Out.

KIRKCALDY.—LADYSMITH writes: "A proprietor asked an architect what the total cost would be for the erection of a certain building. The architect told him that £570 would be the probable cost and this satisfied the proprietor, as he was not prepared to spend more. The architect was instructed accordingly to prepare drawings, &c., and obtain tenders, which latter (to the extreme disappointment of the proprietor) exceeded £1,200, and caused the matter to drop. The architect sends in an account of fifteen guineas for his services, and I should be glad to know whether he can justly claim it, and, if so, on what grounds; or, if not that sum, how much can he claim?"

The architect is entitled to be paid his fair charges for the work actually done. If the client expressly and distinctly instructed the architect to prepare plans, &c., of a building that would cost not more than a certain sum, or would cost about a certain sum, and the architect prepared plans of a building that could not be erected except at a much greater cost, the client would be entitled to repudiate the plans and refuse to pay anything for them. (See *Burr v. Ridout*, reported in the "Times" newspaper of February 23rd, 1893.) But that is not our correspondent's case. The proprietor appears to have been satisfied with a rough estimate given by an architect in conversation, and to have given instructions to prepare the plans, without in any way giving the architect to understand that the building was not to cost more than the amount of that rough estimate. What the fair charges for the work done would be, it would be impossible to say without knowing what the work was. It has, however, been decided that an architect is not entitled, when the matter falls through, to be paid the percentage which he would have received if the building had actually been put up. *Farthing v. Tomkins* (1893), 9 Times L. R. 566.

H. P. B.

London Water Supply.—On Wednesday last a deputation from the London County Council was received by Mr. Chaplin, President of the Local Government Board, at the House of Commons, on the subject of the Bills now before Parliament relating to the water supply of the metropolis. Mr. Chaplin pointed out that the proposal to get water from Wales was in direct opposition to the recommendations of the Llandaff Commission, which reported that the scheme for storing water at Staines would be much cheaper. However, after hearing Mr. Dickinson, he would like to consider the matter more carefully before making any definite statement, but he did not wish to hold out any hopes to the deputation, as he had received representations only a day before from the metropolitan M.P.'s asking him to take an exactly opposite view.

Professional Practice.

Bristol.—The recently opened mission church of St. Aldhelm, Chessell's Road, Bedminster, is in the Gothic style, red Winterbourne stone being used, with Bathstone dressings. It has an open timber roof, left in its natural state, covered with Major's patent interlocking plain tiles. At the east end, and raised three steps above the floor of the nave, is a spacious chancel, to be fitted with choir stalls, room being left for a full-sized two-manual organ. The sanctuary is raised one step above the floor of the chancel, and divided from it by an oak rail resting upon wrought-iron standards of ornamental design. The church has an aisle on the south side, divided from the nave by arches and columns of Bath stone. The aisle is divided by sliding swivel partitions, forming five roomy classrooms for Sunday School purposes, each classroom being 16ft. square and having separate windows. These partitions are made to fold back into a very small space for matins and evensong services. At the west end are two spacious vestries for the clergy and choir, and the latter vestry will also be used as a teachers' room during Sunday School hours. Beneath the vestries are a kitchen, a heating chamber, and various offices. The clergy and choir vestries have separate entrances. On the north side is the main entrance porch, the floor of which is laid with encaustic tiles, and also the entrance lobbies to the vestries. In the east and west gables there are tall, three-light lancet windows, and the whole of the windows are glazed with cathedral glass in lead squares. Much attention has been given to ventilation, and the heating is by hot water on the low-pressure system. The church has been planned to seat 700 worshippers. The architects were Messrs. P. Munro and Son, of Bristol, the contractor was Mr. E. Walters, of Montpellier, and the heating apparatus was supplied by Messrs. Willway and Sons, of Bristol.

Perth.—An electrical generating station is to be built on ground adjoining the river Tay, to the north of the smallpox hospital, with a frontage to the Harbour Road of 120ft. The buildings include an engine house (115ft. by 42ft.), a boiler house (115ft. by 38ft.), a battery room (48ft. by 31ft.), workshop, store, and lavatory accommodation for engineers and men. The test room and offices are at the front, and over these a dwelling-house is provided for an engineer, who will look after the works. The chimney is circular and 150ft. high, and so situated and constructed that it can be utilised as the chimney of a refuse destructor. The buildings throughout are to be built of red facing bricks, with moulded courses in front, round arches for windows, and large entrance doors to engine and boiler houses. The plans have been prepared by Mr. M'Killop, borough surveyor, with the direction of Mr. Hawtayne, electrical engineer. The cost will be £7,428.

Harrogate.—For some time past the Spa Concert Room, particularly since it became the property of the Corporation, has been much too small for the requirements of the Harrogate season, and it is proposed to build a new Kursaal on the Spa Estate, and adjoining the existing building. At the meeting of the Harrogate Town Council on March 12th it was resolved that the architect (Mr. Robert J. Beale, of Westminster) should prepare specifications, quantities, and an estimate for the Kursaal, in order that the Town Clerk might make application to the Local Government Board for the loan. For the new building it is proposed to clear away the glass and iron structures at the left of the Colonnade, and place the new building on the site of the old skating rink and on the west side of the existing promenade, forming a connection with it and so allowing the whole to be used in common or subdivided when necessary. The main entrances to the new building are provided under a covered portico leading into a grand vestibule, from each side of which are spacious promenades going all

round the main concert hall, with two staircases leading to the balcony, smoking and billiard room on the first floor. The new concert hall will provide seating accommodation for about 2,500 persons, and will be roofed in one span. A large portion of the ground floor will have a special polished parquet floor, which can be cleared for dancing; the seating at the back of the hall will be raised so as to give a clear view of the stage and form a pleasant lounge during dancing. On each side of the hall are provided small boxes, with glazed partitions at back, formed to slide up when required, thus providing small balconies from the promenades. The stage provides for a full band and orchestral chorus, and by means of ornamental wings hung at the sides of the proscenium the width of the stage can be reduced when required for dramatic performances. Ample exits are provided for any emergency. At the back of the main hall facing the grounds is a café and refreshment room, and on the lower floor, level with the garden, a reading room. From the promenade a flight of steps will lead to the gardens, also a way for bath-chairs. In the lower ground floor are provided rooms for the chorus and band, lavatories and cloak rooms. The whole of the building is intended to be finished and decorated throughout in a style suitable for the requirements of a thoroughly up-to-date Kursaal. The services of Mr. Frank Matcham, who acted as assessor, have been specially retained by the Corporation. It is estimated that the new building will cost £25,000 or £30,000.

New Patents.

These patents are open to opposition until April 21st.

1899.—Theodolites.—3,064. G. A. HALL, London, S.W. A rectangular telescope with cross webs and stadia lines is attached to a clamp rest, which forms the upper hemisphere of a metal ball. This hemisphere is hollow and leaves only the bridging pieces for support, so that a compass with an "all way" spirit level in the lower half of the ball can be read. There is a vertical and horizontal circumferential, with verniers and microscopes attached to the telescope and socket, and the lower ball can be clamped in any position. The telescope is set to a true level by means of a spring clip and a slow motion screw. It is mounted on a swivel neck, which allows it to be revolved horizontally without losing its level.

Plaster Slab-making Machinery.—3,789. G. B. HALL, London, N. This apparatus is for producing plain or ornamental slabs of plaster, cement, or other composition, and is an improvement on patent No. 1,256 of 1895. The materials are mechanically mixed, delivered to a rolling machine, and rolled into sheets. The feature of the present patent is that the proportions of the ingredients can be varied to produce a slab having one side "keyed."

Breakwaters, Submarine Piers, &c.—5,456. N. R. JECKEL, Jutland, Denmark. Profile girders are erected vertically or obliquely and the building blocks are slid down them, an interlocking arrangement being provided.

Manholes.—5,999. J. KNIGHT, London, S.W. This is an improvement on patent No. 17,733 of 1893, and consists in adding a surface of glass, enamel, or other equally impervious material to form the lining of the manhole. This surface is preferably formed conjointly with the manufacture of the artificial stone.

Trough Closets.—8,280. W. OATES, Halifax. The object of this invention is to dispense with the loose bend for supplying the flushing water. At the flushing end is formed integral a bend having a socket at the top to receive the lower end of the supply fall pipe.

Cutting up Long Shavings.—13,626. T. N. ROBINSON, Rochdale. Long shavings, like those from floor-board planing machines,

are cut up by being caught by and passed through rollers and fed to a rotating cutter below.

1900.—Water Filters.—147. W. L. TETES AND J. A. HEANY; both of Philadelphia, U.S.A. Before the water is passed to the filtering material it is electrolysed in order to decompose and sterilize it.

The following specifications were published on Saturday last, and are open to opposition until April 28th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—3,620, A. WARBURTON, A. BAILEY, and HARRY ROTHWELL, continuous draught kilns for brick and terra-cotta burning. 3,701, BERRY, slugging or nailing machines. 3,786, LORRAIN (*Macdonald*), electric incandescent lamps. 3,814, HEARNE and WHITEHEAD, ventilator. 3,934, LICENSE, clamps and vices. 4,199, BLACKETT, means for operating fanlights and ventilators. 4,344, MARCHAND, manufacture of articles of glass by moulding, casting, or blowing. 4,589, HENTZE and MULLER, method of producing hard mantles or hoods for incandescent light. 5,356, BENNETT, electric arc lamps. 5,587, Titus, road scrapers. 5,627, MARTIN, adjustable shelf bracket. 6,113, HECKFORD, means of fixing cap or back plates of lock and latch cases. 6,485, COLE, hydraulic cranes and lifts. 6,608, HOLLOWAY AND DELLAGANA AND CO., LIMITED, liquid spraying apparatus adapted for colour slip glaze and enamel spraying. 6,609, HOLLOWAY AND B. DELLAGANA AND CO., LIMITED, means for effecting the coloured decoration of pottery. 6,718, DAWSON, folding ladder. 7,556, PERCY, automatic acetylene gas generator. 7,740, DALY, pickaxe, adze, or hoe. 7,801, HUGHES, machinery for pressing bricks. 8,168, MOUL AND LIND, mounting incandescent electric lamp bulbs. 8,234, DALBY, locking apparatus or devices for bolts, nuts, manhole doors, &c. 8,272, PARNALL, BARTER, AND PANES, dovetailing or woodworking machine. MORRISON, water-closets. 8,368, KEITH, sectional hot-water boilers. 8,416, SWARBRICK, draught excluder for doors. 8,497, BARTENSTEIN, bulbs for electric incandescent lamps. 8,648, THOMPSON (*Wegmann-Hausser*), acetylene gas generators. 8,730, PEARSON, hay racks and feeding troughs for cattle sheds. 9,042, BRANDT, pipe joints. 10,456, HEINTZ, file-cutting machines. 18,112, GILMOUE, method of manufacturing lumber. 18,401, THUESTAD, door holders. 18,498, PEISTER, PAETZ, and LEWIN, dyeing of wood. 19,334, MARTINOLI, rotary engines, pumps, and meters. 20,712, LAKE (*Stackmann and Retschy's Chemical Works*), process for the production of disinfecting powder. 21,381, McDONALD, mitre boxes. 21,779, STRAUB, process of treating lime in the manufacture of plaster and cement. 24,110, SHIELD, cramps for cramping together blocks of concrete or stone in breakwater works. 24,753, FORIN, sash fasteners. 24,991, KEMP, brackets and chandeliers for gas lighting, etc. 25,098, LUSK, window fastening. 25,305, BERGER, planing machines.

1900.—343, O'SULLIVAN and BOARDMAN, nut locks. 563, IWASZKIEWICZ, padlock. 884, MARECHAL, locking bolts and nuts. 903, JACKSON, tramcar or omnibus seats, garden chairs, etc. 969, WILKEN, roofing tiles. 1,009, McCABE and GOUGHENOUR, electrically or magnetically operated locks. 1,054, CLARK, syphon flushing cisterns. 1,220, IMRAY (*McDowell*), wall ties. 1,360, ROWELL, metal fencing.

Bloemfontein is well laid out with a large market square in the centre. Many of the houses have luxuriant gardens, shaded by willow, gum, and other trees. The residence of the President is a stone-built house, and cost £15,000. The new Raad Zaal is an imposing building, with Doric columns and a tower 90ft. high. It was erected at a cost of £57,000. The old Raad Zaal is used for Government offices. Another prominent building is the Grey College, which was presented to the town by Sir George Grey.

Builders' Notes.

Workmen's Homes for Plymouth.—The Plymouth Borough Council has decided to accept Mr. H. E. Skinner's tender (amounting to £6,349) for the erection of blocks 13, 15, and 19 of the workmen's homes at Prince Rock, upon the understanding that the architects should from time to time during the progress of the work make such modifications as the Committee might approve in order to reduce the cost of the buildings.

Picketing and Assaults.—At the Guildhall last week two labourers, named Bignell and Burns, were charged with assault. Mr. Biron stated that he prosecuted on behalf of Mr. Shepherd, a builder, who, in consequence of the attacks made on his men, felt it necessary to take these proceedings. Mr. Shepherd had some building going on in Norwich Street, Fetter Lane, and from the very beginning of the work the place had been picketed. Finally, the prisoners assaulted two men, injuring one of them so seriously that he remained insensible for seventeen hours. John James Hunt, foreman to Mr. Shepherd, said that the picketing had been going on in connection with the Operative Bricklayers' Society. Burns was sentenced to two months' imprisonment and Bignell to a fine of 40s. or one month.

London County Council.—At last week's meeting of the Council Mr. W. H. Dickinson was elected the new chairman, and Mr. A. M. Torrance the vice-chairman. Among other suggestions, the Housing of the Working Classes Committee expressed the opinion: "That the law should declare that it is the duty of the freeholder to see that dwelling-houses on his property are fit for human habitation by enforcing the repairing clauses in his leases, and taking all other necessary steps. Where an official representation under the Act has declared that the dwelling-houses in question are not fit for human habitation, the freeholder should have the power to re-enter into possession, but there should be put upon him the obligation to rebuild upon the site dwelling-houses for the working classes. In the event of the freeholder not fulfilling his obligation, the local authority should be empowered to take possession of the land, paying only the market value of land subject to the obligation to rehouse persons of the working classes on that site." The Committee recommended that their action be approved. This was agreed to. It was decided that, subject to the assent of H. M. Commissioners of Works, a site to the west of St. Clement Danes Church should be allotted to the Gladstone Memorial Committee.

A Party Wall Action.—The case of *Watts v. Lapham*, the hearing of which occupied a considerable time at the Bristol County Court recently, was concerned with the rights of neighbours to use party walls. Plaintiff's claim was £50 for damages for trespass by defendant and interference with his ancient lights, and he alleged that defendant in building a shop out from his premises had wrongfully built upon a wall between the plaintiff's and defendant's property, which the plaintiff alleged either was wholly his own wall or a party wall. Mr. Pizey, a surveyor and architect, was called to prove the damages, which he estimated on the basis of a diminishment in the letting value of £10 per annum. In cross-examination, however, he admitted that the bulk of this was due not to the obstruction of light, but to the fact that a business was brought next door to the plaintiff. Dr. Grey, for the defence, argued that the wall was a party wall, and by common law the owner on either side of the party wall had no remedy in the event of the raising of the wall except to pull down the erections placed upon it, and that at the time the plans were prepared and the buildings put up the unquestioned practice under the Bristol Building Act was to allow erections such as this one to be placed on party walls. In addition to this, Dr. Grey stated that only one set of plans had been prepared, and these

had been twice shown to Mr. Watts by the defendant, and had been carefully and critically examined by Mr. Watts, who had discussed them with the defendant with a view to Mr. Watts himself erecting on his premises a similar shop, and so using the wall erected by the defendant; and that he had clearly given full consent to the user of the wall. The judge, in giving judgment, said plaintiff could not maintain any action for damages by obstruction of light, because he believed the defendant's statements as to what passed at the interviews between them; at the same time he did not think that an ordinary man could be expected to gather from the plan what use was going to be made of the party wall, and therefore on that ground he must give judgment for the plaintiff on the action of trespass, and he assessed the damages at £15, but ordered the judgment to stand over pending a suggested arrangement between the parties by which the damages would be reduced to a farthing if a deed were executed granting Mr. Watts the free use of the wall which the defendant had erected.

Cartwright Memorial Hall.—Lord Masham visited Bradford on Wednesday for the purpose of conferring with the Cartwright Memorial Hall Committee upon the tenders and designs for the new building to be erected in Lister Park, the tenders for which exceed by about £10,000 the sum of £40,000 which Lord Masham had presented to the Corporation for the erection of the memorial. It was arranged that the city surveyor (Mr. Cox) should pay a visit to the architects, Messrs. Simpson and Allen, of London, and confer with them with a view to modifying the design (without materially affecting it) in order to reduce the cost to somewhat nearer the original offer.

Improvements at Bingley.—On March 15th a Local Government Board enquiry was held into an application by the Bingley District Council for various borrowing powers. The chief of these is the erection of a new fire-brigade station in Market Street, from plans prepared by Mr. W. R. Nunns, architect, Bingley, for which £2,500 was asked. The other works included £1,000 for the widening of the Main Street at Wilsden; £500 for the sewerage of the village of Cottingley; £400 for the improvement of Park Road, Bingley, at the junction with Main Street; and £120 which has been paid in connection with the improvement of Park Road at the canal bridge. There was no opposition.

Water Under Floors.—At the last meeting of the Yarmouth Town Council the medical officer reported that he had examined fifty-eight houses in Tyrolean Square, and the walls, on every side but the south, were very damp. He had the floorings taken up, and found the "subsoil saturated with water," while in some of the houses "there were actually several inches of water under the floors, rendering the places practically unfit for human habitation and very injurious to health." A report from the borough surveyor also spoke of dwellings into which the "sun never penetrated." The Council decided to erect forthwith blocks of artisans' dwellings in Kitchener and Garfield Roads.

The Mayor of Blackpool and Jerry-Builders.—Speaking on Thursday last on the occasion of the distribution of prizes at the Blackpool Technical School, the Mayor (Dr. Kingsbury) said that their town was cursed with the jerry builder, who had a colleague with him, the plumber, whose aim was not honour but £ s. d. If there was one man more criminal than another it was the bad plumber, but the jerry-builder ran him a good second. He only hoped that the Corporation would take in hand the treatment of these persons, because if they could secure for the town honest and satisfactory building, and honest and conscientious plumbing, he was quite certain that the success of the town would be heightened and the health of the inhabitants very much improved.

Workmen's Compensation Act.—The Court of Appeal gave a very important judgment last Friday with regard to the time limit for claiming compensation under this

act. The question is, or ought to be, a simple one, says the "Daily News." The Act says that claims must be made within six months of the accident. Does that mean that legal proceedings must be taken within six months, or merely that notice of them must be given? Lord Justice Smith and Lord Justice Collins take the former view, Lord Justice Romer takes the latter. Six cases depend upon the decision, and the law lords must now decide. The County Court judges appear to have given the workman the benefit of the doubt. But the Court of Appeal in Ireland and the Court of Session in Scotland are cited by Lord Justice Smith as supporting his interpretation. If the majority of the Lords Justices are right, the workman may be put out of time, and out of Court, by the default of his solicitor. The workman himself, or some member of his family, can always give notice, and for that purpose six months is not an unreasonable time. But the technical commencement of litigation is not under the plaintiff's exclusive control.

Keystones.

The Will of the late Mr. W. H. Picton architect and surveyor, of Liverpool, has been proved at £16,741 11s. 6d. net.

A Statue of Sir Thomas Browne, the author of "Religio Medici," is proposed to be erected in the Haymarket at Norwich.

A proposed Smallpox Hospital for Manchester, to cost £60,000, was the subject of a Local Government Board enquiry held last week.

At St. John's, Macclesfield, a stained-glass window is to be erected in memory of the late Mr. C. G. Killminster, who was the architect of the church.

New Baths at Stourbridge are proposed to be built at a cost of £5,000. A Local Government Board enquiry was held last week.

Southwell Cathedral.—It has been decided to introduce new prebendal stalls at the entrance to the choir of Southwell Cathedral. The cost is estimated to be between £900 and £1,000.

New Co-operative Stores at Consett, Durham, have been built in Newmarket Street at a total cost of about £10,000. The building is three storeys high, with extensive cellerage.

Magnetism in Bricks.—The "Physical Review" has a communication from Messrs. Gage and Lawrence on the magnetic properties of bricks. Brown and pressed red bricks are, it appears, more magnetic than white bricks.

A new Methodist Free Church at Armley, Leeds, has been built at a cost of £4,000 in the centre of the large working-class district which is divided by Tong Road. Messrs. Walter Hanstock and Son, of Leeds and Batley, were the architects, and Mr. Arthur Lambert, of Bramley (mason's work), and Messrs. Horsnell and Heald, of Ossett (joinery), the chief contractors.

A Kimberley Mausoleum.—Mr. Cecil Rhodes proposes to erect a mausoleum at Kimberley to commemorate the gallant men who were killed during the siege, and he is sending Mr. Herbert Baker, A.R.I.B.A., to Egypt, Rome, and Athens to study the mausoleums there. Mr. Baker is the architect who rebuilt "Groote Schuur," Mr. Rhodes' country residence at Rondebosch, after its destruction by fire.

Court of Common Council.—At last Thursday's meeting at the Guildhall a report of the Finance and Improvement Committee, submitting a plan for making London Wall 50ft. wide, was deferred until a reply had been received from the County Council as to their willingness to contribute towards the cost of widening London Wall. Arrangements were sanctioned for continuing improvements at the western end of Cheapside and Warwick Lane, at an expense of £12,000.

Change of Address.—Messrs. Henry Ough and Son, architects and surveyors, have removed from 84, St. Paul's Churchyard, E.C., to 64, Basinghall Street, E.C.

Mr. Reginald Hallward has set up a hand-press, and is printing some fanciful works, the decorative pages of which will be produced by a method which has not been applied to artistic purposes before.

The German Archaeological Institute in Athens celebrated the twenty-fifth anniversary of its foundation on March 12th. The University of Athens has decided to convoke an international archaeological congress in Athens.

Kingston Public Library.—The new public reading-room and library at the corner of Sussex Street was opened last week. The work of renovation has been done by Messrs. Ring and Sons, contractors, according to plans by Mr. W. Kaye Parry, C.E.

Re-opening of a Flintshire Chapel.—The Calvinistic Methodist Chapel at Llanerchymor, Mostyn, has just undergone complete renovation by Messrs. Sibeon, contractors, Holywell, from plans prepared by Mr. Thomas Parry, Colwyn Bay.

Sir Frederick Burton, the well-known Irish artist, died on Friday last. In 1874 he succeeded Sir William Boxall as director of the National Gallery, and his tenure of office lasted for twenty years. In 1884 his services were recognised by a knighthood.

Mr. Andrew Black has removed from Galashiels to Glasgow, where he has entered into partnership with Mr. Robert Miller, I.A., architect; business will in future be carried on under the style of Miller and Black, I.A., architects, 58, Renfield Street, Glasgow.

The Society of Antiquaries of Scotland held its monthly meeting in Edinburgh last week, when a paper was read giving an account of the results of excavations which have been proceeding during the last five years at the Roman station at Camelon, near Falkirk. The excavations were undertaken by Mr. Alexander Mackie, under the advice of Mr. Thomas Ross, architect, and the co-operation of Mr. MacLuskie, a fellow of the society; and of Mr. Mungo Buchanan, surveyor, Falkirk, who devoted his leisure to planning the details from week to week.

Bristol Society of Architects.—At the ordinary monthly meeting of this society held last week, Mr. W. L. Bernard, president, in the chair, Mr. Peter Addie, F.S.I., the city valuer, read a paper on "The Removal of the Insanitary Areas and the Management of Improvement Schemes under the Housing of the Working Classes Act." A discussion followed, and the view was generally held that the cost of building increased the difficulty of a satisfactory solution, more especially as the sound contract work of the municipality could not be done at the same low rate as inferior speculative work. The honorary secretary (Mr. H. Dare Bryan) pleaded for some alleviation of the inartistic and depressing appearance of these dwellings, even at a slight addition to the rates, and the influence of cleanliness and order on the morals of the workers was freely admitted.

The Northern Architectural Association held its annual meeting last Wednesday at Newcastle-on-Tyne. During the past year 4 members, 9 associates, and 14 students have been added to the membership. There are now 54 members, 68 associates, and 51 students; a total of 173. The financial statement showed that the year was begun with a credit balance of £32 5s. 7d., and ended with a credit balance of £54 9s. Sir Benjamin Browne distributed the prizes which had been won by the students. In the course of a short speech he said architecture perhaps combined science and art in a way which was done in no other profession. One of our old cathedrals always struck him by the high scientific ability which it showed on the part of the man who designed it, a man who knew the value of every ounce of material and how to dispose of it to the best advantage. Mr. William Glover was re-elected president of the Association, and the other officers were also re-elected.

Engineering Notes.

Electric Power Bills.—The four electric powers Bills for Lancashire, Durham, South Wales, and Tyneside have been referred to a special committee.

The New Baptist Church at Histon, Cambridge, has just been fitted with the latest improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool.

The Cottage Hospital, Colne, is being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Hopetown Bridge, Modder River.—The centre span of this bridge has been built with remarkable rapidity by Messrs. Joseph Westwood and Co., Ltd., of Millwall, E. It is 108ft. long and weighs 80 tons, and was completed in eighteen days after the receipt of the order, and eleven days after the receipt of the material. The work was carried out under Sir Benjamin Baker.

Inverness Electric Lighting.—The Inverness Town Council has accepted the tender of £21,000 of the Brush Electrical Engineering Company, London, for the introduction of electric light into the town. This amount includes everything, with the exception of the outlay for the erection and laying of the foundations of the electric station and the opening and closing of tracks in which cables are to be laid. It is understood that the work will be proceeded with almost immediately.

Electric Tramways for Brighton.—According to the Bill introduced to the notice of a House of Commons Committee on Thursday by the Brighton Corporation, an electric generating station is to be erected about three or four miles outside the town, and the power brought by cable into the borough. The tramways are to be worked by the trolley system and will form a network over such streets as the Corporation think most applicable in the first place, and next where they can afford most accommodation. It has not been thought desirable by the Corporation that any tramways should be run along by the sea front.

Nile Works.—Owing to the satisfactory manner in which the Nile works are progressing, it is expected that the foundations throughout will be finished this year. This will render possible the completion of the whole undertaking in something like twelve months short of the contract time. At Assuan another cataract has been dammed, and the construction of foundations has been commenced. The total number of workpeople now engaged is over 23,000, 20,000 being natives, of whom a large proportion are normally in great distress at this period of the year when the Nile is low. It may be added that Mr. Gow, R.A., is painting a picture of the great dam at Assuan for the forthcoming Royal Academy exhibition.

New Reservoirs for Halifax.—The Halifax Town Council are about to commence the construction of extensive new reservoirs at Walshaw Dean. Their present water supply, after allowing for compensation water, amounts to about five and a quarter million gallons per day. The new reservoirs are to be three in number, with a total drainage of 5,215 acres, and they will provide a further available supply of two and a half million gallons per day. Their construction, it is anticipated, will involve an expenditure of from £150,000 to £200,000. The length of the three new reservoirs, which will take about seven years to complete, will be one and a half miles, the largest being the centre reservoir. One great advantage of the site secured is that, being surrounded by large tracts of moorland, the Town Council will be spared the necessity of purchasing any of the adjacent land for the protection of the water supply. Messrs. Hill, of Manchester, are the engineers for the scheme. Walshaw Dean is situated above Hebden Bridge, not very far away from the present Widdop Reservoir.

AN EXHIBITION OF FINE WARE.

THE exhibits prepared by Messrs. Doulton and Co. for display at the Paris Exhibition have been temporarily arranged in their showrooms on the Albert Embankment, Lambeth.

At Paris, these art productions will be housed in a specially-designed "pavilion," measuring about 40ft. square and constructed chiefly of stoneware of a pale green tint and semi-glazed surface ("Carrara" enamel). This general tone of pale green is interrupted only by the bold frieze of coloured salt-glazed blocks in the panels over the window openings.

Inside, and on the upper walls, three panels of "vitreous fresco" will form the chief feature. The subjects are taken from Malory and are: "Sir Galahad achieves the Perilous Siege," "Sir Galahad achieves the Sword," and "Sir Galahad achieves the Sancrael." The side panels are each 5ft. 6in. long and the centre one 8ft. 6in., all being 4ft. 6in. high. The painting is made upon terra-cotta slabs in a very rich palette of colours which fire without a high gloss, thus permitting the full strength of the colour to tell. Gold may also be used to add brilliancy; it is "fired on" and burnished afterwards where necessary. These panels have been painted by Mr. J. H. McLennan, from the designs of Mr. A. E. Pierce, who is responsible also for the design of the pavilion and for all its constructional and decorative details.

Room has been found for only one example of a decorative material quite recently introduced from which much is hoped. Under the name of "Stoneware Polychrome," Messrs. Doulton and Co. have sought to carry out on a stoneware basis the method of decoration known as majolica painting. As carried out by Della Robbia and other mediæval potters, the process consisted in covering a slab or form of terra-cotta with a thin coat of an opaque white enamel. Upon this coating the paintings were executed, and on being subjected to a second firing, the painting and the enamel surface were fused into one. Majolica, however, cannot be fired to such a degree of hardness as is desirable for exterior decoration in this climate, and Messrs. Doulton's experiments have led to the preparation of a hard stoneware body and an enamel covering which can be fired at the same stoneware heat as the body itself, and in the same kilns. Paintings fused at such an intense heat as this are not likely to be attacked by the deleterious acids found in city atmospheres. The panel exhibited has for its subject the "Crucifixion." It measures 4ft. by 2½ft. The blocks on which it is painted are 3in. thick, and are intended to be built into the wall. The cartoon is a reduction from the centre one of five panels now being executed for the exterior of a mission church in Glasgow.

Within an annexe of the pavilion at Paris it is intended to erect some examples of the work of Mr. George Tinworth. The most prominent will be the large fountain in Doulton ware now arranged in the showroom. This stands 12ft. 6in. high, within a circular basin of 12ft. diameter. A large candelabrum (one of a pair) by Mr. Tinworth is also exhibited. The place of honour in the Burslem exhibit should undoubtedly be given to the Diana vase. This fine piece is nearly 5ft. high, and is formed of a special clay and glaze made by Messrs. Doulton to enable it to resist the many burnings to be undergone in its production and decoration. Modelled by Mr. Charles J. Noke in the style of the most effective period of the Renaissance, it has on each side a large panel painted in the characteristic manner of the English School by Mr. George White and Mr. F. J. Hancock, representing Eurydice and Orpheus, and, again, Orpheus enchanting the wild creatures of the rock and forest. It is richly embellished in various metals upon an embossed ivory-like surface by Mr. H. Skinner, and is in every way a fine example of the potter's art. Among the many other vases, pots, plates, &c., are some of beautiful design and workmanship, the colouring in many cases being exquisite. The exhibit altogether is worthy of the firm.

Masters and Men.

The Dundee Plumbers' Strike has been settled by the masters agreeing to keep to last year's working rules.

The Perth Masons' Strike has been settled by the men agreeing to a reduction of their wages by ½d. per hour from May 1st. Wages will now be 8½d. for hewers and 9d. for builders.

The Bricklayers employed at Ranceby Asylum, near Sleaford, struck last week for an advance of wages from 9½d. to 10d. per hour.

The Wolverhampton Building Trade Dispute has been settled by the masters granting the men an increase of ½d. per hour from April 1st. The men asked for 1d. an hour advance, and they have given way with regard to other matters demanded relating to apprentices and overtime.

The Bristol Building Trade.—Application has been made to the Bristol Master Builders' Association by the carpenters and joiners, plumbers, painters, masons, bricklayers and labourers for sundry alterations in the working rules, and a rise of wages of ½d. per hour, to take effect on June 30th. It is reported that the masters are prepared to grant the extra wage on condition the rules remain the same, having been thoroughly revised and signed by both parties as recently as 1898.

COMING EVENTS.

Wednesday, March 21.

INSTITUTION OF CIVIL ENGINEERS.—Annual dinner at Merchant Taylors' Hall, Threadneedle Street, Sir Douglas Fox in the chair. 7 p.m.

SOCIETY OF ARTS.—Mr. Samuel Rideal, D.Sc., on "The Use and Abuse of Food Preservatives." 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part II.)—Lecture on "Factory and Workshop Legislation as it affects the Sanitary Inspector." 8 p.m.

BRITISH ARCHEOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

Thursday, March 22.

SOCIETY OF ARCHITECTS.—Mr. G. A. T. Middleton, A.R.I.B.A., M.S.A., on "The Enrichments of the Italian Renaissance." 8 p.m.

YORK ARCHITECTURAL SOCIETY.—Mr. C. M. Hadfield, A.R.I.B.A., on "The Architecture of the Fifteenth Century and Early Tudor Period."

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Face; Expression, Posture, Proportion, and Modifications due to Sex, Race, Growth and Decay; Proportion."

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. Bryan Donkin on "Observations on an Improved Glass Revealer, for studying condensation in Steam-Engine Cylinders and rendering the effects visible." 8 p.m.

Friday, March 23.

ARCHITECTURAL ASSOCIATION.—Mr. H. C. Corlette on "The Decoration of Churches." 7.30 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. W. Hunting, F.R.C.V.S., on "Signs of Health and Disease in Animals. Destined for Food, when Alive and after Slaughter. Tuberculin and Other Tests." 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XII. 11.30 a.m.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. Alex. Davie, I.M., on "The Practice of Measuring." 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science: I.—Written. 10 a.m.

INSTITUTE OF CIVIL ENGINEERS (Students' Meeting).—Mr. J. W. Cross on "The Development of the Modern Locomotive Engine." 8 p.m.

Saturday, March 24.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Donibristle House and Grounds, and small house in Grounds.

DUNDEE INSTITUTE OF ARCHITECTURE, &c.—Lecture by Mr. A. M. S. Richardson, at 7 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science: II.—Viva voce. 11 a.m.

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—Visit to St. Paul's Cathedral.

ARCHITECTURAL ASSOCIATION.—Fourth Spring visit.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers: Part III.)—Inspection and demonstration at the Sewage Outfall Works, Barking, at 8 p.m., conducted by Mr. John E. Worth, M.I.C.E.

ROYAL INSTITUTE OF PAINTERS IN WATER COLOURS.—Private View.

Monday, March 26.

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 8 p.m.

GLASGOW INSTITUTE OF ARCHITECTS.—Council Meeting at 2 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Hugh Stannus, F.R.I.B.A., on "The Historic Evolution of Applied Art: XX.—Renaissance Christian Art," 6 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. W. F. Shaw, F.R.C.V.S., on "The Names and Situations of the Organs of the Body in Animals," 8 p.m. Inspection and demonstration at the Metropolitan Cattle Market, York Road, N., conducted by Mr. James King, M.R.C.V.S.

SOCIETY OF ARTS.—(Cantor Lecture III.)—Mr. E. Sanger Shepherd on "The Photography of Colour,"—IV. 8 p.m.

Tuesday, March 27.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Evening Meeting.

Wednesday, March 28.

SOCIETY OF ARTS.—Mr. Christopher Rawson on "The Manufacture and Use of Indigo," 4.30 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. Alfred Hill, M.D., F.R.S.E., F.I.C., on "The Appearance and Character of Fresh Meat, Organs, Fat, Blood, Fish, Poultry, Milk, Fruit, Vegetables, and other Food, and the conditions rendering them, or preparations of them, fit or unfit for Human Consumption," 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Debate on "Whether in the Education of Architects Office Work can best be supplemented by the Preparation of Measured Drawings of Old Work." Opened by Mr. Muir. 8 p.m.

CURRENT PRICES.

OILS AND PAINTS.

		£ s. d.	£ s. d.
Castor Oil, French	per cwt.	1 8 0	1 10 4
Colza Oil, English	per cwt.	1 6 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 13 3	—
Linseed Oil	per cwt.	1 4 7½	—
Petroleum, American	per gal.	0 0 7½	0 0 7½
Do., Russian	per gal.	0 0 7	0 0 7½
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 7 3	1 11 3
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 0 6	—
Lead, white, ground, carbonate per cwt.		1 2 6	—
Do., red	per cwt.	1 0 4½	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	3 1 0	—

METALS.

Copper, sheet, strong	per ton	88 10 0	—
Iron, Staffs, bar	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 12 6	16 13 9
Do. do. English common brands	do.	17 0 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, sin. to sin.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 7 6	—
Tin, Foreign	do.	143 10 0	144 0 0
Do. English ingots	do.	143 0 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Veille Montaigne	do.	27 7 6	—
Do. Spelter	do.	21 12 6	22 2 6

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	8 12 0	8 15 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.		17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	12 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	17 15 0
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	10 15 0	11 0 0
Do. do. White	do.	7 15 0	11 5 0
Do. Swedish	per P. Std.	17 10 0	19 15 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	18 10 0	25 0 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd & 4th	do.	8 15 0	11 5 0
Do. Canadian Spruce, 1st per P. Std.		10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	9 10 0	9 15 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	7 15 0	10 10 0
Flooring Boards, 1 in. prepared, 1st	per square	0 9 9	0 10 0
Do. 2nd	do.	0 8 6	—
Do. 3rd & 4th	do.	0 8 3	—

HARD WOODS.

Ash, Quebec	per load	8 17 6	4 10 0
Birch, Quebec	do.	8 12 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, in, Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 0 3 29/32	—
Do. Tobasco	do.	0 0 4 3/8	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. spp.	0 0 5 1/16	—
Do. African	do.	0 0 5 23/32	—
Do. St. Domingo	do.	0 0 3½	—
Do. Tobasco	do.	0 0 6 3/32	—
Do. Cuba	do.	0 0 6 19/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	8 15 0	8 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

New Companies.

The Waterproofing Company, Limited.

This company has been registered in Scotland with a capital of £35,000 in £1 shares to acquire and take over as a going concern the undertaking of the Waterproofing, Varnish and Wall Decoration Company, Limited.

Contractors, Limited.

This company was registered on February 21st with a capital of £30,000 in £1 shares (6,000 preference) to carry on the business of contractors for public and private works, electrical, gas, water, and general engineers, miners, &c.

Igneous Cements, Limited.

This company was registered on March 2nd with a capital of £1,000 in £1 shares to acquire the goodwill of Mr G. Baillie in the business of cement manufacturers carried on by him at Mansion House Chambers, Queen Victoria Street, E.C.

Alexanders' Stores, Limited.

This company has been registered in Scotland with a capital of £30,000 in £1 shares to acquire the business carried on at Kirkintilloch, Falkirk and Kilsyth by Messrs. Thomas and Samuel Alexander, wholesale and retail ironmongers. Registered office: 38, Cowgate Street, Kirkintilloch.

Flameless Gas Light Company, Limited.

This company was registered on February 21st with twenty members, each liable for £1, to carry on the business of gas engineers, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Remuneration £100 each per annum, and 10 per cent. of the net profits, divisible.

William Crane, Limited.

This company was registered on February 21st with a capital of £5000 in £1 shares to acquire the business carried on at Nottingham and elsewhere by William Crane, to adopt an agreement with the vendor, and to carry on the business of builders, brick, tile and pipe manufacturers, carpenters, &c. W. Crane is the governing director, and may retain office so long as he holds three-quarters of the issued capital. Registered office: Forest Road West, Nottingham.

Ford Green Brick, Pipe and Road-metal Company Limited.

This company was registered on February 21st with a capital of £1000 in £1 shares to acquire the business now carried on by J. W. Deane at Ford Green, Norton-in-the-Moors, Staffordshire, and to carry on the business of manufacturers of and dealers in bricks, tiles, drain and other pipes, pottery, terra-cotta, &c. The directors are to number not more than three; William Deane is the first. Qualification, one share. Registered office: Bellington Lane, Ford Green, near Stoke-on-Trent, Staffordshire.

Joshua Wilkinson, Jun., Limited.

This company was registered on February 28th, with a capital of £20,000 in £1 shares to carry on the businesses of manufacturers of and dealers in anvils, vices, shovels, forks, hammers, smiths' tools, brick irons, garden tools, tie irons, &c., as carried on by Joshua Wilkinson, jun., at Upper and Lower Freebodies Mill, Kates Hill, Dudley, Worcestershire; also as general engineers and iron-founders, iron and steel manufacturers, &c.; and, further, to acquire the business of engineers and metal founders as now carried on by G. H. Chrimes at Dock Forge, Dudley, Worcestershire. The directors are W. W. Wilkinson, sen., W. Wilkinson, jun., D. G. A. Wilkinson and G. H. Chrimes. Qualification, £1,000. Remuneration £152 per annum each and a percentage of the profits, divisible.

Doust Brothers, Limited.

This company was registered on February 24th with a capital of £2,000 in £1 shares to acquire the business carried on by F. H. Gregory at 199-201, Freeman Street and Wellington Street, Grimsby, and to carry on the business of painters, oil and colour manufacturers, art dealers, &c.

Heysham Hall Estate Company, Limited.

This company was registered on February 24th with a capital of £45,000 in £100 shares to acquire land and buildings in Lancashire or elsewhere, and in particular the Heysham Hall Estate, and to carry on the business of land and property owners, builders, contractors, house, land and estates agents, &c. Registered office: 49, North Road, Lancaster.

Robinson, David and Co., Limited.

This company was registered on March 2nd with a capital of £120,000 in £10 shares to carry on the businesses of timber merchants, &c., as carried on by S. Robinson and W. David at Cardiff under the style or firm of Robinson, David and Co. The first directors (of whom there shall be not less than two nor more than five) are S. Robinson and T. W. David (governing directors).

Wirral Plate-Glass Insurance Co., Ltd.

This company was registered on February 27th, with a capital of £2,000 in £1 shares to grant and effect assurances of every kind against the loss, breakage, or damage (other than by fire) of or to plate-glass and other glass of every description. The first directors (to number not less than three nor more than seven) are W. Atherton, W. T. Brick, E. A. Evans and T. F. Jones. Qualification, 50 shares.

Grove and Company, Limited.

This company was registered on February 24th, with a capital of £7,500 in £10 shares to acquire the business now carried on under the firm of Grove and Co., and to carry on the business of potters, brick, tile and glass makers, stone and flint grinders, &c. The first directors (to number not less than three nor more than five) are C. Wedgwood, F. H. Wedgwood, K. L. Wedgwood and J. Shuffelbotham, each of whom may retain office as long as he holds £250 shares.

Cwm Building Company, Limited.

This company was registered on February 24th, with a capital of £10,000 in £10 shares, to adopt an agreement with G. H. Rosser, Walter Rosser, G. Rosser, Mary H. Johnson and J. Rosser, and to acquire and deal with any lands, buildings, quarries, plant, or other property. The first directors (to number not less than two nor more than seven) are F. Mills, J. F. Tallis, J. R. Jacob, J. Stanfield, E. Phillips, J.P., and A. Johnson. Qualification, ten shares. Registered office: Westgate Chambers, Newport, Mon.

Tramways and Light Railways Estates Company, Limited.

This company was registered on Feb. 25th with a capital of £100,000 in £10 shares, to purchase, take on lease, or in exchange, lands, buildings, &c., or any interest therein, and to develop, deal with, and turn to account the same, building thereon; to deal in and with freehold and leasehold ground rents; to make advances upon the security of lands, buildings, or other property; to establish and maintain gas, water and electric supply works, sewerage works, &c.; to construct and maintain rail and tram roads, wharves, docks, piers, warehouses. The signatories (each one share) are:—G. Morse, G. Stevens, T. Vickers, C. H. Dade, E. Hopwood, G. J. Somerville and E. Garcke. The first directors (of whom there shall be not less than three nor more than six) are to be elected by the signatories. Qualification, £25. Remuneration, £50 per annum each, and a percentage of the profits, divisible; maximum, £2,500.

Anglo-Belgian Fireclay Company, Ltd.

This company was registered on February 28th with a capital of £15,000 in £1 shares to acquire certain concessions granted to Mr. G. T. G. Merckens for getting and working kaolin or china clay and sand on and under lands situate at St. Gerard, Belgium. The directors (to be not less than three nor more than seven) are H. A. Northey, A. E. Young, Major J. R. Scott, F. Haack and G. T. G. Merckens, Qualification, 250 shares. Remuneration £200 per annum, divisible.

Wouldham Cement Company (1900), Ltd.

This company was registered on Feb. 24th, with a capital of £250,000 in 10,000 preference shares of £10 each and 150,000 ordinary shares of £1 each to acquire the business carried on by the Wouldham Cement Company, Limited (incorporated in 1865), and the business carried on by S. Pearson and Son, Limited, at the Lion Cement Works, West Thurrock, Essex, and to carry on the business of cement and brick manufacturers. The number of directors is to be not less than three nor more than seven; the first are John Bazley-White (chairman), Sir Weetman D. Pearson, Bart., William Morgan and Ernest E. Pearson. Qualification, £1000. Remuneration, £1000 per annum, divisible. Registered office: 35, Great St Helens, E.C.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BURSLEM.—For the erection of laundry, &c., Chell, for the Wolstanton and Burslem Guardians. Mr. W. H. Walley, architect, Queen-street, Burslem. Quantities by architect:—
W. Cooke ... £1,854
Bennett Bros. ... 1,700
York and Goodwin ... 1,626
J. H. Ford ... 1,616
C. Smith ... 1,599

GATESHEAD.—For the erection of a rectory, St. John's, Gateshead Fell, for the Rev. J. Mitchell. Messrs. Joseph Potts and Son, architects, 57, John-street, Sunderland. Quantities by Mr. J. C. Christon, 57, John-street, Sunderland:—
J. B. Stott ... £2,798 9 10
J. Bewley ... 2,623 0 0
Henderson and Wakefield ... 2,008 0 0

GLoucester.—For the erection of two shops and offices, &c., Southgate-street, for the Corporation. Mr. Alfred J. Dunn, A.R.I.B.A., architect, 31, St. Michael's square, Gloucester. Quantities by Messrs. Vale and Kingsford, Gloucester:—
Bailey and Dean ... £5,500
H. A. Forde and Sons ... 5,460
W. T. Nicholls ... 4,780
W. Jones ... 4,590

LONDON.—For the construction of public conveniences, Broadway, Ealing, for the Urban District Council. Mr. Charles Jones, C.E., Public Buildings, Ealing:—
L. Macklin ... £5,500
Clift Ford ... 2,391
Neave and Son ... 1,940

Grant and Sons ... £1,590
C. W. Machin ... 1,498
J. Cooke ... 1,490
J. J. Longden, Burslem (accepted) ... 1,460

Draper and Son ... £2,450 0 0
W. Hall ... 2,311 12 2
R. & J. Stephen-son, Low Fell ... 2,197 0 0

* Accepted.

T. J. Williams ... £4,422
A. and A. E. King ... 4,247
Collins and Godfrey, Tewkesbury* ... 4,058

A. and A. E. King ... £1,734
Thomas and Edge ... 1,674
Dickens, Ealing* ... 1,507

* Accepted.

HENDON.—For erecting the "Railway Tavern," Mill Hill, Hendon, for Messrs. M. A. Sedgwick and Co., the Brewery, Watford. Mr. Charles P. Ayres, architect, 14, High-street, Watford:—

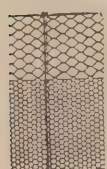
Wall and Co. ... £3,739
Watman ... 3,656
Coleman ... 3,644
Mead and Burton ... 3,618
Turner, Limited ... 3,550
Dove ... 3,395
Webster and Cannon ... 3,348
Wilson, Limited ... 3,342
Patman & Fotheringham ... 3,271

LOUGHBOROUGH.—For the construction of an impounding reservoir of a capacity of 510 million gallons in the Blackbrook Valley, comprising a masonry and concrete dam 48ft. in length and 10ft. in height from foundation to top of parapet, and all appurtenant works in connection therewith. Messrs. George and F. W. Hodson, engineers, Westminster and Loughborough:—
L. P. Nott ... £24,812 10 2
J. F. Price ... 80,186 10 0
Joseph Tomlinson ... 77,711 11 11
George Lawson ... 77,513 0 0
Kellett and Co., Ltd. ... 74,816 8 2
Thomas Stewart ... 74,589 0 0
Nowell and Co. ... 73,017 5 3

MILFORD HAVEN.—For additions to schools, Great North-road, for the Steynton (U.D.) School Board. Mr. D. Edward Thomas, architect, Victoria-place, Haverfordwest:—
Davies and Son ... £1,328
Robert Cole ... 1,327

NETHERFIELD (Notts).—For new bakery, stabling, &c., Netherfield. Mr. Richard Whitbread, architect, Carlton, near Nottingham:—
Wilson ... £2,110 0
Lee ... 1,968 0
Brown and Son ... 1,850 0
Main and Co. ... 1,874 3

* Accepted.

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W.C.

NEWMARKET.—For the erection of a training establishment, Moulton, Faddocks, Newmarket, for Sir E. Cassel, K.C.M.G. Messrs. Henton and Gibb, architects, Newmarket. Quantities by Messrs. W. H. Barber and Son, 22, Buckingham-street, Adelphi, W.C. :—
W. King... .. £17,450
J. G. Cowell... .. 16,900
P. Banyard... .. 16,375
J. Bentley... .. 15,820
Coulson and Lofts... .. 15,460
Foster and Dicksee, Rugby (accepted)... .. 14,949

PLYMOUTH.—For the erection of three blocks of workmen's dwellings, Prince Rock, for the Corporation. Messrs. Hine and Odgers, architects, Lockyer-street, Plymouth :—
J. P. Berry... .. £7,830
Lapthorn and Co... .. 7,390
Lethbridge and Son... .. 7,238
A. Andrews... .. 7,230
J. Griffin... .. 7,230
T. May... .. £7,193
Wakeham Bros... .. 6,978
W. Trevena... .. 6,688
T. King... .. 6,380
H. E. Skinner*... .. 6,340

[All of Plymouth.]

PLYMOUTH.—For the erection of a chapel, Embankment-road. Mr. H. J. Snell, architect, 13, Courtenay-street, Plymouth :—
W. Trevena... .. £6,978 0
F. G. Widger... .. 6,839 0
J. P. Perry... .. 6,690 0
H. E. Skinner... .. 6,487 6
J. H. Blackell... .. 6,340 0
Tozer and Son... .. 6,315 0
A. Andrews... .. £6,314 0
J. Davy... .. 6,308 0
Wakeham Bros... .. 6,214 19
T. May... .. 6,185 0
J. H. Palmer... .. 5,878 0

PORTSMOUTH.—For making about 1,200ft. new road, and laying sewers, Fratton. Messrs. Hall and Pain, surveyors, 57, Commercial-street, Portsmouth :—
E. Beaton... .. £1,327
F. W. Quick... .. 1,277
J. H. Corke... .. 1,220
J. W. Perkins... .. 1,194
W. Lymouth... .. £1,116
Light and Son... .. 1,047
James Crockerell*... .. 920

RAUNDS.—For new shoe factory at Raunds, Northants, for Mr. R. Coggins. Messrs. Mosley and Scriver, architects, Northampton :—
H. Martin... .. £2,772
Freeman and Son... .. 2,693
R. Marriott... .. 2,670
Sparrow... .. 2,635
J. Lawrence... .. 2,629
F. Henson... .. 2,550
T. and C. Berrill... .. £2,544
Smith and Son... .. 2,541
T. Swindall... .. 2,530
W. H. Lovell... .. 2,487
W. Beardsmore, Northampton*... .. 2,480

REIGATE.—For the erection of buildings, chimney shaft, &c., for electric lighting station for the Town Council. Mr. W. H. Prescott, C.E., Market Hall, Redhill :—
G. Weissell... .. £8,300
Longley and Co... .. 7,389
Thomas and Edge... .. 6,690
Potters Bros... .. £6,500
G. Minter... .. 5,900

RIPLEY.—For the erection of a dwelling-house and business premises in Grosvenor-road, Ripley, near Derby, for Mr. George Heaton. Mr. Robert Argile, architect, Oxford-street, Ripley. Quantities by the architect :—
W. Harris... .. £1,390 10
S. Gee... .. 1,376 0
W. Norman... .. 1,375 7
W. Clower, Ripley, near Derby*... .. £1,375 0

ROTHERHAM.—For the erection of office buildings, show-rooms, and store warehouses, for Messrs. G. Wright and Co. Mr. J. E. Knight, architect, College-street, Rotherham :—
Green and Co... .. £2,674
Robert Snell... .. 2,317
Thornton and Son... .. 2,315
Richard Snell... .. £2,300
James Cooper... .. 2,300
Chadwick and Co.*... .. 2,271

[All of Rotherham.] * Accepted.

CONTRACTS OPEN.

TO BUILDERS and CONTRACTORS.

The Guardians of the East Retford Union, Notts, invite TENDERS for the ERECTION and COMPLETION of new WORKHOUSE INFIRMARY, Retford. Drawings and specifications may be seen on and after MONDAY, MARCH 12th, at the office of Messrs. EYRE and SOUTHALL, Architects, Chapelgate, Retford.

Bills of quantities will be supplied to builders on receipt of a deposit of £2, which will be returned if a bona-fide Tender is submitted.

Sealed Tenders, endorsed "Workhouse Infirmary," to be sent in to the undersigned on or before MONDAY, MARCH 26th.

The Guardians do not bind themselves to accept the lowest or any Tender.

THOS. WM. DENMAN,
East Retford, Notts, Clerk to the Guardians.
March, 1900.

EDMONTON SCHOOL BOARD.

TENDERS are invited for the ERECTION of new SCHOOLS at Bowes-road, N.

Persons desirous of tendering must send in their names to the undersigned not later than MARCH 19th, accompanied by a £5 Bank of England note, which will be returned upon the receipt of a bona-fide Tender.

The plans and specification, prepared by Mr. H. W. DOBB, of No. 54, London-wall, E.C., may be seen at his office during the usual office hours, and copies of the bill of quantities (by Messrs. YOUNG and BROWN, 7, Southampton-street, Bloomsbury-square, W.C.) will be forwarded on application.

The contract will contain the ordinary trades' union clause as to hours and wages, and the successful contractor will be required to enter into a bond with two sureties for the proper execution of the work.

Sealed Tenders, endorsed "Bowes-road School," are to be delivered to the undersigned not later than NOON, TUESDAY, APRIL 3rd, 1900.

The Board do not bind themselves to accept the lowest or any Tender.

School Board Office,
Brettenham-road,
Upper Edmonton,
March, 1900.

JOHN MOULE,
Clerk to the Board.

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17 1/2 x 3 x 3	13 8	12 6	20 0
17 1/2 x 3 x 2	8 10	8 1	14 6
17 1/2 x 3 x 1 1/2	6 9	6 2	10 9



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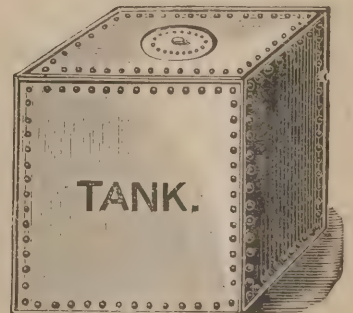
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COMPETITIONS.

ADMINISTRATIVE COUNTY of the ISLE OF WIGHT.
TO ARCHITECTS.

The Technical Education Committee of the County Council of the Administrative County of the Isle of Wight invite DESIGNS for a BLOCK of BUILDINGS, comprising a Public Library and Reading Room, Technical Institute Offices, Caretaker's Residence, &c.

A lithograph plan of the site, with sketch showing approximately the accommodation required, and instructions to competitors, will be forwarded on application to the undersigned.

The cost of the buildings is limited to about £6,000.

Premiums of Fifty Pounds each will be given to the authors of the two Designs considered by the Committee as the first and second in merit, which designs will become the property of the Council. The author of the Design considered the best shall, if required by the Technical Education Committee of the County Council, furnish the necessary contract drawings, with details, and specification, for the purpose of obtaining Tenders to execute the works, for which, if so required as aforesaid, he will be paid 2½ per cent. on the estimated cost.

If employed to superintend the works such 2½ per cent. and the premium of Fifty Pounds to merge in the usual architect's commission of 5 per cent. on the cost, which shall include the necessary detail drawings, copies for

contractor and clerk of the works, superintendence, and all expenses.

All designs to be sent, in accordance with the instructions, to the undersigned on or before APRIL 30th, 1900.

WILLIAM H. WOOLDRIDGE,
County Council Offices, Clerk to the County Council.
Newport, Isle of Wight,
February, 1900.

TO ARCHITECTS.

The Governors of the Bury Grammar Schools invite Architects to submit COMPETITIVE DRAWINGS for NEW SCHOOLS proposed to be erected within the County Borough of Bury, at a cost not exceeding £17,000.

Premiums of £100, £60, and £30 will be awarded for the designs adjudged of sufficient merit and placed first, second, and third in order, respectively.

The Governors will be advised by a competent Assessor in the selection of the drawings.

The premiated drawings will become the property of the Governors.

Lithographed plan of site and copy of conditions may be obtained on application to J. CARTWRIGHT, M.Inst.C.E., Peel-chambers, Bury, on payment of a deposit of One Guinea, which sum will be returned on receipt of Competitive Drawings.

Drawings to be deposited at my Offices, in Broad-street, Bury, by JUNE 1st, 1900.

S. WOODCOCK,
Clerk to the Governors.

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Design No. 51.

JOHN P. WHITE,

THE PYGHTLE WORKS,

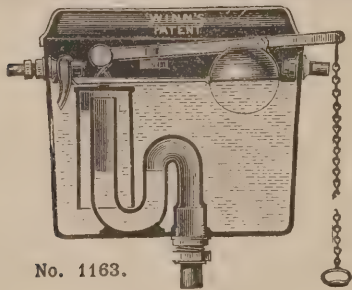
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DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
March 23	Blaengwynfy, Wales—Public Hall	Mrs. Wise	Alderman D. Evans, Gelly Hotel, Abergwynfy.
" 23	Carlisle—Farm Buildings	Industrial Co-operative Society	G. Armstrong, 24, Bank-street, Carlisle.
" 23	Darwen, Lancs.—Houses	E. Townsend and Co.	J. B. Thornley, 45, Market-street, Darwen.
" 23	Dewsbury—Rebuilding	William Smith	F. W. Ridgway, Architect, Bond-street, Dewsbury.
" 23	Elgin—Premises	Alex. W. Mair	W. Smith, 51, High-street, Elgin.
" 23	Keith, Scotland—Villa	Corporation	J. Alcock, Architect and Surveyor, Keith.
" 23	Manchester—Sheds	U. M. F. C.	City Surveyor, Town Hall, Manchester.
" 23	Morecambe—Church	Estate Co. Limited	W. H. Dinsley, Architect, Chorley.
" 23	Ravenscar, near Scarborough—Villas	Corporation	J. Drake and Sons, Architect, Queensbury, near Bradford.
" 23	Tonmawr, Wales—Re-building	Corporation	Manager, Railway Inn, Tonmawr, near Pontrhydyfen.
" 24	Bradford—Fire Station	Corporation	Mawson and Hudson, The Exchange, Bradford.
" 24	Gowran, Ireland—Schools	Corporation	Rev. J. C. Carroll, The Parochial House, Gowran.
" 24	Blaina, Mon.—Schoolroom	Corporation	W. S. James, 77, High-street, Blaina.
" 25	Newport, Mon.—Re-building	Corporation	Lansdowne and Griggs, Metropolitan Bank Chambers, Newport, Mon.
" 25	Crumling, Mon.—Classroom	School Board	R. L. Roberts, Architect, Abercarn.
" 25	Thorndon, Suffolk—Shed	Co-operative Provision Society	F. C. Foster, Thorndon.
" 26	Bournemouth—Fire Station	Trustees of H. Pinnock	F. W. Lacey, Engineer and Surveyor, Bournemouth.
" 26	Bury—Alteration	Corporation	T. Nuttall and Sons, 20, Market-street, Bury.
" 26	Gravesend—Alms-houses	Guardians	Farrow & Nisbett, 7, New Court, Lincoln's-inn-fields, W.C.
" 26	Manchester—Shed	County Council	J. M. M'Ilroy, Town Hall, Manchester.
" 26	Retford—Infirmary	London County Council	Eyre and Southall, Architects, Chapel Gate, Retford.
" 27	Brighton—Alterations	Parish Council	Engineer, Town Hall, Brighton.
" 27	London, S.W.—Dwellings	Gasworks Committee	Engineer, County Buildings, Spring-gardens, S.W.
" 27	Shirebrook—Chapels	Guardians	Vallance and Westwick, Architects, Mansfield.
" 28	Tunbridge Wells—Lodge	School Board	Borough Surveyor, Town Hall, Tunbridge Wells.
" 28	Lincoln—Buildings	Lambeth Walcot Charity Trustees	R. A. MacBrair, Corporation Offices, Lincoln.
" 28	Lyminge, Kent—Mortuary	St. Paneras Vestry	R. Loneragan, Saltwood, Hythe.
" 28	Middlesborough—Schools	School Board	J. M. Bottumley, 28, Albert-road, Middlesborough.
" 30	London, S.E.—Flats	Edmonton School Board	Waring and Nicholson, 38, Parliament-street, Westminster.
" 31	Solva, Pembrokeshire—Residence	Wesleyans	D. E. Thomas, Architect, Haverfordwest.
" 31	Workington—Club	Rural District Council	J. Howse, 23, Curwen-street, Workington.
" 31	Wolverhampton—Abattoir	Presbyterians	J. W. Bradley, Town Hall, Wolverhampton.
" 31	Swindon—Church	London County Council	W. Drew and Sons, Victoria-street, Swindon.
" 31	Scammonden—Mill	Joint Hospital Committee	C. F. L. Horsfall and Son, Lord-street Chambers, Halifax.
April 1	Ammanford—Chapel	Paddington Guardians	R. Jones, Tanyfan, Hendra Chapel, Ammanford.
" 2	London, N.—Additions	Market Committee	Superintendent, St. Pancras Cemetery, East Finchley, N.
" 2	Gosforth—Additions	Primitive Methodists	W. Bedlington, 23, Eldon-square, Newcastle.
" 3	London, N.—Schools	St. Paneras Vestry	J. Moule, Brettenham-road, Upper Edmonton.
" 3	Spenymore—School	School Board	J. W. Taylor, Architect, Newcastle-on-Tyne.
" 4	Shalford, near Guildford—Bridge	Edmonton School Board	E. L. Lunn, 36, High-street, Guildford.
" 7	Belfast—Church	Wesleyans	Young and Mackenzie, Scottish Provident-bldgs., Belfast.
" 9	Bexley, Kent—Farm Buildings	Rural District Council	Clerk, Asylums Committee, 6, Waterloo-place, S.W.
" 9	Moss Side, near Lytham, Lancs.—Hospital	Presbyterians	Heywood and Harrison, Post Office Chambers, Accrington.
" 10	London, W.—Home	London County Council	J. W. Chapman, 18, Sutherland-avenue, Harrow-road, W.
ENGINEERING—			
March 23	Halifax—Tanks	J. Horsfall and Son	C. F. L. Horsfall and Son, Lord-street Chambers, Halifax.
" 23	London, E.C.—Boilers	Bengal Central Railway Co.	Manager, Bengal Central Rly. Co., 199, Gresham House, E.C.
" 26	Blackburn—Conduit	Highway Committee	W. Stubbs, Municipal Offices, Blackburn.
" 26	Dublin—Boilers	Electric Lighting Committee	B. Hammond, 64, Victoria-street, Westminster, S.W.
" 27	Dartford—Electric Lighting Plant	Urban District Council	J. C. Hayward, Sessions House, Dartford.
" 27	Mansfield—Bridge	Corporation	H. Silcock, 14, Westgate, Mansfield.
" 28	Doncaster—Electric Lighting	Guardians	Electrical Engineer, 3, Priory-place, Doncaster.
" 31	Athlone, Ireland—Heating and Ventilating	United Gaslight Company	P. J. Prendergast, Engineer, Athlone.
April 2	Sheffield—Condenser	Government	J. W. Morrison, Co.'s Engineer, Commercial-st., Sheffield.
" 6	Bathdrum, Ireland—Waterworks	Corporation	B. Manning, Clerk, Aughrim.
" 9	Sophia, Bulgaria—Engines	Corporation	The Manager, Commercial Department, Foreign Office, S.W.
" 9	Halifax—Reservoirs	Corporation	G. H. Hill and Sons, 3, Victoria-street, Westminster, S.W.
IRON AND STEEL—			
March 24	Northwich—Railing	Rural District Council	H. Bancroft and Son, 88, Mosley-street, Manchester.
" 27	Southampton—Pipes	Corporation	W. Matthews, Waterworks Engineer, Southampton.
" 31	Pontycymmer, Wales—Pipes	Garw Water Co.	A. J. Laurence, Secretary, Pontycymmer.
PAINTING—			
March 26	Brighton—Painting	County Council	Engineer, Town Hall, Brighton.
" 28	Brighton—Cleaning and Painting	County Council	Engineer, Town Hall, Brighton.
ROADS—			
March 23	Dumbarton—Whinstone Metal	District Committee	Babbie and Craig, County-buildings, Dumbarton.
" 23	Halifax—Repairing	Highways Committee	E. R. S. Escott, Town Hall, Halifax.
" 23	Ipswich—Materials	Rural District Council	J. J. White, Surveyor, Needham Market.
" 23	Towcester, Northants.—Materials	Rural District Council	W. Sheppard, Surveyor, Blakesley.
" 23	Eastbourne—Materials	Rural District Council	L. Jeffery, Trinity-chambers, Eastbourne.
" 24	Newbury—Repairs	Rural District Council	H. S. Talbot, District Surveyor, Cold Ash, Newbury.
" 24	Padiham—Various	Urban District Council	J. Gregson, Surveyor to the Council, Padiham.
" 24	Alnwick—Road	Rural District Council	W. H. Walton, District Council Offices, Alnwick.
" 24	Driffield, Yorks.—Materials	Rural District Council	T. C. Beaumont, Surveyor, Driffield.
" 24	Exmouth—Road Metal	Urban District Council	W. D. Harding, Council Offices, Exmouth.
" 26	Bridport—Repairs	Rural District Council	J. W. S. Bartlett, West Bay-road, Bridport.
" 26	Wellingborough—Granite	Rural District Council	W. Jackson, Clerk, Wellingborough.
" 26	Leighton Buzzard—Materials	Urban District Council	J. Mackenzie, Surveyor, Linsdale, Leighton Buzzard.
" 26	Ilford—Materials	Urban District Council	H. Shaw, 7, Cranbrook-road, Ilford.
" 26	Ince, near Wigan—Works	District Council	A. T. Swain, Council Offices, Ince, near Wigan.
" 27	Wilkesden—Roads	Urban District Council	O. C. Robson, Engineer, Public Offices, Kilburn.
" 27	Bromley—Roads and Materials	Rural District Council	The Surveyor, Council Offices, Bromley.
" 27	Staines—Macadam	Rural District Council	G. W. Manning, Council Offices, Ashford, Middlesex.
" 27	Newark—Materials	Urban District Council	C. D. M. Trinder, Brant Broughton, Newark.
" 27	Clayton-le-Moors—Materials	Urban District Council	A. Dodgeon, Surveyor, Clayton-le-Moors.
" 28	Hackney—Wood Paving	Vestry	Chief Surveyor, Town Hall, Hackney.
" 28	Strood—Making-up	Rural District Council	G. W. Prall, Workhouse, Strood.
" 28	Gateshead—Materials	Corporation	J. Bower, Borough Surveyor, Town Hall, Gateshead.
" 28	Tutbury—Materials	Rural District Council	C. F. Chamberlin, Union Offices, Burton-on-Trent.
" 30	Aylesbury—Granite	County Council	R. J. Thomas, County Hall, Aylesbury.
" 30	Market Harborough—Granite	Rural District Council	C. Burgoine, Clerk, Market Harborough.
" 31	Winton, Bournemouth—Granite	Urban District Council	W. T. Streather, Wimborne-road, Winton.
" 31	Lymington, Hants.—	Corporation	I. Pym-Jones, Borough Engineer, Lymington.
April 2	Stockton-on-Tees—Materials	Rural District Council	W. Burton, Surveyor, Billingham, Stockton-on-Tees.
" 3	London, W.—Cartage	County Council	H. T. Wakelam, Guildhall, Westminster, S.W.
" 3	London, W.—Materials	Middlesex County Council	H. T. Wakelam, Guildhall, Westminster, S.W.
" 4	Bury St. Edmunds—Streets	Corporation	J. C. Smith, Town Hall, Bury St. Edmunds.
" 4	Penryn, Cornwall—Stone	Rural District Council	J. H. Chubb, Surveyor, Belmont, Penryn.
" 14	Wolverhampton—Setts	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
SANITARY—			
March 23	Morley—Sewage Disposal Works	Sewerage Committee	W. E. Putman, Town Hall, Morley.
" 23	Plymouth—Sewerage Works	Corporation	Town Clerk, Municipal Buildings, Plymouth.
" 24	Mellor, near Stockport—	Rural District Council	H. Bancroft and Son, 88, Mosley-street, Manchester.
" 26	Hull—Removal of Nightsoil	Rural District Council	J. P. Chatham, Lincoln's Inn-buildings, Hull.
" 26	Godstone—Sewerage Works	Rural District Council	T. C. Barralet, Surveyor, New Oxted.
" 27	Cheam, Surrey—Scavenging	Parish Council	J. Ockenden, Clerk, High-street, Cheam.
" 27	Dartmouth—Sewer Works	Urban District Council	T. O. Veale, Castle View House, Dartmouth.
" 27	Bolton-upon-Dearne—Sewers	Urban District Council	J. L. Hawksworth, Clerk, Bolton-upon-Dearne.
" 28	Tanfield, Durham—Sewer	Urban District Council	R. Heslop, Surveyor, Burnopfield.
" 28	Tanfield, Durham—Scavenging	Urban District Council	R. Heslop, Surveyor, Burnopfield.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
SANITARY—Continued.			
March 28	Minster, Ramsgate—Sewerage Works	Rural District Council	Bailey Denton and Sons, Palace-chambers, Westminster.
" 29	Kensington—Sanitary Works	Guardians	J. H. Rutherglen, Marlowes-road, Kensington, W.
" 30	West Hartlepool—Sewer	Corporation	J. W. Brown, Corporation Buildings, West Hartlepool.
" 31	Seacroft, Leeds—Sewers	Rural District Council	W. Spinks, Park-row, Leeds.
TIMBER—			
March 25	Sunderland—Timber	River Wear Commissioners	N. H. Wake, Engineer, Sunderland.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
March 28	Andover—Pavilion	£5 5s.	T. E. Longman, Town Clerk, Andover.
" 30	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor.	J. E. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
" 31	Blackpool—Poster ... ..	... ..	C. Noden, Town Hall, Blackpool.
April 4	Lurgan, Ireland—Cottages ... ..	... ..	W. J. Corner, Clerk, Lurgan.
" 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's walk, Leicester.
" 30	Newport, Isle of Wight—Buildings	£50, £50	W. H. Wooldridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
" 31	Riviera—Villa for Sir William Ingram	£78 15s., £23 5s., £5 5s.	"Architectural Review."
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.

CLASSIFIED INDEX TO ADVERTISERS.

Acetylene Gas— Strode and Co. Thorn and Hoodle Asphalte— Pilkington and Co. Val de Travers Boilers— Hartley and Sugden Horsfall Destructor Co. Ltd. Young and Marten Bricks— Burmantofts Eastwood and Co. Edwards, J. C. Leeds Fireclay Co. Stanley Bros., Ltd. Blinds— Bell and Co. Williams, G. A., and Son Builders' Ironmongery— Ball, H. A. Brawn, T., and Co. Measures Bros. Cement, &c.— The Builders' Material Supply Stores Chimney Pieces— Coalbrookdale Co., Ltd. White, J. F. Decoration— The Anaglypta Co. Ltd. Walton, F., and Co. Directories, &c.— Local Government Annual Distemper— Aspinall's Enamel Co. Ltd. Doors, &c.— Dowson, Taylor and Co. Door Springs and Hinges, &c.— Adams, Robert Sharland and Waddington Drain Pipes— Doulton Woodward Drawing, Tracing, &c.— London Drawing and Tracing Office Electric Light Fittings— Brawn, T., and Co. Perry and Co. Enamels— Aspinall's Enamel, Ltd. Felts— Adelberg, M. V. Fencing— Bayliss, Jones, and Bayliss Fireproof Flooring, Partitions, &c.— Dowson, Taylor and Co. Homan and Rodgers London Non-Flammable Wood Co. Mark Fawcett and Co. Fibrous Plaster Slabs— Jones, F. K., and Co. Garden Frames— Hypolite	Gas Fittings— Brawn T., and Co. Strode and Co. Gates, Railings, &c.— Bayliss, Jones, and Bayliss Coalbrookdale Co. Ltd. Glazing— Griffiths, Wm. Mellows and Co. Glass— Prest, E. J., and Co. Ltd. Talbot and Co. Ltd. Union Plate Glass Co. Ltd. Granite— Bower and Florence Heating— Blackman Ventilating Co. Hartley and Sugden Jones and Attwood Horticultural Buildings— Hypolite Hurdles— Bayliss, Jones, and Bayliss Insurance— London Plate Glass Insurance Co., Ltd. Lift, Elevators, Hoists, &c.— Waygood and Co. Lightning Conductors— Lewis J. Locks, Latches, and Furniture— Colledge and Bridgen Kaye, J., and Sons Shirland and Waddington White and Sons Machinery, &c.— Reynolds, F. W., and Co. Ltd. Manholes— Woodward J. Marble— Patteson, J. and H. Mosaic Work— Diespeker and Co. Non-Flammable Wood— Non-Flammable Wood Co. Paints, Stains, Varnish, &c.— Sissons Bros. and Co., Ltd. Photo-Engravers— Carl Hentschel, Ltd. Pottery— Burmantofts Plaster of Paris, Cements, &c.— Ford, Peter and Sons Railings, &c.— Bayliss, Jones and Bayliss Roofing (various)— Adelberg, M. V. Blakeley, E. F., and Co. Carter, A., and Co. Homan and Rodgers Hope, H., and Sons, Ltd. Mellows and Co. Sanitary Appliances— Adams and Co. Couzens Doulton and Co. Duckett and Son Ltd. Morrison and Ingrams Oates and Green Stanley Bros., Ltd. Twiford	Sanitary Ware— Doulton Twiford Woodward Slates— Buttermere Green Slate and Stone Works Carter, A., and Co. Morris, M. E. Shepherd, E. Stables— St. Pancras Ironworks Young and Co. Staircases, &c.— The St. Pancras Ironworks Stoves, Ranges, Mantles, &c.— Ball, H. A. Coalbrookdale Co., Ltd. Shorland, E. H., and Bros. Structural Ironwork— Blakeley, E. F., and Co. Brawn, T., and Co. Homan and Rogers Measures Bros. St. Pancras Ironworks Co. White and Sons Williams Bros. and Co. Tanks, Cisterns, &c.— Bawn, W. B., and Co. Millar, J. S., and Sons Winn, C., and Co. Terra-Cotta— Burmantofts Chapman, Walwyn T. Doulton Edwards, J. C. Leeds Fireclay Co., Ltd. Tiles— Boote, T. E., Ltd. Edwards, J. C. Godwin and Son Leeds Fireclay Co. Minton, Hollis and Co. Pilkington Wooliscroft and Son, Ltd. Typewriter Stands, &c.— Fox, J. M. Urinals— Doulton and Co., Ltd. Ventilating— Blackman Ventilating Co., Ltd. Boyle, R., and Son, Ltd. Keys King, J. Shorland, E. H., and Bros. Wallpapers, Decorations, &c.— Godwin and Co. Knowles, C., and Co. Walton, F., and Co., Ltd. Windmills— Millar, J. S., and Son Window Frames and Sashes— White and Sons Williams Bros. Wood Flooring, &c.— Charteris and Longley Gregory and Co. London Non-Flammable Wood Co. Mark Fawcett and Co. Vigers Bros.
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MARCH 28, 1900.
No. CCLXVIII.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

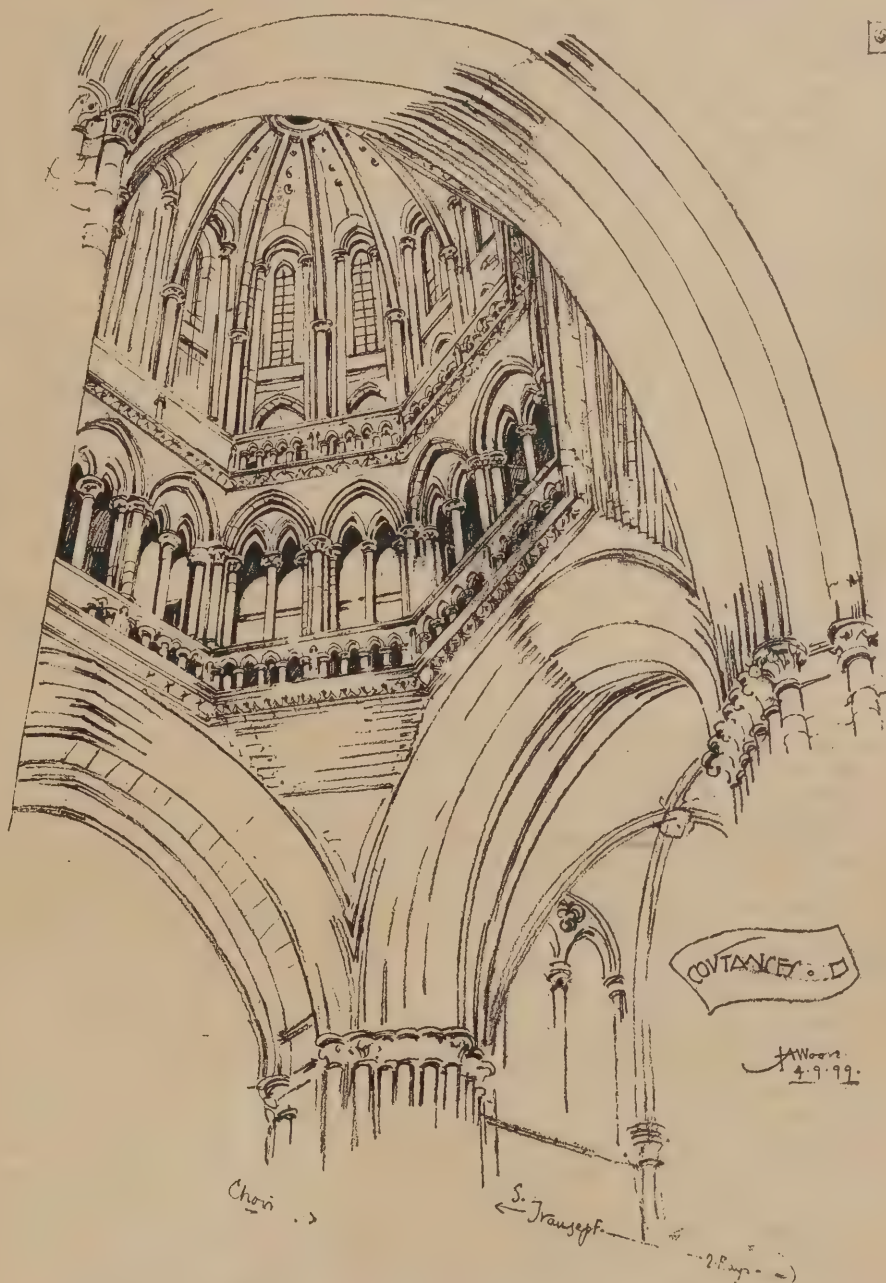
An Architect's Spare Moments.

EVEN in the busiest offices there are periods of comparative dullness, when the problem of how the time is to be profitably occupied becomes unpleasantly obtrusive. If the staff be large, the temptation is often to reduce it, when the solution of the problem is transferred from the architect to his dismissed assistant, with whom it is just as pressing and possibly more difficult; while, where the staff is already as small as prudence will justify, the necessity of employing every member of it fully in order to prevent "slackness" and want of discipline is very real. In circumstances like these the architect has one great advantage over members of other professions, in that there is almost always a competition upon which he can exercise his own skill and that of his assistants, not only preventing their getting rusty, but with the probable result of general improvement all round. Yet there are many ways in which an architect, whose most strenuous efforts are necessary in order to earn a bread-and-butter living, can more profitably employ his leisure than in competition work, with its problematical success. Those with any literary skill ought to have little difficulty in disposing of articles upon technical subjects, especially if they commence by approaching the editor whom they think likely to accept their work with a list of suggested subjects; and the writing of technical articles for the technical press may readily expand to writing as a specialist for the general press, or to the publication of technical books. Similarly, the man who is possessed of the gift of pen draughtsmanship can usually, with a little perseverance and the exercise of that class of tact which would prevent him from sending an illustrated joke to "Good Words," obtain fairly remunerative employment for odds and ends of time. [Not very often, we fear; this particular market is overstocked. —Ed. B. J.] More legitimate still, perhaps, because more akin to an architect's true vocation, is the preparation of designs for the fittings and finishings of buildings, wall-papers, furniture and textiles, for which there is an unlimited demand so long as the work be good, and the trained architect has many advantages in the race of excellence. Quite another field again presents itself to the man who decides to employ his spare moments in increasing his connection and impressing his friends with his knowledge of his profession. Many attempt to do this by aiming at social success, but this is a risky proceeding, better replaced by reading papers before local archaeological societies and delivering courses of lectures at a nominal fee (it rarely answers to give free lectures) upon some such popular subject as constructional hygiene. A large amount of kudos, even

locally, is to be obtained by reading a paper before the architectural society located in the nearest large city, and even more if it be accepted by one of the great Metropolitan societies who, for their part, are often seeking original matter and new men, and would be only too glad to be approached by anyone with something fresh to say. This sort of thing may not have an immediate money value, may even involve a certain amount of expense, but it goes a long way to make or sustain a reputation, and it is questionable whether in the long run it may not do more good than work for which immediate payment can be obtained. G. A. T. M.

nating in spires, was inaugurated by William the Conqueror in 1056, and is one of the finest specimens of ecclesiastical architecture in Normandy. Coutances is the ancient Roman Cosedia in the country of the Unelli, and many traces of Roman work are still to be seen in its environs.

Colourless London. LONDON, though the largest and most opulent capital in the world, is singularly lacking in some of the attributes of smaller



LANTERN, CENTRAL TOWER, COUTANCES CATHEDRAL. DRAWN BY J. A. WOORE.

Coutances Cathedral.

THE illustration of the lantern in the central tower of Coutances Cathedral which we give on this page is from a pencil drawing by Mr. J. A. Woore, and is one of a set which received a medal of merit in the R.I.B.A. Pugin competition this year. The town of Coutances is built on a granite ridge which rises between the canalised River Soule and the stream called the Bulsard, sixteen miles from St. Lô and seven miles from the sea. The cathedral of Notre Dame on the height, with its two lofty towers termi-

and far less important cities on the Continent and elsewhere. It may be considered as the most colourless and, with the finer, more central portions excepted, the dingiest mass or "province of houses" in Europe. Thanks to modern enterprise and advancing architectural taste, the important parts of London can boast of some fine buildings, such as the Imperial Institute, New Scotland Yard, &c.; also many other new buildings of an entirely commercial character where colour is being carefully and tastefully introduced by means of terra-

cotta, red brick, mosaic work, and coloured plaster, as in several new premises in Oxford and Regent Streets. But with regard to the less important parts and the suburbs—those endless ramifications of "Greater London"—nothing can exceed their stale monotony, dreadful colourlessness, and general depressing hideousness. Take almost any rising suburb; of what does it mainly consist? and how does it come into being? What were fields and hedgerows become long strings of monotonous boxlike villas all of one pattern, and where any colour is attempted it consists of a vulgar use of crude red brick and tile, with false ornament stuck on in a meaningless manner to proportionless walls and gables. If we are a practical nation, "A nation of shopkeepers," why should we allow such a refinement of ugliness? The only answer is that cheapness is the main consideration. But surely it is as easy and as cheap to do without sham ornament and unnecessary stone embellishments, and in their place to aim at proportion, taste, and judiciously applied colour. Would it be absolutely curtailing the "liberty of the subject" if some control were exercised architecturally as well as structurally upon new erections? Why not even have a Ministry of Fine Arts, as in Paris?

The peculiar colourlessness of London arises partly from the smoke-laden atmosphere, partly from its natural climate, and partly from the indifference of the average citizen to all matters architectural. The predominant "note" of the London streets is a dull leaden grey, which pervades pavements, roadway, house fronts and roofs, the only touches of colour proceeding from the omnibuses, pillar-boxes, or garish advertisement hoardings. Few prospects equal in gloom that of a London street, suburban or otherwise, when seen on a dull Sunday. Is there any feasible means of remedying or modifying this state of things? Without indulging in any Utopian dream, it would seem that there might be a remedy, though as long as the London atmosphere is saturated with smoke it will be a difficult task. Kiosques are useful and cheerful objects, and might be much used in the principal thoroughfares as in Paris. In summer, why not make more use of properly coloured awnings—buff or a good green instead of the usual dingy drab things. Tinted tiles could be more used in addition to the terracotta so much in vogue, though unless tiles are most carefully employed and are of a good tint the effect on buildings is very crude and glaring. An immense field for the display of colour would be the advertisement hoarding, often so terribly hideous, though its hideousness is totally unnecessary, as some very good recent posters testify.

Lastly, for summer purposes many flat roofs and parapets might be decked with flowers and plants and utilised as open-air cafés and for smoking; here people might sit removed from the turmoil of the street and enjoy a modicum of fresh air. If these roof-gardens were properly designed, and unpleasant views of chimneys were hidden by shrubs and plants, they would soon become popular resorts. In several ways London might well take a lesson from Paris, Brussels, and other Continental cities. Because we live in a gloomy climate that is no reason why we should meet the climate halfway in gloominess. Much has been done by modern architects to impart colour into London streets by using terra-cotta and red brick instead of the liver-coloured brickwork of forty years ago, but much more remains to be done before London becomes a "City of Light," or a feast of colour.

C. S. B.

On Reflection.

Artistic Copyright. ANYONE who has had to do with the existing law about artistic copyright knows what chaos here exists, and it is to remedy this state of things that Lord Monkswell's Bill has been drafted. Whenever a multitude of enactments govern any particular subject, it generally follows that the exact law is very difficult to define, owing to the cross-references which seem somewhat to clash with one another. Artistic copyright is governed by no fewer than ten Acts, the first being passed in 1734 and the latest in 1886, and each appears to have been drawn up without much consideration for those that preceded. The result is that nobody can determine exactly where copyright begins and ends. These laws divide the subject into three classes—engravings and prints, sculpture, and paintings and photographs—each of which is subject to certain exclusive restrictions. For instance, you cannot copyright engravings and prints in Great Britain unless they are actually made here; sculpture and paintings and photographs can be made here or in the colonies, but the first must be published in this country in order to obtain copyright, and the two last must be made by a British subject, or a person living on British soil. It need hardly be pointed out that this division of the copyright law is very ridiculous and unnecessary. Then as to the duration of copyright. Engravings and prints enjoy it for twenty-eight years after publication; sculpture enjoys it for half that term (with a second term of fourteen years if the sculptor survives the first); and paintings and photographs enjoy it until seven years after the artist's or photographer's death. Under the present law an artist loses the copyright in his picture if he sells it without having a written statement from the purchaser that the copyright is vested in the artist; yet the purchaser cannot claim the copyright unless it is directly assigned to him in writing by the artist. If neither of these two things is done, nobody gets the copyright, and the picture may be copied by anyone who is smart enough to get hold of it. If Lord Monkswell's Bill is passed (and we sincerely hope it will be) the copyright will rest with the artist, unless he assigns it in writing, and all kinds of artistic work will receive the same protection for the same term—namely, the artist's life and thirty years afterwards.

The Sculptor-Architect.

It is constantly deplored that we have few works erected at the present day that are worthy of a high place in the history of architecture, and in a like degree that we have few good works of sculpture that are architectonic. Yet we do not attempt to repair this deficiency. It is not that a way has not been found to get out of this nor that history affords us no hint to aid us in the endeavour. It is hardly going a point too far to say that all architecture in the past was the work of sculptors—we have but to refer to the Egyptian, Grecian and Roman, Indian, Japanese, and Gothic as examples. And when we study the greatest works known to us we see the special value of a practical knowledge of sculpture; the Parthenon would have been nothing without a Phidias; the Argive Heraeum nothing without a Polyclitus; and the works of Michaelangelo, Giotto, Donatello, Niccola Pisano and other Renaissance architects testify to the value of a training as a sculptor. The greatest example of this sculptural training is to be found in Gothic work, where in all the great periods the architect was always and necessarily a sculptor, or, as sometimes referred to in

those days, a "master mason." We are quite prepared to admit that at the present time it is not generally possible for the architect to personally execute his own sculpture, nor that it is a necessity in the production of every architectural work that he should be a sculptor; but we do contend that a training in this art is necessary for the production of great works, such as those of a monumental character. It may be contended that this is all very well for those who hope to have the designing of these great works given to their hands, but those who merely aspire to the erection of commercial and domestic premises do not require it. But after all architecture is, broadly speaking, merely sculpture—a due regard to proportion, mass, solids and voids, and rhythm—and the study and practice of sculpture will aid the faculties in the exercise of these qualities; and added to this is the benefit that may be derived from the study of nature and the human form and the help in affording a ready means of seeing the actual effect of a piece of carving, or the appearance of the structure itself, by a clay model. There is also something to be said for the contention that the greatest pleasure to be derived from a building is to read the sculptures, as archæologists do now, and so penetrate the very thoughts of the makers. Sculptors nowadays are inclined to produce statues—life-size or miniature—in their studios, for sale as separate pieces of furniture, as it were. Now, although the Greeks gave us the statue in this form, we do not find them untrained in the architectural use of sculpture. Everywhere we see in modern work this want of architectonic sense in sculpture, not only on buildings but in statues, which are set up without any regard to their surroundings. We require more sculptors like the late Harry Bates, A.R.A., whose work at the Institute of Chartered Accountants is a standing example of the co-ordination of sculpture and architecture.

Well Done! It is gratifying to know that there are enough public men and pressmen who have a sense of fitness and artistic feeling sufficient to compel the abolition of many new-fangled ideas of the advertiser for giving further publicity to his wares and helping to destroy what beauty in our streets still remains. It is not so very long ago that the ugly sky sign was ordered to be pulled down, and now the London County Council has prohibited the use of those flash-lights and night-signs (more particularly the latter) which have been so long an eyesore. Mr. Charles Whibley said of these night-signs in a recent number of a contemporary:—"They wink, they shift, they scintillate, they go out. Now yellow plays on red; now darkness pockets all the colours; and the passer-by is not only distressed by these sudden apparitions, he is even prompted to the cultivation of a new vice. As his cab rushes by the illuminated spot he will hazard all the money in one pocket against all the money in another that the red light will not flash again until he is swept off out of sight." This is light criticism, but it covers a great truth, which is that these forms of advertising are outrageous to public taste (however indefinite a quantity this may be). The exact wording of the Council's by-law is somewhat ambiguous, for it says that no flash-light (this includes all those illuminated letters, signs, and devices which we know so well) or search-light shall be visible from the street and "cause danger to the traffic therein." The word "street" includes, however, everything that can possibly be called by that name, while the provision about causing danger to the traffic has, we assume, a similar wide bearing; so that it really seems that these signs and lights are to be stopped—and a good thing, too.



LANCASHIRE CHURCH ARCHITECTURE.*

By W. H. B.

THOSE who know the architectural annals of the County Palatine may well ask "can any good thing come out of Nazareth?" The ruins of its religious houses are few, and are not in any sense remarkable. If we compare Furness with Fountains; Whalley with Rievaulx or Whitby; and Cockersand with Guisborough or Easby, we shall see how much richer in these relics is Yorkshire than the western shire with which, to such a large extent, it is coterminous in boundary. Nor has Lancashire any churches like St. Mary's at Beverley; the Grey Church at Old Malton; St. Mary's, Hull; Wakefield Cathedral; or the "Old Churches" at Bradford or Halifax. Yet it was in Lancashire, to a great extent, that the Gothic revival had its origin. Authorities generally admit that in his "Attempt to Discriminate the Styles of English Architecture from the Conquest to the Reformation, with Notices of Eight Hundred English Buildings," Thomas Rickman, a Liverpool architect, led the way in that revolution in art which has largely sought to realise the dreams and ideals of writers so diverse as Walter Scott, John Mason Neale and Bulwer Lytton. Rickman published his work so early as 1817, and so well and conscientiously had he done his part that a second edition was soon called for. At the time of the publication of his first edition, it is well to note, the younger Pugin was only six years old. A short extract from his preface explains his motif. "The object of the present publication," he says, "has been to furnish, at a price which shall not present an obstacle to extensive circulation, such a view of the principles of Architecture, more particularly that of the British Isles, as may not only be placed with advantage in the hands of the rising generation, but also afford the guardians of our ecclesiastical edifices such clear discriminative remarks on buildings now existing as may enable them to judge with considerable accuracy of the restorations necessary to be made in those venerable edifices that are under their peculiar care; and, also, by leading them to the study of such as still remain in a perfect state, to render them more capable of deciding on the various designs for churches in imitation of

the English styles, which may be presented to their choice."

The little work realised all and more than Rickman had anticipated for it, so that we have one more illustration of the superiority of genius to its particular environment. In his enumeration of buildings, which forms the appendix to his work, Rickman traverses every English county for his examples of styles. Only nine of these examples, however, are furnished by his own county, and necessarily he draws on Yorkshire, Lincolnshire, Oxfordshire, Warwickshire, Nottinghamshire, and Norfolk for his fullest lists. We wonder if he was struck, as we have frequently been, with the poverty of the examples close at hand? Nearly every parish church in Lancashire—speaking, of course, of the ancient buildings—

is of one era and one type. That type is the late perpendicular, of which we have a familiar example in Ribchester, leaving out the earlier chancel and the strange, modern clerestory dormers.

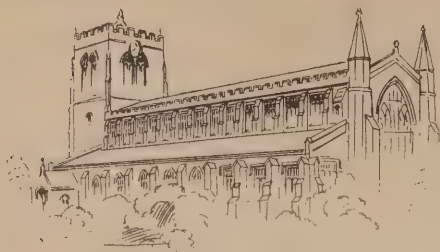
Ribchester is an old historic centre, dating back to Roman times, and, in consequence, we find at Ribchester what is rare in other Lancashire churches—features of all the styles. The chancel is a "deep" one, and at one time was undoubtedly pure Early English. It has been restored, with the usual bad effects of early restorations. In an old side chapel in the north aisle there is a fine flamboyant window, which makes quite a picture when seen through the foliage from the vicarage garden. The stone tracery is complete, but nearly the whole of the old glass is gone, except a piece in the upper foliation which portrays our Lord in Glory. Whalley (where there is some excellent choir carving), Leyland, Higher Walton, Great Harwood, Guisburn, all are churches of the Ribchester type, only poorer in character and more uniformly of one style. They consist as to plan of western tower, nave, north and south aisles, and deep chancel. The only example we know of a cruciform church is furnished in Cartmel.

The drawing of Whalley Church on this page is from the facile pen of Mr. Herbert Railton.

But the poverty of the great cities is even more remarkable than that of the towns and villages. Manchester retains its "Awd Church" in its splendidly-restored cathedral; that is the one ancient ecclesiastical building of which it can boast. Liverpool is all modern. Burnley Parish Church should be an ancient structure, but it is a thing of shreds and patches, and has been rearranged out of all semblance to its former self. How unlike the big towns across the Pennine Chain, such as Bradford and Wakefield, Hull and Halifax. Some day, perhaps, some thoughtful writer will sit down and answer for us two important questions. How is it that Lancashire exhibits such lack of ecclesiological endowment; and how has it come about that nearly the whole of its churches are of one style of architecture, and have evidently been erected or re-erected at about the same period? We know from Domesday, that the country was, in Norman times, thinly populated and very poor. Then, when it attained the dignity of a Palatinate, it lived a life apart from the rest of the English shires and had an internal economy "all its own." Its duke was a king in all but name. He could



DRAWN BY HERBERT RAILTON.



ST. MARY THE VIRGIN, LEIGH.

pardon treasons, murders, and felonies. He held a separate Court of Chancery, Court of Common Pleas, and Court of Criminal Jurisdiction. He could summon his own barons, and the King's Writ did not run in his dominion. Did Lancashire suffer architecturally from its being outside the regular stream of our national life until the reign of Henry the Fourth? Or are we to put down its poverty until quite recent times as the main factor in its architectural leanness? It is a pity that the ordinary Lancashire manufacturer is a man of limited education, whose principal endowment is a prehensile faculty of money-getting. He is, however, improving, and as the standard of taste rises in a backward county we may in time come to see more buildings of the character of that splendid church at Stockport, of which such excellent illustrations were given in Vol. I of the "Architectural Review." If the big towns of Lancashire have, unhappily, remaining in them few relics of the art of ancient days (in towns like Preston and Blackburn hardly a stone of ancient work is anywhere to be traced), the man of culture and the conscientious architect may well unite in the determination that such new buildings as are erected shall in some way harmonise with ancient and true canons of art. Much has undoubtedly been done since Rickman's time. A handsome Roman Catholic church at Lancaster; a new English church at Morecambe; the fine new church of St. Silas's in Blackburn; and new country churches like that of Hapton, are indications of the trend of public taste as well as professional proficiency. Even the architects themselves are becoming more severely critical of their own work. For an example of this we need only compare the Church of St. Mary the Virgin, Leigh, by Messrs. Paley and Austen, with their most recent work in St. Silas's, Blackburn. In the early years of the Gothic revival some excellent churches were built in Lancashire, some by Rickman himself and some by architects who followed his careful leading. They were marred, however, by short chancels, as at Mellor, Holy Trinity, Darwen, and in Blackburn Parish Church. The latter is a really fine building structurally considered, but as it was built in the early



THE CHANCEL GABLE IN ST. SILAS'S CHURCH, BLACKBURN.

twenties it is naturally faulty in many of its features. Pleasington Priory, the façade of which is illustrated on the opposite page, is a church belonging to the Roman Catholic body, and shows how early most elaborate attempts were made to improve the character of the prevalent styles, or rather the absence of them. This edifice was erected in 1816-17. John Palmer was the architect, and Thomas Owen the sculptor. John Palmer was also the architect of the Blackburn Parish Church, which is of quite cathedral-like dimensions.

These brief notes on a large subject may well be closed with the reflection that with Lancashire it is the day of opportunity. Manchester is rightly enlarging, improving and enriching its somewhat diminutive cathedral. Liverpool may, some day, have a cathedral which, as a structure, may not be a reflection on the wealth and commerce of the second city of the Empire. The Gothic revival might in this way be fitly honoured in its birthplace. It is better that we should "bide a wee" than, in the hurry to attain a desired end, we should erect a building unworthy of the recovered knowledge we have obtained of the ancient English styles.

PUBLIC BATHS AND WASH-HOUSES.*

BY A. SAXON SNELL.

I DESIRE first of all to remind you of a few cardinal points which I venture to think cannot too often be reiterated, and some of the most trite and obvious might with advantage be pressed upon those public authorities who have the inception and carrying out of these institutions.

Firstly as to sites. It has been pointed out that irregular sites with small frontages can be advantageously used for public baths. With the exercise of considerable ingenuity and a lavish provision of corridors it may be so. Nevertheless, it is certain that what is gained in economy in the cost of the site is lost in inferior arrangement, long lines of communication and wasted space. It is one of those "ways out" of a difficulty which is best spoken in the ear of a client in real difficulties for a site at all. Let us beware of the authorities coming to the conclusion that any site is good enough for public baths. Public institutions of most kinds should occupy positions of honour in our towns—entirely surrounded by streets if possible, always at least detached from other buildings. We have yet in Britain to learn this lesson from any third-rate German town.

Secondly, as to the general arrangement of the buildings. It is well for us to remember that the more completely a building is planned, the easier, and, therefore, the more economical will be its management. And it is not the first cost so much as the annual charge for management and maintenance which makes public baths, as a rule, unremunerative. I use the term "unremunerative" in the narrow sense of the word, meaning that these institutions seldom yield a direct monetary profit upon the outlay and expenses. Will you pardon me if, upon this subject, I quote a few paragraphs, with some variations, from my last year's paper? (This paper was published in the BUILDERS' JOURNAL for March 8th and 15th, 1899.)

"The word economy is brought into contempt so often by its misuse in the mouths of narrow-minded people with whom it is synonymous with 'cheapness,' that it is worth while to define our interpretation, the short form for which is arrived at by labelling it with the words 'wise' or 'true.' In planning a building, then, to ensure or make possible 'wise' or 'true' economy in administration, we mean arranging the various parts in such order as will enable those who administer it thereafter to do so with the least waste of human energy; and the architect is fortunate

whose clients perceive the true bearing of this principle. It is only just to them, by the way, to say that it is largely recognised to-day, as witness the lavish expenditure upon glazed bricks, majolica, and other surface decorations, the great first cost of which is so soon repaid by their permanence and the small cost of maintenance. I need scarcely remind you that we as architects are much more interested in the first cost of a building than its subsequent maintenance; and it is, therefore, also our interest to build well from the first. That is, by the way; it does not benefit us alone. Indeed, our share is, comparatively speaking, small; the benefit to our client, far greater. For it is obvious that if by our skilful planning we make it possible to administer a building with five servants, say, instead of six, we save our clients a subsequent expense, to take a low estimate, of £60 annually—a sum which, capitalised, could be expressed in buildings to the value of £1,800, or thereabouts. Inversely, if by spending an additional £800 our client saves the cost of one servant, he is the gainer of £1,000.

"For some years our rulers have been slowly



THE CHANCEL OF ST. GEORGE'S CHURCH, STOCKPORT.

learning the lesson which generations of architects have endeavoured to teach them, but they listened not to our voices, and have even hinted that we advocated magnificence in our public buildings for purely personal reasons. Judged, however, by modern buildings, I think they begin to realise that money spent in buildings is not spent in the sense that it leaves the community poorer, but rather that it is *invested*. It is beginning to be understood that in no way can money be more widely circulated, or give a better return to the community, than in building. It is recognised that nothing is more educational to the lower stratum of human life than to house it decently, and to accustom it to better surroundings. The money spent in public buildings must be regarded as invested only—and well invested. A little sign that the public are beginning to perceive this is afforded by the growing tendency in competitions not to hamper the competitors by a fixed price. May the tendency grow into custom! Another is the trouble our authorities take in visiting other institutions to learn what is best in them, and then to go one better. The younger generation of architects have a good time before them if we foster the growing imagination of our clients to lead them on to yet higher ideals, yet nobler efforts."

It is to architects they will look, as in the main they always have looked, to give that lead which was never more wanted, and, happily, never more appreciated, than to-day.

The very first essential in any building is the plan, and personally I wish that this

* A paper read before the Liverpool Architectural Society on March 5th, 1900.



CHURCH OF ST. MARY, CARTMEL.

obvious truth was more thoroughly insisted upon than it is in architectural education. We have our classes for construction and design. Why not for planning? In public buildings, the simpler and more direct the plan, and the greater the proportions between the rooms and passages, the better. Unless a passage reaches the proportions of a gallery (when it can be used as such), or is small enough to be regarded as a lobby, it is so much waste space which has to be paid for in first cost, and subsequently maintained and kept clean at further expense. This is applicable to public buildings in general, but it is our business now to discuss public baths in particular. Under this head are included swimming, washing, and Turkish baths, and all of them until late years have been combined in one building for economy of administration, and I suppose for a certain sense of fitness.

It is obvious that few towns and boroughs can afford several sets of baths; and one establishment, however centrally placed, is likely in most cases to be a long distance from the greater part of the population. The desire for cleanliness is not, I fear, so strong among those who need it most to induce them to walk a mile or two for the opportunity of a bath; and latterly a wise experiment has been made in the distribution of small sets of washing baths in the various quarters of the municipal area, and with very encouraging results. In time it may be possible also to multiply the number of swimming baths in these areas, but not, I fear, for many years yet. The British public learns very slowly, but, happily, very surely.

I should much like to enlarge upon this subject of the proper distribution of baths, but save in shortly prefacing my remarks upon washing baths, I shall not pursue it further. My paper is not addressed directly to public authorities with whom these matters rest. Speaking to a body of architects, it is perhaps more of interest to deal with the buildings themselves, and my only reason for referring to the question of their distribution is that we should have some ideals and aspirations of our own to guide us in helping our clients to deal with the matter.

Details of Specimen Baths.

I believe that in no way can we better get to close quarters with the subject than by examining the details of any specimen building designed under fairly advantageous conditions. For such an example last year I prepared a sort of model plan which has some relation to the baths now being erected at Plaistow. I prefer this year, with your permission, to make use of a plan which has been adopted for the Stratford baths, because it is, as a plan, somewhat in advance of the other. I almost feel that I should

apologise for taking one of my own buildings as an example; but it seems obvious to me (and I hope to you) that it is better to deal with a building one knows thoroughly than to speculate upon others (however superior) designed under conditions known to few but their authors and projectors.

The building comprises three swimming baths, respectively for first- and second-class men and women, and warm baths allotted to the two classes in the proportion laid down in the now obsolete Public Baths and Wash-houses Act of 1846; also a small Turkish bath. The site is at the corner of two streets, and a

right of way on the third side forms practically a third street. It is not an ideal site, but very fair, especially for London. The main entrances are from the Romford Road, a fine, wide thoroughfare, and there is a special entrance for the Turkish bath and emergency exits on the two other sides. The entrance hall is, as I think it always should be, the key to the plan; and it is so designed that it can (and I hope will) be used by all classes, both men and women, for I hold it an anachronism in these days to have separate entrances for the classes and sexes in a properly-planned building. It is not necessary in a railway station nor in a post-office. Why in public baths? I am convinced that it is a matter of pure prejudice. At any rate, I have not yet heard any really good reason for it—nothing stronger than the vague statement that the public "won't stand it." The two subsidiary entrances are provided for dividing the sexes if so desired, but more especially to allow the central entrance to be kept free when entertainments are held in the great bath hall. Had it been possible, I should have made this hall much larger. The entrances are dominated by the offices, and in the rear of the hall is a refreshment bar, the convenience and comfort of which will be fully appreciated by the bathers. Immediately in the rear is the first-class swimming bath hall, 125ft. long by 53ft. broad at the platform level, 150ft. by 65ft. at the gallery level. Still further in the rear are two baths, respectively for women and second-class men, and between the two the towel laundry, boiler house, &c. On the left hand side of the large bath hall are the men's warm baths, and on the right women's warm baths and the Turkish bath. The committee room and a residence for the superintendent are on the upper floors of the front building. There are one or two particular features in the plan to which I wish to draw your attention as illustrating certain principles.

The central entrance hall is, as I have said, the key to the plan, and the arrangement of



FACADE, PLEASINGTON PRIORY.

the corridors and entrances is such that the various parts of the building can be used separately without interference with the others, yet without loss of control by the offices.

The first-class bath is designed for use as a racing bath; and here I should like to acknowledge an error of judgment in replying to a criticism of my last paper by Mr. E. Harding Payne. Mr. Payne pleaded for more consideration for those who use these baths for racing and sports; and I think I expressed the view then that as baths were only so used occasionally, racing men's requirements should take a secondary place. Subsequent consideration of the matter in the light of the effects upon other physical and mental exercise of the sporting element in the English character convinces me that nothing will popularise the use of the swimming baths more than the encouragement of racing and aquatic sports generally.

The situation of these baths is just opposite one of the finest technical institutes in the country, and the corporation, seeing a good opportunity of encouraging the physical side of their students' education, have agreed that the first-class bath shall be made as attractive to them as possible. The length of the bath is 100ft. and the breadth 35ft., and the depth from 7ft. to 8ft. 6in. The yard being the unit of length in races, and the divisions mostly multiples or parts of 100, that length in feet is convenient; 150ft. might be better, but it must be borne in mind that the cost of water in most cities is such as to make the frequent filling of so large a bath very costly. And it is desirable that in hot weather at least the water should be changed every day.

When the hall is to be used for swimming entertainments, the dressing boxes round the sides would be folded back against the walls, allowing a width of 8ft. 6in. on each side and one end of the bath for spectators, leaving the other end for performers. The galleries will be constructed with tiers of seats at such an angle that all will have a very good view of the bath pond. In short length races it is frequently necessary for the swimmer to finish at the opposite end of the bath to that from which he starts, and unless this is done swimming he has to pick his way along the edge of the bath, to the possible discomfort of the first row of spectators and the danger of slipping to himself. Either of the corridors outside the bath hall will provide a free gangway for this purpose.

Swimming baths are generally closed during the six winter months. The expense of heating the water to a fair temperature and maintaining it is great, and in cold weather the general public do not show much inclination to bathe. It is usual to keep one of the smaller baths going in winter for the sake of the more vigorous minority who find a swim as beneficial in winter as in summer. During the winter months the baths will be boarded over, and the hall is then available for concerts or other public meetings. I must not speak at more length on this part of the subject, and will only draw your attention to the very necessary provision of plenty of exits from the platform and gallery levels. The two smaller baths are similar in construction, but have a small gallery at one end only. The second-class men's bath will be fitted up in winter as a gymnasium.

A complete system of subways connects all the baths, and, indeed, all points of the building, with the engine house and boiler room, and this I regard as a very necessary provision, obviating the burying of the very numerous water, steam, and other mains which form so extensive and important a part of bath construction. There is little else in the plan which calls for special description, and I fear that the compass of my paper will not permit me to enter into a description of the constructional features of these buildings.

The New St. Pancras Baths.

With regard to the new baths for the Vestry of St. Pancras, London, now in course of erection (Messrs. Aldwinckle and Sons are the architects), the site is an exceedingly awkward one, ill-shaped and limited; so limited, in fact, that it must have entailed very long and

very tedious efforts to have put so much upon it. I had a somewhat similar site myself to deal with at Marylebone, and know something of the difficulties, and, indeed, I am afraid that in London we seldom have it otherwise. Then the position and means of access to the first-class bath were designed with a special view to the very stringent regulations of the London County Council as to approaches and exits; because it is proposed to use the bath hall in winter for public entertainments.

The first-class bath will be a fine one in many respects, and not the least in an architectural sense. I draw particular attention to the lighting, which is uncommon though not entirely new in principle. The most usual form adopted is that of a large lantern and skylight, but it is found in practice that a skylight forms a very large sounding board, spoiling the acoustic properties of the hall and reflecting every sound to such an extent that it is almost impossible to hear oneself speak when the bath is fairly full of bathers, laughing, shouting, and splashing about as bathers will—especially boys.

Mr. Aldwinckle has, therefore, adopted a trefoil form of roof. The lower half of the centre vault is glazed between iron bars for the whole length of the hall. Opposite this and at an average distance of 4ft. is a skylight in the roof covering. The architects are confident that this will entirely obviate the nuisance and inconvenience of the ordinary lantern. A fine gallery is formed above the boxes built up in tiers, but I venture to think that the rise is not quite sufficient. I believe, however, that the County Council will not allow more. The dressing boxes are all wood framed. Three douche compartments are provided at the entrance-end of the hall, a provision to which I refer more particularly later on. The second-class bath is similar in size to the first-class bath, which is unusual. Although it is by no means universal, I think it will be found that in most cases the second-class bath is used mainly by boys, and it is, therefore, not necessary to have it so large or deep. In this bath a great number of the dressing boxes are placed in transeptal bays, which allow of a greater number than would otherwise be possible. An uncommon provision is that of boxes to accommodate respectively two and three boys. The partitions of these boxes are of oiled slate kept 6in. short of the floor, and the doors are of wood, and quite short. Four douche baths and a foot bath are provided in this case—and for obvious reasons.

As I shall not refer again (except casually) to this particular form of warm bath, I draw your attention to the ingeniously contrived position of the second-class warm baths, which are practically built out on cantilevers round three sides of the swimming bath hall.

Provincial Baths.

The Guildford Crescent Baths at Cardiff, designed by Mr. Harpur, the borough engineer, are another example of planning under difficulties, and I think you will agree with me that they have been well met. They are notable, too, for the warm lavatories and douche baths in connection with the dressing boxes. As to the reason which led the corporation to adopt this innovation and other progressive ideas in connection with warm baths, I cannot do better than refer you to Mr. Harpur's report to the Cardiff Council, dated June 9th, 1893, which was quoted *in extenso* by Mr. E. Foster in the paper he read upon this subject before the Incorporated Association of Municipal and County Engineers at the annual meeting in 1899. I shall describe these warm lavatories later on in connection with the washing baths. The small Turkish bath is by no means a frequent provision in public baths, but one which will be adopted more in the future.

The plan of Cheltenham Baths does not, I fear, in its arrangement do justice to the enterprise of Mr. Hall, the borough engineer, in his endeavour to bring it up to the level of modern requirements. It is a thankless task at all times to alter an old building. I draw your attention, however, to the really handsome waiting-room for first-class bathers. This is a boon in its way, for on certain days and at

certain hours one may have to wait one's turn for a bath for as much as half an hour. The rounded end to the swimming bath is a purely architectural feature and of no special use. The columns in the middle of the footway are out of place, but they were part of the old building.

The plans of Tunbridge Wells Baths, again, do scant justice to the building itself.

The plan and section of a Dutch bath which Mr. Nieuwerkerken, the architect, sent me a couple of years ago, is interesting as showing some striking variation from the English plan. I note, by the way, that the site is "quite English." The length of the bath is about 75ft. and the breadth 25ft. The depth is, however, 10ft. at the lower end, or 3ft. more than in the English bath, and the slope is graduated in lengths. There is ample width for the footway, which with us is nearly always narrow. The dressing boxes, too, are roomy.

The magnificent establishment at Harrogate does not include a swimming bath, nor indeed washing baths of the ordinary description, but I asked Mr. Baggallay, the architect, to lend me the drawings and photographs for exhibition as a standard of architecture which we may yet hope to see realised in public baths. There is little more I shall have to say upon the subject of swimming baths, because I should necessarily have to repeat so much of last year's paper; and I desire on this occasion to discuss the details of

Warm or Washing Baths,

which, happily enough, are engaging more attention at the present time than in past years. At a time when every house with an annual rent of £28 upwards is provided with a bath-room, it would seem unnecessary to provide public warm baths, but I am credibly informed that in most cases—that is, among the smaller houses—these bath-rooms serve as handy store cupboards, and when we bear in mind the kind of bath and water supply which can be afforded in a jerry-built house, and the want of constant attention necessary to keep the bath clean, we can scarcely wonder that it becomes in time uninviting and not to be compared in comfort with the well-constructed, scrupulously clean public bath, replete with every convenience. There will always be, too, a very large number of people living in model dwellings, and even of the better-class lodgings, to whom the luxury of a bath would be unknown were it not for these public baths, and for this very large class it behoves our public authorities in the interests of public health to provide the best facilities possible for a good wash at the smallest cost. We in England pride ourselves as a nation upon cleanliness; but I fear that truthful statistics showing the proportion of us which is accustomed to regular bathing would at least show that we are very far behind the unspeakable Turk, for instance, in this matter.

The problem before our authorities then is how to induce the masses to take kindly—indeed eagerly—to the delightful habit (when once learned) of keeping themselves clean; and this problem is being grappled with very energetically in our large cities, and Liverpool is, I think, well to the front in this matter. Much has been written, and much more will follow, upon this subject, and in due time much will be done—there is a large field for enterprise. I do not propose to weary you with a history of the development of the public warm bath, or to discuss the several forms which have been adopted in this and other countries. It is too large a matter to form part only of a paper. I prefer rather to ask you to study the arrangements of one or two good modern examples.

It appears to be generally recognised that if we are to make the washing baths popular with the working man they must be brought almost to his door, instead of being grouped in one or two large establishments in central positions. A working man may be induced to walk or ride a mile to enjoy a swim, but scarcely to get a bath. The scheme now in course of adoption in the larger cities, and notably in Liverpool and Cardiff, is one of decentralisation and the establishment of small sets of baths centrally placed in

comparatively small areas within easy reach of their patrons. Necessarily, if decentralisation be carried too far, the establishments become too small to be economical; but a small set of from twenty to thirty baths (if they become popular) should go far towards paying cost of administration. Of course, everything depends upon the initial outlay in construction, and the cost of maintenance and administration. These matters depend again very greatly upon our skill as architects in planning simply, and constructing cheaply and durably, and it is to such points I particularly invite your attention. Perhaps one of the simplest plans for such an establishment is that of one of the people's baths for the City of Yonkers, U.S.A. It consists of waiting lobbies respectively for men and women, a ticket office commanding both, six washing baths for women and fourteen for men. These proportions could be easily varied. The superintendent's room would no doubt be placed over the waiting halls, and the heating apparatus, coal stores, &c., underneath. No side lights are required in the walls, so that the amount of ground and frontage occupied is little more than is necessary for a workman's cottage. Where more ground is available, the plan designed by Mr. Court for the Corporation of Liverpool is very compact. There is apparently a little waste space on the women's side, but this merely provides room for the erection of four more baths at a future time.

It is so difficult to determine from time to time in what proportion the sexes will bathe that I venture to suggest that all these establishments should be so designed that the proportions can be varied by simple means. A little rearrangement of the passages will easily affect this. A small alteration in the approach to the laundry would effectually cut it off from direct communication with the ticket office, to the greater comfort of the superintendent. An even better arrangement would take the laundry out of the front building, placing it in the rear of the baths with a proper top light and ventilation.

Each bath comprises two compartments, one for undressing and dressing, and the other for washing. The dressing box should, of course, be fitted with a seat, hat and clothes pegs, mirror, and a boot jack—all fixed. (I am not describing Mr. Court's particular building.) The washing box is fitted with a sort of large foot bath, a seat, and a fine overhead shower or douche for cold, hot, or warm water. The bather first partly fills his foot bath with water, and washes and soaps himself all over, and then a gentle warm shower cleanses the whole of the body, a shower which can, at will, be lowered sufficiently in temperature to invigorate the body and close the pores of the skin. The amount of water used in this bath is very small compared to that required for the slipper bath; indeed, I believe six to ten gallons as against forty to fifty gallons.

Constructional Details.

Having planned a building as economically as possible, we have yet to construct it cheaply. With respect to the *carcase*, we are bound within limits of cheapness by building by-laws. Internal finishings can be as plain as possible, but nothing is gained by making them flimsy. Both wall and floor surfaces must be impervious and easy to clean and keep clean. For internal faces of walls I think nothing is really so cheap in the long run as plain tiles or glazed bricks, but these need not be carried higher than 6ft. For flooring, granolithic is certainly cheapest, but pressed tiles of terrazzo are not very costly.

In the construction of the bath compartment there are one or two apparent extravagancies desirable, which are, however, well worth the cost. It must be borne in mind that a large amount of dirt—and very offensive dirt—is taken into these compartments, and not all of it is washed off by the shower. Every horizontal surface forms a resting-place for particles of dust and dirt, every internal corner harbours them, every inaccessible nook forms a secure breeding place for objectionable and nameless life. The dirt may not be in evidence to the eye, perhaps scarcely to the sense of smell,

perhaps only in a certain closeness in the air. What we should aim at, therefore, is to so simplify the fittings as to render them easily and automatically cleaned all round, and to do away with internal corners as far as possible by rounding them to a fairly large radius. By keeping the partitions a few inches clear of the floor a number of these angles are avoided, and it becomes possible to clean the floor easily and effectively. The foot bath may be little more than a large glazed stoneware sink (which is cheap enough) and the top solid dish slate, but both should be bedded solid all round, no open joints or inaccessible recesses being left. The supply pipes are best kept above ground, the main pipes carried above the top of the partitions and the branches strongly fixed quite clear of the walls. The waste should discharge into an open channel common to each row of baths and formed with half-round white-glazed pipes.

The walls of the compartments can be variously constructed with wood, slate or glazed brick. Wood is, of course, the cheapest material as it is also the most open to objection. The advantages of glazed bricks are more apparent than real. The surface is too uneven, and the very numerous joints form small ledges for dirt which is not easily detected. Enamelled slate (while it lasts) gives a perfect surface, but it is easily scratched, and it is costly. Marmorite appears to be the most perfect wall lining possible, for it can be obtained in large slabs necessitating but few joints. At present it is too costly. On the whole, therefore (unless extreme cheapness is essential) I should prefer to fall back upon 6in. white-glazed tiles fixed with rubbed joints to any of the patent thin partitions now on the market. The surface is perfect and durable, it is not more expensive than glazed brick, and it is possible with the use of coloured or stencilled bands to give it a decorative value at very small extra cost.

The type of plan I have just described is suitable for the cheapest class of baths, for which bathers might be reasonably charged one penny. It is necessary to provide also a better class of washing baths which might be attached to the central swimming bath establishments, and for which a charge of fourpence to sixpence would not be unreasonable. I fear that it is with this class that we shall find most difficulty in getting rid of the old fashioned slipper baths. People who can afford to pay sixpence for a bath are inclined to resent any dictation in the matter of their established prejudices. Nevertheless I believe they can and will eventually be tempted out of their prejudices if our public authorities will exercise or allow us to exercise a little taste and imagination in the planning and fitting up of these establishments.

A great step has been taken in this direction at Cardiff—I mean in the provision of a plunge bath in connection with the spray baths. The idea is that after a warm bath the bather has an opportunity of invigorating his frame and combining with it a little amusement by a dive and short swim. There is one objection to this particular plan which I think Mr. Foster referred to in his paper last year.

People in this country at least have an unconquerable objection to bathe or to see others bathe in a state of what Trilby called "the altogether," and it would seem tiresome to have to don a bathing costume just for a few minutes in a plunge bath. I suggest as an improvement that the position of the warm bath compartments should be reversed and placed round the plunge bath close to the edge, with the corridor next the outer walls. A bather could then dive out of his compartment direct into the water, and in returning to his compartment dripping all over he would not have to pass by that part holding his dry clothes. There is another suggestion I should like to see taken into serious consideration. Is it not possible to make a few more steps towards Roman ideals in the matter of public baths? I know, of course, that we cannot expect a revival of the baths of Caracalla until the twentieth century at the earliest; but would it not be possible to take a few steps in that direction—say, for instance, an establishment where, for the sum of sixpence, you

might enjoy at will a modified form of Turkish bath, a swim, and a few gymnastic exercises with the opportunity of an adjournment afterwards to the lounge for a cup of coffee, the daily papers, and the latest war telegrams?

Lest you should doubt my seriousness, I will not go further, but it would be easy to pile up delights which would make the bath-house a most popular resort, and I venture to prophecy a most paying concern.

Mr. Harpur, superintendent engineer at Cardiff, has arranged warm lavatories in connection with swimming baths—one being provided to each two dressing boxes. The idea is that every bather before entering the swimming bath should have the opportunity of first washing himself all over—this is the rule in most countries. I must confess that I have some doubts as to whether this arrangement is reasonably economical, and I venture to think that he himself has adopted it mainly to meet some of the bathers' many prejudices. The plan of these lavatories and the arrangement of the fittings appear to me excellent; but I would rather recommend a simpler and more solid construction. I think a pipe enclosed in a pipe in the wrong place, and that all odd corners and spaces which cannot be easily exposed and cleaned are to be avoided at any cost.

You will notice that these douche baths have been adopted at Cheltenham, and I may add that I may shortly make an effort to introduce them in East London for the benefit of dock labourers.

Wash-houses.

The title of this paper is "Public Baths and Wash-houses," but I think the last word fell into its accustomed place without notice, because it has always been bracketted with public baths. But it does not really form part of the same subject, and I feel almost disposed to drop it with these few words of explanation. Public wash-houses have been established to enable the working classes to do their washing under conditions which are not attainable in the miserably small houses—rooms even—in which they often live, or exist. For the modest sum of 1½d. to 2d. per hour a woman can have the sole use of a compartment containing one or more tubs, unlimited hot and cold water and steam. Her washing will be wrung out for her by powerful hydros, after which she can dry it quickly in a steam-heated chamber. A large ironing room is provided, fitted with broad tables, ironing stoves and irons, and power-driven mangles. A creche is attached to modern wash-houses, where she can leave her small children in charge of a capable nurse.

There is not much variation in the plan of these wash-houses, and I think you may take those of Marylebone and St. Pancras as typical examples. The plan consists of a number of rows of washing compartments enclosed with iron partitions, and each about 3ft. 6in. square on plan. The main difference between the St. Pancras and St. Marylebone wash-houses is that in the former these partitions will be (as is more usual) high enough to screen off the washer from her neighbour's sight. At Marylebone the partitions were designedly kept low, but which of the two systems has the greater number of advantages I cannot say as yet. Opposite the rows of washing compartments are a few power-driven wringers or hydro-extractors as they are grandiloquently called. At Marylebone these are under the charge of a special attendant, as they are driven at a very high speed. Behind these is a row of drying horses, one corresponding to each washing box, and these should be so placed that each horse can be seen by the occupant of the particular washing box to which it corresponds. The washer is then able to keep a watchful eye upon the drying horse to prevent theft by others. In some cases I believe the drying horse is attached to the washing compartment, but it is obvious that this can be done only at the expense of great space.

Royal Society of Painters in Water-colours.—At a recent meeting of this Society there were seventy candidates for the vacant Associateships. One only was elected.

"BUILDERS' JOURNAL" SHILLING FUND.

OUR offer of a copy of the current issue of "Specification," the invaluable reference book for all connected with the building trades, sold at 5s. nett, is still open to anyone who collects twenty shillings for our fund.

The following subscriptions have been received since the publication of our last list:—

Previously acknowledged...	2,074
Per J. W. Harrison, Rock Ferry, Cheshire:—	
J. Harrison	2½
T. McHugh	5
T. Duthie	5
W. G. Lea	2½
W. J. Lightfoot	1
J. Simpson	1
W. J. Lea, junr.	1
— Stephenson	1
W. Davies	1
M. Tobin	1
J. H. Richards	1
G. Williams	1
	23

Per Alfred Morton, Handsworth, Birmingham	1
G. F. Merriman, Worcester Park	28
W. W. Hind Smith	1
Proctor, Offerton	5
Per H. Dorse, Builder and Con- tractor, King Street, Cradley Heath, Staffordshire; col- lected from his workmen	20
Per Alfred H. Bunting, Dromfield, near Sheffield:—	

Mr. —	1
Mrs. —	1
A. Prestwich	1
"Nemo"	1
J. F.	1
D. Bunting	2
A. H. Bunting	1
T. P.	1
S. B.	1
Tom Margerrison	1
E. Broomhead	1
	12

Per W. A. Osborne, Old Street, St. Lukes, E.C. (3rd instal- ment):—	
Mrs. M. Wilson, Crickle- wood	5
R. A. Andreikovits, London	1
E. J. Marshall, London	1
Mrs. Rickinson, Redcar	1
W. H. Rickinson, Redcar	1
Edgar Richardson, Red- car	1
Mrs. Hyde, Portsmouth	1
J. Hyde, Portsmouth	1
Minnie George, Ports- mouth	1
J. Ashley, New Brighton	1
Mrs. Metcalf, Liverpool	1
J. G. Metcalf, Liverpool	1
Mrs. Osborne, London	2
W. A. Osborne, London	2
	20

A. B. and W. Scott Deakin, archi- tects and surveyors, Shrews- bury and Llandrindod Wells	21
R. Haddon, of Messrs. Parnell and Sons, contractors, Berks Asylum, Wallingford	20
Per Walter Yeo, Plymouth:—	
W. C. Causley	1
W. Yeo	1
Phil Saunders	1
Samuel Lobb	1
	4

B. S.	5
Per Colin E. Reader, West Ealing, W.:—	
C. E. R.	5
J. E. W.	10
E. F. R.	1
F. A. R.	1
R. T. W.	1
A. L. H.	1

R. F. G.	1
M. H.	1
A. G. W.	1
L.	1
	23
Total	2,257

The British Fire Prevention Committee has decided to put its Reading-room at No. 1, Waterloo-place, at the disposal of the Building Trades' Gift for a further term, so that all communications should, as before, go to the original address of the Gift. The Fire Prevention Committee was guided in giving these facilities by the fact that the primary movers in the scheme are practically all members of that body. Mr. T. F. Rider, honorary secretary of the Gift, calls particular attention to the great liberality of the asphalt trade, practically every firm working in London having applied to assist, either on the roofs, paths, damp course, or the like, and the work hence being offered many times over. The work will be distributed among the six donors who applied first, the other firms mostly changing their offers in kind to cash donations. Mr. Rider further announces that among the materials particularly required to complete the scheme are timber joinery, red facing bricks, cement, lime, and some iron roof trusses. Scarcely any timber has been presented.

Views and Reviews.

OUR ANCIENT CHURCHES.

The Romance of our Ancient Churches! What a name to conjure with! What a theme for poet or historian! How unique is the position in our national life held by these buildings! What a strange glamour surrounds them; how subtle and delicate a perfume of long-forgotten days, how faint and tremulous an echo of harmonies long played out!

"The Romance of our Ancient Churches," as a title appeals to the imagination. We expect much, we anticipate something very good, but in this case we do not find it. As a title to this book it is misleading—it leads to disappointment. Perhaps it is only natural that, not finding here what we were led to expect, we experience some difficulty in doing justice to this book. But, indeed, it does not appeal to us.

There is a large amount of material collected together—facts about churches and their surroundings; that this one has an isolated tower, that one a chained bible, and the other a rood loft; but there is little skill displayed in arranging it. The book strikes us as the disjointed, chatty, amiable production of an amateur—amateur as architect, as antiquarian, or as writer. It gives us the usual antiquarian information, mentions some of the still undecided problems, and tells us about all sorts of quaint things, frid-stools, dog whippers and dog tongs, aumbreys and acoustic vases, bone houses, and a Dutchman who "attracted notoriety on the weathercock." Occasionally we find an interlude of "fine" writing, pervaded with an atmosphere of gentle sentimentalism; but of romance—!

The book is illustrated by nearly 200 sketches and drawings which, we must say, hardly ever do justice to the subject matter. With the exception of the frontispiece, it would be difficult to pick out a single one that is more than just passable. The printing and paper are good, and the binding satisfactory.

There is no doubt that considerable time and labour must have been spent in collecting the information here given; we only wish the result had been better. We cannot say we think that this book will prove of service to the serious student. It would probably be more

acceptable as a birthday present for a country parson's daughter. There are some good things to be found in it, here and there, but the best—or the worst—is the title.

"The Romance of our Ancient Churches." By S. Wilson. Illustrated by Alexander Ansted. London: Archibald Constable and Co.

THE DUPLICATION OF DRAWINGS.

This little handbook is intended for the experimental amateur photographer and for engineers, architects and others who constantly need reproductions of their drawings and tracings. The theoretical element has been reduced to a minimum, and the book deals almost exclusively with a clear exposition of the various ferric and heliographic processes, the four chief of which are: Ferro-prussiate (white lines on a blue ground), Pellet (blue lines on a white ground), ferro-gallic (black lines on a white ground), and brown (white lines on a brown ground). The ferro-prussiate is one of the oldest printing processes (being used by Herschel in 1840) and has the merits of simplicity and cheapness, but objection has been taken by some draughtsmen to its blue ground. The Pellet paper (variously known as "Cyanofor," "Positive Ferrottype," "Cyanographic," etc.) is certainly the most rapid paper, though it needs more skilful handling and four baths in its production. Ferro-gallic paper is not so rapid as the Pellet variety, but is simpler in treatment, and its black line on a white ground makes it very popular with many; but, unlike the Pellet paper, this white ground is rarely pure. The brown or sepia process gains in favour on account of its adaptability for producing a number of positive copies from a negative intermediate (white line on brown ground), printed directly from the tracing. Kallitype, Obernetter, Uranotype, and other processes are dealt with, and an interesting account is given in Chapter IV. of Mr. Brewerton's method of utilising in tri-colour work the pure blue colour of the ferro-prussiate process. The Kallitype and Obernetter processes give dark, rich tones very easily, and, Mr. Brown remarks very wisely, "it is a mistaken policy to torture the blue ferro-prussiate image with chemical reagents, with the object of imitating these other processes." Mr. Oscar Bolle has suggested that, as the colour of blue prints is similar to that of the old Delft pictures, they may be used to make imitation tiles by mounting them on glass or wood and then coating them with size and varnish. The book explains the various apparatus used in the several processes enumerated, and can be recommended as a short practical treatise on the subject. It is fairly well illustrated, and includes some real examples of ferro-prussiate, ferro-gallic, and brown papers.

"Ferric and Heliographic Processes." By George E. Brown, F.I.C. London: Dawbarn and Ward, Ltd., 6, Farringdon Avenue. Price 2s. net.

Architectural Association of Ireland.—

On Wednesday last between twenty and thirty members of this association paid a visit to the Dolphins Barn Brickworks. The party was received by the directors, Messrs. Fox, Allen, Ward, and Doyle, who, with Mr. John Good, the managing director, and Mr. Milligan, works manager, personally conducted the members over the extensive works, and explained the latest methods of making bricks by machinery.

Ordnance Survey.—In the course of a paper on "Twelve Years' Work of the Ordnance Survey, from 1887 to 1899," read before the Royal Geographical Society, Sir John Farquharson said with regard to complaints of the slow production by the Ordnance Survey of its topographical maps, as compared with the rapid production by other countries, that the systems employed in this country and abroad were so different as to afford no ground for such comparisons. Foreign countries did not publish at all such maps as our 10ft. plans, or even those on the 25in. and 6in. scales, but only topographical maps analogous to our lin. maps.

ARCHITECTURAL ASSOCIATION.

THE DECORATION OF CHURCHES.

By H. C. CORLETTE.

A SPECIAL GENERAL MEETING of the Architectural Association took place last Friday evening, preliminary to the ordinary meeting, to receive several changes in the by-laws proposed by the committee. Mr. G. H. Fellowes Prynn, the president, was in the chair and put the proposals, which were carried unanimously. These are as follows:

To add the word "*Honorary*" before "*Secretaries*" in by-laws 17, 21, 25, 30, 32 (in two places), 43, 48, and 51; these alterations being necessary, as Mr. Driver has been appointed secretary by the committee instead of assistant secretary. By-law 38 to read "*half-a-crown*" instead of "*one shilling*." At the end of By-law 16 add: "Any ordinary member elected between January 1st and April 30th in any session shall pay a sum of half a guinea in lieu of one guinea as the subscription for the remainder of the then current session, in addition to the entrance fee of two guineas."

The ordinary general meeting was then held. The minutes of the last meeting having been read and confirmed, Messrs. G. Drysdale and O. R. Goodman were elected members of the Association. It was announced that Mr. H. C. Corlette had been reinstated a member. Mr. G. B. Carvill, hon. secretary, then announced the donation of twenty-seven models and casts of foliage, etc., made for work executed by the late William Burges, A.R.A., by Mr. John S. Chapple. On the motion of Mr. R. S. Balfour a vote of thanks was accorded to Messrs. Farmer and Brindley for allowing members to visit their premises on March 10th. Mr. H. C. Corlette then read his paper on "The Decoration of Churches," of which the following is a summary:

New ideas concerning decoration are most likely to be derived from the study of applications of ideas whose use and value has been proved by experiment. It is no more than to do in matters concerning design just as you do when you go for a walk—you lift your foot and take a step upon the encouragement derived from experience in locomotion; then you take another, but a different one, and so proceed. To do no more than read or hear about decoration, and not venture to try and do some yourselves, is absurd.

When I accepted the invitation to read a paper upon this subject I had little idea what this involved. A very little reflection was required to assure me that to deal with decoration under ordinary circumstances need present but few real difficulties; for it seemed merely to call for some statement of my own opinions and preferences. But to speak about the decoration of churches was to tread at once upon very debatable ground, invite hostility, pleasant enough in itself but productive of little if it contended merely for propositions involving religious conviction or taste which necessarily admit of little solution by argument. So it was advisable to find other grounds than taste alone and to make them the base from which to urge the desirability, in fact the need, of decoration in our churches. But as artists we are not very much of one mind concerning the principles involved in design and, unfortunately, as churchmen, under the present condition of things, our opinions largely differ upon points of detail, though I hope not so much where essentials are the question. But desiring to be courteous to your several points of view I decided to avoid, as far as possible, any questions which are better not discussed on occasions of this kind. So when it became apparent that there were distinctly two broad aspects from which to view the subject—aspects which cannot be separated—it was inevitable that the course of the paper should be devoted largely to a series of suggestions of principle which should attempt, first, to show the intimate, the necessary relation of these two sides. Then, as far as possible, the natural course to pursue was to deal with each of these two leading ideas in continuation, and briefly take notice of a

variety of matters in more detail. Let me now ask you to come with me to meet these general considerations.

What are the larger ideas we should adopt in determining the relation that we must maintain between one part of the decoration in a church and another? This idea resolves itself at once into two general aspects—the ecclesiastical and the architectural.

The first deals at once with the object of the decoration and with the subject it may represent. And these both may be satisfied by the choice of theme if figure work is possible, and the selection of appropriate symbols, whether they be chosen among those taken from animate or inanimate nature, or from the colours which themselves may speak much thought to those who have been taught to read what they may reveal.

Next, architecturally, we are led to think of the manner by which that object may best be realised and the subject be given appropriate expression in the field available. Our bare materials have been led on from their incorporate state after having been severed from their condition in nature to other realms of usefulness in our service by the exercise of man's skill. This skill has given them place in a building which is the result of thought, of design. The element of art has been introduced by that power of design, and to the capacities of will and mind are now to be added some expression of those of the imagination and affection. Without these, from mere technical ability, we cannot derive architecture, that union of the arts which so pre-eminently appeals to us through the avenues of our emotional and imaginative faculties. And it is in decoration by means of colour united with form that we add those beauties which are the complementaries to all the preceding ingenuity. Without decoration in some form we cannot be satisfied; it is the sign of life, of fruition, of satisfaction, everywhere in nature. After every wintry death there is always a revival of fuller beauties in the spring for which we look with anticipating hope and joy; but sombre gloom is derisive; it weighs heavily like a fog over the spirit of happiness for which we always crave and seek as a perpetual companion. Therefore give men decoration which is not dull, and you may help them to be fresh too, and bright, and full of sympathy by the example of those associations in the midst of which they find themselves continually.

We have been thinking of general considerations. And to these there must be some focus for all our ideas—some central point of interest, both ecclesiastically and architecturally, which shall be the ruling idea to which all others in the whole treatment shall be related. And it is only by keeping this principal idea constantly before us that we can effect a prevalent unity in the completed scheme. Is it necessary to state in what position this central thought shall be? Where is the most important part of the church ecclesiastically? Where is it architecturally? Is it not to be found in that portion of the choir which is known as the Sanctuary, the Sacramentary? The position of the altar, or call it Holy Table if you will, surely this indicates the place where all the ideas, the thoughts, the aims, the aspirations, the complete attention of both clergy and congregation should be concentrated! It is there that the most sacred part of Christian ceremonial is enacted. And it is within the immediate precincts of this spot that all the glory of art should be used to aid us in appreciating the sincerity, the sanctity and the beauty of ideal which is there principally represented. If you would require precedent for such a method have you far to seek? Go back to the beginning and see in the type of what the arrangement of a church should be, how the same order was observed. In the Jewish Tabernacle you have it all.

The three divisions of the Tabernacle were a presentment of many things. But for our present purpose they showed what was to be the general ecclesiastical arrangement of a Christian church. And in it we have known, from the earliest times, those separate but related parts, the nave, the choir or presby-

tery, and the sanctuary. It is necessary that our attention shall be confined to the principles of ecclesiastical decoration we may derive from this source, and these chiefly appear in the fact that the decorative treatment was carried from the Outer Court to the Holy and Most Holy Places as a progressive development moving upwards to a more perfect expression in strict relation to the same increase in the solemnity of the ceremonial.

By colour alone we may have thoughts suggested to us. In hues of gold we see typified the security and undeniable truth of ruling principles; in blue the lights brought down to earth by the prophetic capacities of a searching imagination exercised under due subjection; in the red of blood the food of life, the power of human reason in full and sympathetic exercise; and in the whiteness of purged silver the purity of unselfish affection. And you will find that these colours and these metals with brass, or copper as it probably was, are the colours so often specifically mentioned in the descriptions of the Mosaic Tabernacle. They all had their office, their set place, position and meaning.

The architectural design of a church is not a matter only of the inception and execution of aesthetic dreams. Architectural history necessarily covers a consideration of the causes of certain ideas as well as their execution as problems in structure, that is as works of building. In this aspect we are brought into immediate contact with what we may well consider the marvellous engineering skill of the mediævals; and this skill stood not alone in cold and unsympathetic isolation. It was not exercised, divorced from considerations of beauty; for the mechanical elements of design were inseparably wedded to the architectural, and the product of the union was seen in the issue. There were the two parents of one being always discernible in the composite whole. The power of the two found expression far more effective in combination. The one resulting work of art, or rather nature, for its production was an act of nature, was as a voicing of the powerful spontaneity of utterance which that language expressed by the beauty of silent form and colour. It was man's privilege to speak so in days when simplicity and sincerity of aim were more to him than self-grafted, forced and self-conscious art. The one work was architecture, the corporate expression of art as a unity. And the elements to be discovered in the composition of this effort towards a unanimity of expression are to be seen in each branch of human skill, of whatever kind, that was called in to offer its tribute to this aim. There was the practical, the structural, the scientific, the engineering side by which some forms of skill were expressed. They were the display of sound common-sense based upon careful observation of natural static laws, the qualities and properties of materials and the allotment of each in consequence to its proper place and function in the scheme. They were the expression primarily of man's will under the guidance of his reasoning, thinking, observing mind. But reason and will alone do not produce architecture, that is art, in its highest sense. They give us building and engineering purely, simply. The entire resources of man's being must be called in to aid if we are to see the manifestation of work which shall always appeal to the sympathies of other men. There must, therefore, besides the expression of his will and reason, also be afforded some scope for his imagination and his affections. We have as architects to grasp and act upon the knowledge that it is necessary before all things in art, to use our mind rather than our memory, our own observations, and not so much the catalogue in printed type or illustrated page with which the libraries are overflowing. Avoid the fret and waste of incessant labour among books and learn to be idle in order to think and dream. Go to the works in the library of nature. Creep about the mysterious piled walls of poetry and prose in stone and brick. Let us learn to design by the study of design not by the unweaving of theories of supposed laws derived from original interpretations of natural suggestions.

Let me now touch upon another aspect. It

is necessary that in decorating a church we should subject our scheme to some one ruling principle—one which shall enable us to keep always constantly in view the effect we may desire to produce. And by effect I do not mean merely an effect from the æsthetic point of view, but, without disregarding this, from that of a creative impression. By a creative impression we should understand that one result the whole produces upon the responsive spectator. You know well enough how externals affect the mind and whole being of anyone who finds himself confronted by them; and it is almost trite to say that we are expected by each opportunity to express by means of architecture those feelings which are most required by the end for which the work has been begun. And so, is it not necessary that we try first to make men feel by their surroundings that they are before a presence which should at once call forth a reverent attitude of mind? Let us, then, have a breath of reverence first amid all the beauties you may devise. With such an end in view, it will be necessary to avoid the theatrical, the striking, the bizarre element in all decoration that may be used.

It is not easy to arrange the various ways in which this subject may be approached architecturally—at least, not if you try to attack it by any orderly method. Under the first division of the subject I separated it into two leading aspects; and under the second of those—the architectural—there seem naturally to fall three sub-sections. Under the first of these we had better, perhaps, consider the treatment of simple structure decoratively; that is, by the use of such colour as may well be introduced in the necessary parts of the building. In the next, the application to that structure of a simple and partial scheme of decoration, adopting largely only conventional pattern design, or diaper, and such like ways of introducing what is required, and under this heading might also be included the use of colour, sparingly, in the windows, on the floors, the roofs, and in the furniture. Then we might permit ourselves to be more lavish and think of a complete scheme for a fully decorated church; but the two latter will probably lend themselves better to our purpose if they are not treated quite apart, but as merging the one into the other.

But how shall we decorate our churches? With what means, what materials, shall we set to work? The list of methods is almost without end. It may be of some use to survey the catalogues and venture any remark or suggestion that shall occur, and for convenience I shall give you heads and sub-divisions so that we may, to a certain extent, be methodical. Broadly we have to consider surfaces horizontal, vertical, on the slope and on the curve, such as for instance: 1. *Flooring*, and the things about the same level to be used as the furniture of a floor. 2. *Walls*, flat, or with arcades and windows, in light and shade. 3. *Roofs*, including wood, or stone vaults, domes, open timber work. 4. *Light*, natural and artificial. 5. *Furniture*, such as the font, seats, pulpit, organ, screens, altar, reredos, &c. 6. Specially decorated parts of the structure.

Let us take the floors first. The unredeemable hideousness of the present day encaustic tile with its bilious yellow art shade, its pinks and blues that stare with such effrontery—these are, as a rule, too terrible to think of. There is surely no reason why glazed tiles for a floor surface need be so grossly vulgar as they often are! But they are cheap; they may easily be procured; they satisfy the untrained taste of those who demand showy brilliance and cheap tawdriness in place of quiet ease of colour, and repose. They leap at you when they should lie prone upon the floor of which they should be a part, not a mere ruse to attract our eyes to the region of our boots. Above all things in treating a pavement let us endeavour to keep it where it is. Let it lie. Do not make it restless. Not too startling, like a thing ready to meet your gaze half-way. It may be very beautiful, but, at the same time, if coloured the colours should not wrestle with each other; they may be many, but in effect they should be one.

The flooring may be of wood. But as we

are thinking of the decoration that it is possible for us to get by a thoughtful method of dealing with it, it is not necessary to dwell at length upon the ordinary boarded floor, except to remark that if the woods were more easily available it would be possible to discover many a fine and quiet beauty in the various textures, the grain and the colour of several varieties of wood used simply as well set boards; they might be polished or not. Wood, too, is better in northern latitudes for this purpose, because it is not so cold as any form of flagging, or tiling; but in England we do not see the floors of our churches as they do across the Channel, for we are wedded to the formal, long, depressing line of fixed benches, or to ranks of deep chairs hustled together and screwed up to keep them quiet and in place. Perhaps in some respects it is well so, for order is truly better than noisy muddle, though the long, horizontal lines of bench certainly do not, usually, help the architectural treatment as a whole. Chairs are better, for they are more in sympathy with the prevailing lines of Gothic art. Let us accept, then, the fact that for the present the greater part of every nave floor is to be permanently hidden from view except we wait and study it in the dips between the edgy waves of wooden seats. Then what have we left us which may, without futility, be dealt with by design? There is the space about the west end. Large it should be; then there would be scope for your energy, and room for our feet, and we should not feel that commercial considerations had overruled those of decent order and dignity. There would be space for the font to stand free and unencumbered, so that it might speak what it may well say both by its use and the beauty of design in which it may have been conceived. It would not then be hustled into a corner, which it is made to seek as a resort, as if it were a thing of comparative insignificance. Give it place, and give it dignity. Let us show that by our treatment of it we know its use, and respect the purpose for which it is required.

There may be a porch or porches. And it seems reasonable to suggest, if these are to be paved with thoughts, that those thoughts should be related as introductions to those that shall be found within the inner doors.

We are still dealing with the first idea—the use of simple materials, and for a floor there are many such that are always available. The use of boards or wood blocks for the body of the church which is covered by the seating seems to be the suggestion offered by common-sense for a reason already stated, but in the aisles or passages, and for the choir and sanctuary floor something more interesting is required. It is not necessary to discuss tiles further, and the many patent flooring materials may speak for themselves to those who have experimented with them. Some are inoffensive enough, but many are rather trying in their dullness, so far as colour is concerned and lack interest otherwise. Plain stone flags, or a broad use of two or at most three different colours in any materials—either of these ideas can produce happy results; but there seems to be a common fault among us by which we too much incline to cut up the floor surface into little patches. We use too small a pattern, or without any pattern we divide the pieces into diminutive parts, which increase so largely the cost with no compensating effect. Quite the reverse. We derive this peculiar tendency no doubt from the influence which modern tiles have exerted upon us; it would be preferable to see the mistake made in the other direction where the floor is concerned, it would help us to be rid of the analytical, the too logical and mental view of things, and urge us to quit the habits of a fly and adopt by preference those of the eagle; we should be freer, more imaginative, more comprehensive, in looking at things then. It does not do in architecture, or in any work connected with it, to dwell too much on detail before a general idea has been conceived, so that some attempt may be made to work up to it. By following this method details would be kept in place and always

subject to the effectual combination of the several parts.

Any pavements in the body of the church are undoubtedly best kept in relation as a unity. There should be some kinship both in colour and design. They should not be dealt with in the different parts like separate families; each opposed in aim and idea to the other, and all the children pieces composing them quarrelling among themselves. Those, too, in the choir should bear some link in their design which binds them in their relations on two sides. First to the nave, and next to the sanctuary. It is consistent, too, with the principle evident in the design of the Jewish Tabernacle that we should increase the value, the beauty, the significance, and the rarity of our work as we approach the most important part of the whole undertaking; for the sanctuary should be architecturally, as it is liturgically, the most important centre of all our ideas. Therefore it follows that we may endeavour to express more thought by our work at this point, and, as a consequence, the work in the sanctuary should, in the same respect, differ from that in the choir.

Before quitting the subject of floors, it is natural that some reference should be made to the use of carpets or rugs, or both, in the sanctuary. These may be very beautiful accessories, but they may be—they often are—hideous excrescences when, as is so often the case, they are ill chosen, both for their pattern and colour.

If we are limited to the introduction of only so much decoration as can be obtained by the materials of the structure, and the means usually adopted for their preservation, such as painting or oiling the woodwork, we already are possessed of an ample opportunity. Say we were to use brick! Need all the bricks be the same colour? Need they be merely laid side by side, bed on bed, with no more thought than is required to set them truly in bond? Surely not! If you have decided to use brick for your walls, it is of course possible to use it throughout for the piers, arches, and windows, but may we not provide a welcome contrast by showing the brick in the mass, and plastering some of the detailed portions of the composition; or the idea might be reversed and the mass plastered, leaving the details to show the essential materials. And this use of plaster as a really beautiful material should commend itself more to our minds, if it has not already a very high place in them. Then again, are we limited to brick, or to brick in conjunction with plaster? Certainly not. Externally we may use any combination of materials which are able to make themselves offensive to the assaults of climate. But it is not my intention to deal particularly with the decoration of churches so much from this point of view, the internal treatment is quite sufficient for one paper, but naturally the exterior lends itself to other methods and is subject to the control of different principles from those which rule the consideration of interiors.

It is quite unnecessary to do more than remark that the use of stone allows us to adopt every variety of treatment for internal decoration. There is naturally a much larger choice in the selection of materials, for we are at liberty to use the softer as well as the harder stones without fear, and this provides an almost unlimited palette of structural colours. How and by what means they may be combined must be left to individual taste, but in using them we should never forget the value of texture, the quality and nature of the tooling adopted in finishing the surfaces, for it is upon this detail that the beauty of stonework so largely depends. A rough surface in the masses with a fine finish on details makes a great difference in the ultimate effect, even if only one stone of one colour is used throughout. Different stones of similar colour, or rather other shades of the same colour, produce wonderful results, and it is gratuitous to speak of combinations of dissimilar colours, for it is an obvious method by which we may gain what is required. Brick with stone dressings; stone with brick dressings; stone surfaces with plaster details, either white or coloured—preferably with the ground

chippings from the dressed stone—or plaster surfaces and stone dressings; these are all familiar ideas.

The roof or ceiling of a church, however simple the structure, may well be used as a means of obtaining much decorative effect. We are able to do this by various ways; the mere arrangement of necessary timber will do a great deal if it is done with thought, not merely by following the customary dulnesses of a puerile text book on what is called construction. If you do not show your wooden roof structure as a part of the design, but cover it up with a stone or brick vault, a plastered ceiling of brick, concrete, or wood, or a boarded one, much can be done with these. A stone vault with its moulded ribs should be beautiful in itself, even though the stone used be of the usual pale shades of cream or yellow. But need the ribs be the same colour, or even the same stone as the filling? And may we not sometimes use stronger, more positively coloured stones, for a vaulted roof? If the ribs are of a different stone, or a different colour, from the filling, at least the colour of them should merge into the ground of which they are the structural support, so that they do not unduly stand forward from it as assertive streaks. The same ideas apply to the use of bricks as stone, when we think of them from the decorator's point of view. A plastered inner ceiling, whatever be the support that carries it, may be dealt with in many ways, but it is sometimes a difficult material to deal with except we are satisfied with whitewash, which is truly most valuable. The great need, though, in using plaster, if we wish to finish the surface in a colour, over the whole area, is to find some satisfactory tempera medium. By satisfactory, I mean one that will not readily perish on new plaster. Or else we must perhaps seek the remedy in better plaster. If we succeeded in finding this it would be possible, without misgivings, to do some excellent, but simple colour work by finishing in blues, reds and yellows—or, rather, golds—instead of being so much restricted to the adoption of the safer white and cream washes. It would be an easy matter to paint the plaster, but tempera seems the more natural medium to use in colouring it, and it is less expensive in first cost, as well as for the labour and skill required to put it on.

With a boarded ceiling there is a wide field open to us; we can paint or distemper it at will with little fear of the results if the boards are, as they must be, thoroughly dry. I am inclined to think that we should largely discard the use of oil paint when we may, except as a preservative, where decoration is concerned; especially in cities, where oxidation rapidly alters its colours. I am referring more particularly to cases such as those we are at present considering, that is, where the only decoration we may introduce must be a part of the necessary finish to some simple work. One reason for my saying that we should avoid the too frequent use of oil paint as a finish is because tempera, if properly used in a safe position, is more permanent. It retains the original brilliance of its hues longer, and they possess a more beautiful and transparent quality, like the freshness of water-colours almost, when used as a ground to cover large surfaces; but for highly decorative work, and pictorial work which is part of some decorative scheme, let us use every medium, every means by which we may with most security and success obtain the end at which we aim.

The roof, the vault, or the ceiling of a church—call it what you will—affords one of the best opportunities for simple decoration in colour that we can find. There is no need to make it always white. There is never any excuse for permitting it to be varnished, though it may with advantage be stained if of wood. The beauty of gold, that is certain tones of yellow and orange, as a colour to be used as an open field of colour, all of us realise who have seen it in mosaic work. Blue, too, and red, the excellence of these we know as well, and the plain undecorated ground is often, perhaps, more satisfactory than one which shows more evidence of design in conventional forms applied to it. Reserve in the use of colour and design is often a means of

discovering better results than can be obtained by allowing ourselves a looser rein to fancy; it gives us breadth, simplicity, and dignity, as well as that much needed quality— repose. And if we can be sure of these in our efforts we have already secured that which is most to be desired. Restless, fretting, disturbing combinations should most certainly be avoided. Abjure everything in schemes for decoration, which is more an endeavour to show your own cleverness than to make the thing beautiful for its own sake. The best works of the past were surely produced more by unconscious than conscious efforts to do fine things. They were the spontaneous products of a natural capacity.

I have spoken about the walls of a church, but not of the windows in them. These seem naturally to suggest a few thoughts apart, for they introduce the important matter of light. And in this regard we have to think of two ways by which this essential property must be provided. By this I refer to natural and to artificial methods. With little internal decoration we can dispense with clear glass in windows to a large extent, and make the glass itself by its colour and design serve as an important feature in the decorative scheme, but if there is much colour and design on the walls and roof inside a church we require plenty of light by which to see it. This principle the Byzantines frankly recognised. Again, in southern latitudes, where the light is brilliant and strong, a little of it is sufficient for practical purposes, and it is therefore possible, in fact desirable, to use very deep hues of rich colour in windows where stained glass has been adopted. In northern climates, on the other hand, we cannot so well spare light, especially in smoky cities, so the tones of colour and the proportion of white to stained glass have to be studied carefully, always bearing this idea in mind.

Other factors in decoration are the position of windows, their height from the floor, their size, and their relation to the decoration, or decorated objects, within the building. The thought of prospect does not so very much matter, as the chief reason for the use of a window in a church is to admit so much light as is necessary under various circumstances. But aspect does matter a great deal, and especially is this so in hot climates; in these a large east window, unless it be a studded field of very deep toned gems of colour, is most unpractical. Suppose yourselves in the body of a church and looking eastwards. Over the altar and reredos there is a large, or even a small, window, designed strictly in accordance with the traditions of northern art; it is filled with clear glass, or, with the most hideous of all things, cathedral tinted glass; or with stained glass thin and weak in colour. If you can see the Sanctuary properly under such circumstances, and sit quietly without a positive feeling of irritation, you will be possessors of remarkable eyes. The most sensible, the most truly artistic thing to do would surely be to provide the actual light required by the use of side windows in the chancel, and to treat the east window, if any, as an integral part of the reredos, and to keep it in the same scale of colour tones if possible. This may not be an easy task where you are obliged to make translucent colours combine, in unity of composition, with others necessarily opaque. Obviously, too, in localities where plenty of light is always available the windows generally may well be smaller than where nature is not so prodigal. The height from the floor at which they will best serve their purpose is a somewhat troublesome question; each individual building calls for its own solution of the problem. The character, the type of architecture imposed by conditions, largely decides such a point, for in a small country church they would not be placed so high up in the walls as in a building designed for a town, since the building should always reflect the character of its surroundings within certain limits that I need not mention; the windows in a town church approach the sky in search of the light which cannot be so well secured at lower levels. Consequently we are led to consider our decorative attempts subject to these altering conditions. Shallow saucer domes like those,

say, at St. Mark's, Venice, are best lighted at their springing level, but deep egg domes are most effectively illuminated from the top after the manner of the Pantheon at Rome. The whole value of the dome of St. Paul's Cathedral as a decorative opportunity is lost, internally, because of its lack of an efficient eye, and where domes cannot receive a direct light by either of these methods they are likely to prove unhappy expedients so far as their decoration is concerned, though the difficulty may largely be overcome by allowing the windows near them to be filled with white or silver-toned glass.

It is necessary to attempt a few suggestions concerning the introduction of artificial light, and by artificial light I allude to that which is required to enable a congregation to see clearly. In dealing with artificial light several important things must be considered. The positions in which it shall be placed; the nature of the light available; its power; its colour; its height above the heads of the assembled people—these are the principal matters with which we should have to deal. And let us be careful to remember that artificial light may make or mar any decoration that is to be seen by its aid. If the fittings are bad you present a permanent defect to the building seen by daylight, so it is well that they should be carefully designed. There is a little room for improvement upon the vulgar common-place stock patterns always available, but the truth is that all these fittings, as well as other furniture, should be expressly designed and made for the building in which they are to serve. The lights should never be hung in a string down the centre of the nave; it ruins the architectural effect, it entirely destroys the dignity of the sanctuary, it blots out the altar and reredos, and it is not, practically, the most desirable position. For, further than those objections already stated, this method is not the most satisfactory way of equally distributing the rays. If there is an arcade, the happiest position for brackets is on the east side of each pier. This, to a certain extent, will light the building without our being compelled to see where the light comes from, especially if some form of reflector is used to throw the rays forward towards the centre, but if there are brackets on piers, or on side walls, it is necessary to keep the width of the nave, that is the distance across from point to point, within certain limits. Standards are sometimes adopted as a method of securing an equal distribution, but they are objectionable for reasons that will follow in considering the height at which the lights are best fixed. There is another course that may well be followed, and that is to use pendants; these, whether hung out from the walls, or directly from the roof, seem the least objectionable idea, for with them we can distribute the candle power as we will, and they may be regulated in height from the floor. A useful practical position for pendants is about in a line centering over the seating space on either side of the middle aisle; any decoration on the walls or roof is little obscured by the glare from them in such a situation.

Of the various kinds of artificial light now available two are most commonly used—electric light and gas. Of acetylene gas I cannot say anything, as it is only a new product comparatively. Candles and oil lamps as general illuminators do not now command very much respect for several reasons, so it will be sufficient to confine any further remarks to the two kinds at first mentioned. Electric light appeals to us all because of the many chances it gives of lighting a place beautifully as well as effectually. Its colour, though rather white and cold as a light, interferes but little with the colours in any decorative work, unlike the strong yellow of oil lamps which combines with and quite alters the hues in painted work. But I find from experience that the chilling feeling of electric light, always exaggerated by the use of white shades and reflectors, can be toned down so as to be quite like a lovely mellow ray of sunshine by using polished copper reflectors. One objection to the use of electric light is its piercing glare, but you can dispose

of this trouble by breaking up the rays, and by carefully selecting the situation and height of the lamps. One way to combine the use of copper reflectors with an effort to multiply the rays in a pendant is to put an inverted saucer-shaped reflector over the lamp, and from this to hang by slender chains a cut glass bowl, close up under the lamp, with the whole surface faceted so that it looks like a transparent cup of diamonds. In speaking of gas for the purpose in view my reference is to incandescent burners, and if these are used there is little to choose between it and electric light, so far as their relation to decoration is concerned. Gas is a slightly warmer-toned light than the other, but in candle power they are nearly equal.

There is another idea that we need to consider before quitting this immediate subject; it is, too, one which affects the whole character of a decorative scheme, and of an architectural composition, as much as the comfort or pleasure of any person who looks at these by artificial light, and it also helps to give dignity or suggest depression to everything that takes place in the building. And this is the level above the floor at which the lights are placed. Keep them too low and they will blind your eyes to all things else, and make the interior seem mean, small and circumscribed. Lift them well up at least 8 ft. above the average level of your eyes, and the building is transformed at once; it becomes open, capacious, free; it has an air of easy repose, and its size you apprehend because that which kept you in oblivion now teaches your open eyes to see.

In a church there are several objects necessary for its complete equipment. These we, as a rule, think of as the furniture. And if the person who has designed a building is not privileged also to design or select all the furniture that is required, he may at least hope that his opinion will be sought regarding it. Now what is there that we may speak of as the flesh, the mind, and the soul of architecture? Surely these are to be found in the mouldings, the carving, the colouring, and the furnishing! Is not decoration, then, in nature always the finish to perfect structure? Therefore let us first have sound and well-studied building, and let us design it, always bearing in mind that the bones are to be in time clothed with a covering beauty—a beauty which shall never hinder nor interfere with, but rather express and more fully interpret all that other beauty of which it is the completion. The various items of furniture are considered essentially ecclesiastically and architecturally; however, in neither sense can the building be considered complete unless colour has been introduced, and that not only upon such furniture. Mouldings and carving we can omit entirely, but not colour. It is of course inevitable that it should be there in a modified way because all materials possess it naturally, but it should be there by design as well as by occurrence.

The use of woven stuffs of all sorts in the decoration of churches is much in need of revival. I do not mean at all to say that this revival has not been tried. For it has, and in the still too few cases where the art of the weaver has again been introduced to serve the needs of the Church much interesting and beautiful work has been done. Now why may not this method of decorating churches be more used? It is a means by which permanent coloured work may be introduced, though it may, with some force, perhaps, be urged that equally good results can be obtained by methods which do not involve the exercise of so much highly skilled capacity. It need not be always so costly as it is now if its use became more general. And we are not obliged to use figure work in all tapestries. But I am inclined to think that such a material should be used rather sparingly, as a hanging, say, behind the font, as a panel in a reredos, or as a frontal for an altar. It would look very fine, too, as a curtaining round the walls of a sanctuary. By tapestry we should mean real tapestry, not the sham material of the wholesale furniture mart. And above all, in using it, we must insist on having good colour, real colour, not dark, morbid, heavy shades, not feeble tints, but bright, cheerful

tones taken from the tints of flowers, or jewels, or sunlit clouds. There may be uses, too, for other woven stuffs; those large curtains, hung in big folds with fine simple lines of curve, which are to be seen as a feature of many a western entrance in Italy are suggestions of what might be done even in England. Where we have most adopted a kind of curtain hanging in England is in the dossal and the wings or riddle hung behind an altar to take the place of any more elaborate work, such as a reredos. Many beautiful effects have been obtained by this method; it is a simple one, and need not be at all costly, and the number of materials that can be used for the purpose is almost unlimited. Curtains, too, may be used with fine effect if well hung, and well chosen for colour, in place of wood screens. There is one thing further—be very careful about the altar frontals. They become part of a decorative idea, and should therefore be designed in keeping with it. There is much room for improvement in embroidery, and each of us can help in this by watching over its production, from the making of the design and the choosing of grounds down to the selection of the kind and colour of the threads, silk or other, or the texture to be obtained by the character and direction of a stitch.

Again, there is the subject, a most important one it is too, which requires much forethought. What shall be the colour scheme in relation to lightness and darkness by which the impression or impressions at which we aim shall be produced. Shall it evoke a bright, cheery, and hearty response of delight in our surroundings? Shall it make us full of joy in the freshness of lovely beauties of colour and form, or must we submit to some sombre gloom full of suggestions of pessimistic distrust? Does the situation, does the climate, the intensity of light, or the soft mistiness of its suppression, permit us to use safely an abundance of bright or deep toned colours, or of whites or greys? For broad ground work we may select a large variety of tones of some few colours. A blue or a gold ground in mosaic work is the traditional course to follow. But in cities of the north we need develop other methods than those proved of so much value by southern experiment, and it seems natural to suggest that a white mosaic ground would be a useful one, especially for buildings in large towns where the light is rather feeble. The necessary warmth and brightness could be introduced in the decoration upon this ground.

These thoughts seem naturally to lead us forward so that we shall turn our attention to decoration as it may be used when applied as a partial scheme. This would mean that we should use very little figure work, but mostly conventional patterns, or moulded and carved work coloured. And they also introduce ideas of a comprehensive treatment of the whole building. Now I will take this part of the subject in a similar order to that observed before.

Windows, and the glass in them have always been most valuable as a means of decorating, or destroying, an ecclesiastical building. They can give us the most beautiful colour it is possible to get by any artificial medium. If stained glass is to be put into the windows we should fight hard against the prevailing custom of introducing into one's building a mixed collection of samples, good and bad, by a variety of designers. Let there be a unity of idea throughout the wholeseries connecting them together as subjects, as colour schemes, and in the general principle of their treatment as several related designs. It is quite possible to accomplish this, even though the first window may be inserted years before the series can be completed, but whatever is done, let the work be stained, not painted glass, and let the design be strictly decorative, strictly conventional, strong in line, flat, having no pictorial shading, and never a shadow.

All particular ideas, all special media, in one decorated building is relative, and the attempt of a general supervision should be to keep each designer in any craft in proper subjection to the one object of the whole scheme. If we are allowed to add applied decoration to the walls and arches let us keep the same

principle of unity always still in view, and this unity is possible best when we do not, as it were, riddle and worry all surfaces with something which calls for notice. To keep a common groundwork and to show plenty of it will help to give a continuity to the prevailing idea of your scheme; or else subdue the ground and connect the related parts with a covering pattern or diaper. The two methods combined aid each other. The restfulness of a plain field, either of white or in colour, with but little applied decoration, helps to counteract the restless activity of thought apparent in the intricacies of meandering scrolls, or the repetition of one idea in spotted diapers. This is but another way of saying take care of the value of your contrasts, as well as of the arrangement of lines, the contours of form, and the quality of colour. It is a pity we do not more realise to what extent we may well omit all moulding and carving if colour on the flat is taught to take the place of these, but it should take their place not as a hypocritical mimic that would savour of theatricism, but rather as a substitute frankly acknowledged in the methods by which it is introduced.

However we may decide to act in detail let us follow the principle already suggested and observe the uses of subjection and accentuation both in detail and in the general treatment. Above all, keep the unity of the two architectural and the three ecclesiastical parts of the building a patent fact, and at the same time let the beauty and value of the work in the chancel exceed that in the nave, and in the chancel concentrate your best efforts upon the treatment of the sanctuary as distinct from, though contiguous with, the choir. With regard to the roofs, ceilings, domes, or vaults, much that I have said concerning the walls applies to them, but as they are more removed from the ordinary eye-level they call for a large vigour and breadth of handling. Notice how clear, how definite and firm are the lines of design in the pattern work from St. Anastasia in Verona, St. Alban Abbey and Chichester Cathedral. In painted figure subjects the same simplicity and readable clearness—lucidity if you will—prevails. The theme may call for the representation of few or many figures, but never in good work is there a single unnecessary one introduced. The endeavour is rather to compress the thought by elimination than to expand it by overgrown profusion. In the mosaic schools of the East and of Italy it was the same. Consider the self-repression, for the sake of clearness, that is evident in the decoration of Sta. Sophia and St. Mark's. Frequently there are simple figures set alone upon the groundwork having little or no connection with each other in design; they depend for their relation upon the idea which their attitude, position, and grouping suggests. Be epigrammatic, speak a volume in a sentence, give a life's history in a sonnet—that is the aim and the attitude that literature suggests to design. And design requires before all things an exercise of repression, restraint, selection, and if it has not passed through the crush-mill of your own merciless criticism it will not stand the test of exposure to the views and tastes of other minds.

A vote of thanks was accorded to the lecturer on the proposition of Mr. J. D. Crace, seconded by Mr. Cole A. Adams.

East-End Housing.—The London County Council propose to clear three areas at Poplar at a cost of £16,000, displacing 269 inhabitants. One of the areas will be turned into a playground. A Home Office enquiry into the scheme was held last week.

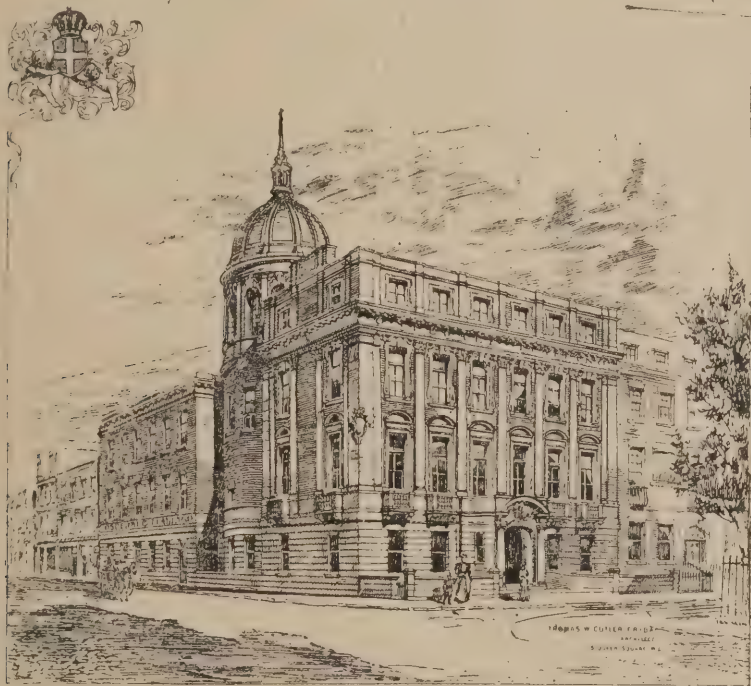
The National Gallery.—The report of the director (Sir Edward J. Poynter) on the National Gallery for 1899 has few acquisitions to record, for the purchase of two Rembrandts from Lord de Saumarez absorbed all the available funds. The price paid was £15,050. The hot-water pipes in some of the rooms which, by over-heating, endangered the preservation of the pictures, have been removed to the middle of the floor. As the result of successful experiments, the flaws are to have only a low polish in future.

Professional Practice.

Chester.—The case of *Jones v. Montgomery* was recently heard before Mr. Justice Bucknill and a jury at the Chester Assizes. It was an action by Mr. Arthur E. Jones, architect, Old Bank Buildings, Chester, to recover £207 odd as charges and commission in connection with the re-building of the King's Head Inn, Grosvenor Street, Chester, and the Grotto Inn (formerly known as the Harp and Crown), Bridge Street; the defendant being Mr. Thomas Montgomery, managing director of the Lion Brewery Company, Chester. The defendant not only denied liability but denied that he had instructed plaintiff to prepare the particular plans in question, and further counter-claimed damages because of plaintiff's alleged negligence and want of skill. The judge commenced to sum up, when one of the jurymen had a fit, which caused a painful scene in court. He was removed, and after some delay the parties agreed to take the verdict of the remaining eleven jurymen, and the judge proceeded. He pointed out that the real question at issue was not whether plaintiff was entitled to recover for work done, because the work had not been completed, but whether he was entitled to damages for being prevented from carrying

for 522 infants; on the second, accommodation is provided for 486 juniors; and on the uppermost floor a similar number of seniors can be accommodated—a total of 1,496. In addition to the cloakrooms at the south, west and east of the building, there are others on each landing. Part of the basement is to be used as a laundry and cookery room, and the remainder is taken up with apparatus for the heating and ventilating, which is on the propulsion system.

London.—We give on this page a perspective and first-floor plan of the enlarged Italian Hospital in Queen's Square, Bloomsbury, which was recently opened by the Italian Ambassador (Baron de Renzis di Montanaro). The hospital—which was founded in 1884, and rebuilt 1898-1900 on the same site, but enlarged by the addition of the adjoining house in Devonshire Street—was designed by Mr. T. W. Cutler, F.R.I.B.A. The building is in the style of the Italian Renaissance, with a handsome façade looking into Queen's Square built of red brick and Portland stone. It consists of three floors, and the front facing Devonshire Street is relieved by a dome covered with lead. As will be seen from the plan, the first floor is devoted to male patients, and consists of a large ward warmed and ventilated by open Galton stoves at each end, with the

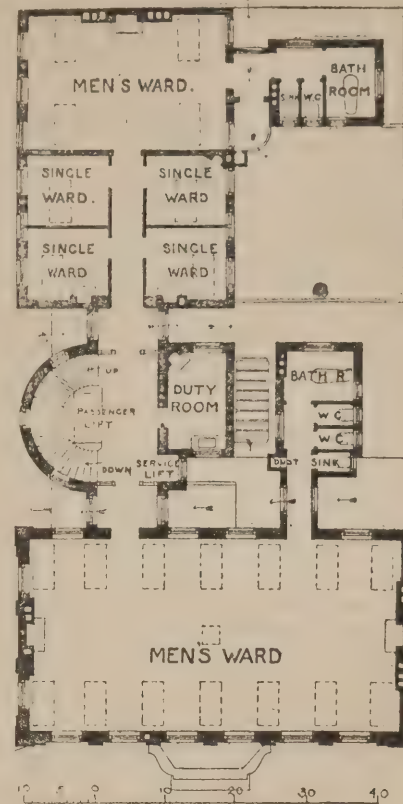


ITALIAN HOSPITAL, QUEEN SQUARE, LONDON, W.C. THOMAS W. CUTLER, F.R.I.B.A. ARCHITECT.

out work which he was engaged to do under the contract. The jury, after a short retirement, returned into court with a verdict for plaintiff on the full amount claimed—£207, less £71 9s. already paid to plaintiff.

Glasgow.—A new Board School has been erected in Dunard Street from designs by Messrs. H. B. W. Steel and Balfour, architects, Glasgow, at a cost (inclusive of the site) of about £27,000. When the Board purchased the site in Dunard Street, clay was being dug out and manufactured into bricks on the spot where the school now stands, and only a few years ago the district, which is now densely populated, was a grass field known as Sheepmount. When the Glasgow School Board began operations in 1873 the school accommodation was limited to 57,290 places, good, bad, and indifferent; whereas now there is fairly good accommodation in Glasgow schools, including those of the Roman Catholic Church, for 107,733 scholars. The new building is designed exteriorly in the classic style of architecture. It has three floors. On the first are five classrooms, with accommodation

addition of hot-water radiators designed to admit fresh air, which is then warmed and passed into the ward at a low velocity calculated to change the air in each ward three times an hour. There are no hollow linings to collect dirt and dust in the windows, which are so constructed as to allow the ward to be "air-swept." In the ceiling is a large exhaust ventilator for the removal of vitiated air. Admission of fresh air and displacement of foul air are obtained by fanlights hinged at the bottom to fall inwards. The floor is of English oak, tongued and grooved, waxed and polished, and the joints are caulked with mastic. There are no mouldings in any woodwork to accumulate dust, only rounded edges. The ward is lighted by thirty incandescent lamps of 16 candle-power each. In the Devonshire Street wing there is a ward of four beds for surgical cases and four single wards for special cases. The circular staircase is entirely detached from the wards by a cross-ventilated lobby on each side, so that no ward air can be carried from one floor to another. There are two detached sanitary blocks containing bathrooms, w.c.'s, and slop sinks, lined with white-glazed tiles to a height of



FIRST FLOOR PLAN.

ITALIAN HOSPITAL.

4ft. 6in. and lighted by electricity. All appliances are fixed clear above the floor, which can thus be readily cleaned. The wastes from sinks and lavatories run into a gutter in the floor, and the waste from baths (all movable) discharge into a sink let into the floor. The second floor is devoted to female patients, with a ward for eight, a smaller ward for four, two single wards, and a children's ward. Disconnected by a corridor, open to the air, is an isolation ward. Two outside unenclosed lifts are provided to ward floors for coals, dust, soiled linen, &c., to prevent their being carried through the building. The top floor is arranged for the nursing sisters. The chapel is on this floor and forms the finish to the top of the staircase; it is surmounted by the dome. One of the roofs is asphalted and used as an airing ground for patients, with a covered shelter fitted with seats. The staircase and floors are fire-resisting throughout the building; the ceilings are of expanded metal, suspended from an iron and concrete floor, with an air space between for the stoppage of sound or fire. The ground floor consists of entrance hall, rooms for the committee, house surgeon, operating room with accident ward adjoining. There is a patients' lift (7ft. by 3ft.) in the centre of the staircase. The out-patients' department is shut off from the hospital. The basement is devoted to the servants' department, with linen room, heating chamber, wash-house, post-mortem room, and a vaulted mortuary under the roadway.—New front blocks have been added to the Marylebone Workhouse. These face Marylebone Road and stand on the site of the original workhouse infirmary built in 1792. They comprise two double blocks, connected on the ground floor and basement by wards and workrooms, and on the upper floors by light fire-escape bridges. With the completion of a comparatively small block of buildings for able-bodied men, and the enlargement of the receiving wards, the workhouse will be fully re-constructed. The two new blocks are, with a small exception, exactly similar in arrangement. Cheerful airing-yards are provided both at the front and in the rear of the buildings, the former being laid out with gravelled paths and flower-beds, and the latter paved. The buildings have been erected from the designs and under the superintendence of Mr. Alfred Saxon Snell, at a cost of £52,000.

ITALIAN RENAISSANCE

DETAIL.*

BY G. A. T. MIDDLETON, A.R.I.B.A.,
M.S.A.

"NOWHERE did the exuberant fancy of the early Renaissance architects find such free play as in the enrichments of their buildings. Founding their designs mainly upon the scroll-work of ancient Rome, in low relief, they developed a treatment which, while of infinite variety, is always recognizable as that of their age and country. Sometimes formal, sometimes free, always conventional, always subdued sufficiently not to interfere with the general design which it decorates, it is uniformly pleasing. Panels and pilasters are freely ornamented with scrolls in which the acanthus is largely, but by no means exclusively used, other leaves and flowers being introduced, conventionally treated in a highly decorative way, to fill, but not to crowd, the space available."

Such was the judgment passed a few years ago, before Italy had been visited, based upon photographs, drawings, and casts, and upon the few small examples of original work to be found in South Kensington Museum. Since that time Italy has been visited with the express intention of studying closely the ornamental detail of the period of the architectural Renaissance *in situ*, and of making measured drawings of selected examples of it for publication in book form ("Architectural Details of the Italian Renaissance," by G. A. T. Middleton and R. W. Carden. London: Batsford); examples selected as much for variety of treatment as for their beauty; and a modification of judgment has been the natural result. But a moderate modification only has been necessary.

The original judgment, it will be noticed, was passed upon the earlier work only, it being acknowledged then, as it is more fully recognized now, that the detail of the later period of the Renaissance, in Italy as elsewhere, was wanting in imagination, in the underlying spirit of conception and design, though its grandeur and its suitability to the buildings which it serves to decorate could not possibly be appreciated till the buildings themselves had been seen. It was the scroll-work of the later rather than the earlier period, however, which was based upon the scroll-work of ancient Rome in any deliberate sense, as it was the buildings of the later period which more nearly followed Roman models. The earlier workers may have been influenced somewhat by the examples of ancient Roman craftsmanship around them, as they unquestionably used the ordinary Roman details, such as the leaf and dart enrichment; but they appear to have been also influenced by Byzantine tradition, and as this was itself based upon the Roman and its predecessor the Greek, we may almost be justified in recognizing a continuity of classic tradition, so that the early Renaissance, so far as its ornament was concerned at any rate, was a native descendant and true revival of the classic spirit as opposed to the copyism of the classic letter which came later on. The tradition had in fact been kept alive in the treatment of the goldsmith's work if not in architectural carving, being modified to suit the material in which the goldsmiths wrought; and, as has been pointed out by Mr. W. J. Anderson in the book which he published some four years ago ("The Architecture of the Renaissance in Italy," London: Batsford), the enrichments of the earlier Renaissance buildings were such as would be designed by jewellers rather than by marble masons.

It has become customary of late to consider the Renaissance architecture of Italy territorially as of three great types, Florentine, Roman, and Venetian, each with its own broad distinctive characteristics, this division being accounted for alike by geographical and

political considerations, and explained in a masterly manner by Mr. Anderson; but it seems to be hardly possible to differentiate territorially in the same broad way about the ornamental details. In Florence, in Rome, and in Venice, to say nothing of the smaller towns, there is the same low relief carving inspired by designers in embossed, engraved, and jewelled metal work, the local differences being of a comparatively minor character and generally due either to some peculiarity in the available material in which the work had to be executed, or to the idiosyncrasy of some particular designer. Thus, speaking generally, the intention seems in all cases to have been to fill the space to be occupied with ornament in a manner which should not obtrude itself or detract from the general design of the building or feature which it decorated, while giving an impression of surface texture when viewed from a distance, and while being also most pleasing in itself when inspected closely. Covering the whole space well, and raised upon a flat background, the carved decoration generally takes the form of leaves and flowers, with animals and birds occasionally interspersed, joined together by fine filaments in even lower relief than the principal masses, and all arranged in the form of graceful scrolls. In vertical panels and pilaster strips there is frequently a central stem rising from a vase, the pattern being symmetrical, but this treatment is by no means universal. As a rule, the face of the panel is sunk, and the relief of the ornamentation rarely exceeds the depth of the sinking—though this remark does not apply to frieze and tomb enrichments, which are rarely sunk within panels; but even within these limits there is considerable undercutting to give the necessary depth of shadow, this being practicable in so hard a material as white marble, which is almost invariably the material used.

Another instance of the influence of the goldsmith is to be found in the frequent introduction along the central stems of vertical panels, of vases and cups, themselves enriched with bead and leaf ornamentation. Superficially similar to this, but essentially different in reality, is the copyism in stone of turned and carved work in high relief, such as is suitable in woodwork—a style of ornament which is comparatively rare in Italy, but of which South Kensington Museum contains a fine example in a doorway from a palace at Genoa, which is of considerable importance, as upon it is based a good deal of the earlier Renaissance carving of France and Belgium.

The presence of scroll-work ornament based upon either the acanthus or the anthemion is comparatively rare in the earlier work, though common in that of the unimaginative later period, when the leaves are generally found to be conjoined, delicacy giving way to richness and to gradually increasing obtuseness. In place of these motifs, of classic origin, are found representations of natural fruit, the olive and the grape predominating, of natural flowers such as the poppy, of cereals such as wheat and barley, and of leaves such as those of the oak and vine. Birds are introduced with tolerable frequency, usually differing but slightly from the natural form; but, speaking generally, when dealing with animate life the grotesque is much more common than the natural treatment. When used as sculpture, the human figure is correctly rendered, but when employed in conjunction with scroll-work considerable anatomical liberties are taken for the sake of decorative treatment, and very beautiful, as a rule, is the result. Beauty, however, may hardly be said to be characteristic of the numerous dolphins and dragons with which the fertile imagination of the craftsman would often enrich his composition to its great advantage as a whole.

It may be noticed at this point that the dolphin and the scallop shell are found as enrichments in inland as well as seaside towns. Indeed the only enrichment which appears to be confined almost entirely to one locality is the winged cupid's head, which is frequently seen in Rome and but rarely elsewhere; while the comparative coarseness of much of the

detail in Bologna is mainly due to the use there of terra-cotta in place of marble.

Besides the low relief decoration, of which there is a very large amount, there is also a smaller proportion of incised and inlaid work. The inlay affected for external decoration appears to be metallic lead, which has a very good effect indeed against the white marble in which it is set; while a black composition is frequently used in a similar way where it is under cover. Whichever be employed, the pattern is almost invariably a repeating one, based upon a leaf of some kind, and the band of enrichment narrow.

The mouldings, whether of cornices, door jambs, panels, or anything else, come as a revelation to one who has hitherto studied from books alone and has been inclined to think that the Italian Renaissance, in this respect at least, was bound within the strict traditions of the Orders. So it may have been a hundred years or so later than the period which we are now considering; but the fertile artists of the early period disdained to be bound by hard and fast rules—or probably were unacquainted with them—and evolved or developed just such mouldings as would give the effect they wished to the executed work. It must be admitted at once that, when drawn upon paper, the contours are not always pleasing; but then the mouldings were not intended to be seen in contour. Here more than anywhere else has the general idea of Italian work been wrong, that being most generally commended which has conformed most closely to the "Orders" as laid down by Chambers and Vignola, whereas that is the least commendable, the least original, the least adaptable to varied circumstances. It is not too much to say that the art of mouldings, as understood by the workers of the early school of the Italian Renaissance, needs to be releant, and that from the craftsman's and not from the draughtsman's standpoint.

In the enrichment of mouldings, however, classic forms were closely followed. The egg and dart, the egg and tongue, the leaf and tongue, the bead and fillet and the dentil, all recur again and again, often varied in some small particular, it is true, but also often of almost Roman purity—evidence that, given certain mouldings, such as the ovolo and cyma, the Greeks and Romans had evolved the most satisfactory enrichment for them, and that this fact was insensibly admitted by their successors of the Renaissance, to whom they had been handed down with scarcely a break of continuity.

In point of decorative importance the metal work of Italy does not rank much behind the carving, if at all. Of the cast bronze work it is not necessary to say much, as the principal examples, such as the gates to Sansovino's Loggia and the well-heads in the courtyard of the Doge's Palace, both at Venice, are well known and universally admired for the marvellous workmanship they display as well as for their beauty, in spite of the redundancy of ill-connected ornament. But of the wrought-iron work it is different, inasmuch as there is a great deal of it of which but little has been illustrated, while the collections at the Birmingham and the South Kensington Museums are by no means so well known as they deserve to be. And this iron is remarkably well worth studying, differing in some important respects from the ironwork of other countries and of other dates, and from that of Italy itself in the later period. In this it follows much the same course as does the carving, the earlier being the more original, instinct with inspiration, and the later conforming more to ordinarily accepted precepts and comparatively tame even when beautiful. After careful consideration, and recognizing the origin of the earlier carved detail, one is irresistibly driven to the conclusion that the source of the patterns of the early ironwork is to be found in the twisted wire ornaments of the goldsmith, so very much of it being the natural outcome of the use of the pliers and the pincers rather than the hammer. Much of it is of great intricacy and curiously unconstructional, and yet of a character such

*A paper read before the Society of Architects on March 22nd, 1900.

as would be perfectly permissible, aesthetically speaking, if executed in wire and on a much smaller scale.

Of the Renaissance enrichments generally, and particularly those of the period now mainly under consideration, it has been said that they are liable to be degraded—to be used as patterns for mere embroidery. As to whether this be degradation there may very well be two opinions, for a well-designed home should be furnished with well-designed accessories, and the result of using designs based on good models would be more likely to elevate the accessories than to debase the models; but whatever may be said upon this point it cannot be questioned that these enrichments embellish the buildings to which they are applied most suitably, most unobtrusively, and altogether admirably.

Builders' Notes.

The Builders' Clerks' Benevolent Institution held its twenty-second annual dinner at the Holborn Restaurant on March 20th, when the president (Mr. Henry Holloway) occupied the chair.

Cartwright Memorial Hall, Bradford.—Messrs. Simpson and Allen, the architects of this building, desire not to have the design interfered with and it has been decided to respect this wish. If the full design and details meet with Lord Masham's approval, a special meeting of the City Council will be called to deal with the financial part of the scheme; for it will be remembered that the tenders considerably exceed the amount offered by Lord Masham for the memorial. It is expected that the foundation stone will be laid in May.

New Building By-laws for Cardiff.—For more than twenty years the Cardiff Corporation has been endeavouring to obtain the assent of the Local Government Board to certain street and building by-laws which they were desirous of adopting. Probably in the early stages of their work the municipality was looked upon as a revolutionary one—they wanted it enacted that every new street should be at least 40ft. wide, besides a hundred and one more advanced improvements. Year by year the marginal objections have become less, and now they have been sanctioned.

The Yarmouth Amalgamated Society of Carpenters and Joiners held its annual dinner recently, when Mr. Councillor Beech presided. Mr. Chasteney gave "Success to the Building Trade," observing that since their last meeting their chairman had fought another municipal election and was returned as the builders' representative at the head of the poll. Mr. Beech, responding, said he had it on excellent authority that the Midland and Great Northern Railway were contemplating building a new station at Yarmouth, which would cost £200,000. They were also going to erect a large hotel, with 200 bedrooms, and required more land, if the Corporation were willing to dispose of it.

Apportioned Cost of Public Street Works.—The appeal case of *Stock v. Meakin*, heard before the Court of Appeal on February 27th and March 5th, raised a question of some interest and importance under the Private Street Works Act of 1892, namely, whether the sum finally apportioned as payable by the owner of premises fronting a street, in respect of works (such as sewers) executed in the street by the local authority, becomes a charge upon the premises as from the date of the completion of the works, or only as from the date of the final apportionment of the expenses of the works among the various owners of premises abutting on the street. Lord Justice Vaughan Williams, delivering the judgment of the Court on March 19th, dismissed the appeal.

Building at South Kirkby, Wakefield.—The South Kirby Colliery Company are about to erect 134 houses in the district of White

Apron Street. They are to be formed into streets, properly drained, flagged, and macadamised, and many of them will be provided with three bedrooms and kitchen garden, as well as the other conveniences attached to an ordinary working-man's house. They will be under the authority of the Hemsworth District Council and will have a good supply of the Barnsley water. It is intended to erect a large store in the centre. The execution of this scheme is in the hands of Messrs. Garside and Pennington, architects, of Pontefract, Castleford, and Selby. The same company have land in Mill Lane, South Kirkby, upon which another sixty or seventy houses are shortly to be built.

The Strand Improvement.—At the Surveyors' Institution, Westminster, on Thursday last, Mr. J. Green (Weatherall and Green), the valuer appointed by the Local Government Board, held a preliminary enquiry to determine the value of the property of the betterment area in the scheme of the Holborn and Strand improvement. The case of the leaseholders was first considered, and Mr. Green stated he was instructed for the purpose of that valuation to value (1) the site value of the property, (2) the value of the land and buildings as a whole, (3) the interest of the owner, and (4) the interest of the leaseholder, whose lease at the time of the valuation had twenty-one years to run. He decided that the holders of leases expiring within twenty-one years had no *locus standi*. The majority of the cases had been settled on terms agreed upon with Mr. A. D. Young, the valuer of the Council. The sitting was adjourned.

London County Council.—At the meeting held on Tuesday in last week, the Local Government and Taxation Committee submitted some new by-laws: (1) imposing a penalty not exceeding £5 on employers who do not provide sufficient support to prevent their servants falling off sills when standing on them for the purpose of cleaning or painting windows, when the sills were more than 6ft. from the ground; (2) imposing a penalty not exceeding £1 on the servants themselves for the same offence; (3) prohibiting the use of street flash-lights and night signs, and imposing a penalty not exceeding £5 in case of default; and (4) imposing a similar fine for indecency in the street. These by-laws were approved. The Parliamentary Committee recommended that they should be authorised to insert in the Council's Improvement Bill a clause to provide that the land between the embankment and the Millbank Street to be formed in connection with the Westminster improvement should be laid out as a garden. This was agreed to after some discussion. Tenders amounting to about £107,000 were accepted for the erection of ten blocks of dwellings on the cleared area at Millbank. This will effect a saving of £11,000 on the architect's original estimate of £118,000. The Council decided to instruct the chemist to continue the analysis of the water from the Thames and Lea above the companies' intakes, and of the water drawn from the companies' mains for a further period of six months, and approved the allocation of the sites for the reinstatement on the western plot between the new crescent road and the Strand of the Gaiety Theatre, Gaiety Restaurant, and Messrs. Short's premises, such sites to have an area of about 12,860, 10,450, and 2,100 sq. ft. respectively.

Trades Unions' Dispute: Slander.—A trades union slander case was heard last week at the West Riding Assizes, held at Leeds, before Mr. Justice Bigham. The plaintiffs were five officials of the Leeds centre of the Federated Builders' Labourers' Union, and the defendant was George Belt, the organiser of the Independent Labour Party at Hull. The slander was that at a meeting held on November 1st, at York, the defendant suggested that various moneys sent from Hull through York to Leeds had not been accounted for. Defendant was stated to have said that the accounts were "cooked" at Leeds, and that the plaintiffs had mistaken their vocation, that they were "Jabez Balfours" and ought to be floating bogus companies.—For the defence it was argued that the

occasion was privileged, but his Lordship, holding that the meeting was public, ruled otherwise.—Mr. Scott Fox (for the defendant) then said it was a case which had a very important bearing on the interests of working men throughout the kingdom. In Yorkshire, at the time in question, Leeds had become a dominating power, and York had been for some time rebelling against this. In July, 1899, York started a branch of its own, which the Leeds members did not like. The learned counsel contended that defendant was entitled to comment on the proceedings at the meeting, and suggested that at such meetings there was invariably some vigorous language used.—The jury, after retiring, found a verdict for plaintiffs, with damages one farthing.—His Lordship, in entering judgment, said when a jury returned a verdict with one farthing damages he regarded it as an opinion that the action ought not to have been brought. Accordingly, he should deprive the plaintiffs of costs.

Electric Wiring: an Interesting Case.—The case of *Moody Brothers v. Henley and Co.* was heard before Mr. Justice Ridley and a jury, in the Queen's Bench Division, on Thursday last. This was an action brought by electrical engineers to recover £315 11s. 3d., their charges for an installation of electric lamps and fittings and a dynamo in the defendants' premises. The defendants, who are photographers and colour printers and have premises at Epsom, claimed to set off against the amount claimed damages for the destruction of a building and its contents by fire owing, as it was alleged, to the defective manner in which the installation was carried out. The premises consisted of the main building, or factory, and a building 60 yds. or 70 yds. distant from the main building, containing a studio and a dark room. This was the building which was burnt down. The dark room was constructed of wood and the studio partly of wood and partly of glass. The two rooms were separated by a partition of matchboarding. The dynamo was placed in the main building and a cable was laid to the studio, where there was, among other lamps, an arc projector lamp capable of giving a light of 25,000 candle-power. The cable passed through the floor of the studio and resistance coils were fixed on to the matchboard partition at a distance of 4in. from the matchboard, separated from it by a piece of asbestos. The projector lamp and its fittings were supplied in September, and the fire took place on October 3rd. Professor Boys and other expert witnesses were called, who stated that the installation was, in their opinion, defective because (1) there was no metal guard round the resistance coils; (2) these coils were placed at a distance of less than 10in. from an inflammable material; (3) there was no double pole switch at the dynamo by which the current could be completely shut off from the studio building; and (4) fuses ought to have been placed at the junction of the cable and the wires of the projector lamp. Mr. Witt, on behalf of the plaintiffs, suggested that, if the cause of the fire was connected with the electrical apparatus at all, it was due to the interference with the apparatus by some person after it had been tested by Mr. Moody and Mr. Heron. Mr. H. N. Moody said there was no brick or stone wall in the studio, so that he was obliged to fix the resistance coils to the wooden partition. The air space of 4in. was sufficient, taking into consideration that the lamp was protected by a sheet of asbestos. The lamp was one of Crompton's. The base of it took the shape of a tray sufficient to prevent any pieces that might be detached from the carbons from falling on to the floor. The following questions were put to the jury to which the answers are appended: Was the fire due to the action of the electrical apparatus? Answer.—"Yes." If so, was the apparatus constructed in an improper or unskilful manner? Answer.—"No." The jury added that in their opinion the fire was due to some interference with the apparatus after the departure of Mr. Moody and his partner.—Judgment was entered on this finding for the plaintiffs, a stay of execution being granted pending an appeal.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Roofing Tiles.

LONDON, E.C.—L. O. and Co. write: "Who are the manufacturers of the 'Longport' and 'Victoria' roofing tiles? Is there a book of reference giving information as to the names of manufacturers of goods specified by name or brand?"

Messrs. Boulton and Co., Midland Tileries, Longport, make the "Longport" roofing tiles. We cannot trace the makers of "Victoria" tiles. We do not know of any book giving the names of manufacturers of goods specified by name or brand. Lockwood's or Laxton's "Price Book" might be of use; either can be had from B. T. Batsford, 94, High Holborn, W.C., price 3s. 4d. each

Legal Books for Architects.

ARMAGH.—H. C. P. writes: "I should be glad to know the price of the following books, and where I can obtain them:—'The Architect's Legal Handbook,' 'Hudson on Building Contracts,' 'The Specific Performance of Contracts.'"

"The Architect's Legal Handbook" is now quite obsolete, and has been out of print for some two or three years. "Hudson on Building Contracts" will cost £2 5s. nett, and may be obtained from B. T. Batsford, 94, High Holborn, W.C. "The Specific Performance of Contracts" is published by Sweet and Maxwell, 3, Chancery Lane, W.C., at 5s. nett.

Measuring Mouldings.

HEREFORD.—H. S. writes: "In measuring and making surveys of old churches I find a difficulty in taking the correct forms and measuring the outlines of the mouldings to caps, bases, &c., of columns. I should like to know the best method of doing this."

When the mouldings are not too undercut, the best method of obtaining accurate drawings of them is to get a strip of lead about $\frac{1}{2}$ in. wide (any plumber will cut this for you) and carefully press it into the curves and hollows of the mouldings. When this is done the lead strip may be laid upon a sheet of paper, and with a pencil follow the shape of it, which will accurately give you the form required. Great care, however, must be taken that the lead is not bent in removing it.

H. F. W.

Alternating Gear for Charging Sewage Filters.

PARSONSTOWN.—OAR writes: "I should be glad to know the names and addresses of firms who manufacture self-acting alternating gear for charging filters in connection with a septic tank. The installation is for a workhouse with a maximum number of inmates of 500, and simplicity in working is most essential."

Messrs. Cameron, Commin and Martin, 7 and 8, Bedford Circus, Exeter, are patentees and manufacturers of alternating gear for charging filters in connection with a septic tank, suitable for both country houses and towns. Messrs. Adams and Co., 7, Old Queen Street, Westminster, London, S.W., are also patentees and manufacturers of self-acting alternating gear for sewage tanks and filters, together with other necessary fittings required in connection with biological sewage purification.

T. E. C.

Draining a Cow-shed.

STOURBRIDGE.—SURVEYOR writes: "Which is the best way of draining a cow-shed? In a case under my charge the liquid manure settles in the pipes, which are continually

stopping up. There is a gully fixed outside the cow-shed, on to which a pipe running under the stalls to the back of the cows delivers. I am told that the drain ($\frac{1}{2}$ in.) from the gully has a fall to the pipe of nearly $\frac{1}{2}$ in."

The drainage arrangements mentioned require reconstruction. No traps, gulleys or underground drains should be permitted in a cow-shed, all urine and other refuse liquids being removed to the outside of the building by means of surface channels. The floor and channels can then be thoroughly cleaned by hand, and the whole maintained in a satisfactory condition. The best method of draining a cow-shed is to provide a granite concrete floor, carefully laid to proper falls and having a shallow channel at the rear of the stalls, which should be carried through the external wall so as to discharge over a trapped gully outside. The gully should be of the type known as a "stable" gully, and provided with a perforated catch-basket immediately under the surface grating to retain any straw or other solids, instead of allowing them to pass into the drain. Several well-known firms of concrete workers make a speciality of paving and surface channelling for cow-houses, and it is in every way desirable to have such work executed by them.

T. E. C.

Valuing Building Stock.

LITTLEHAMPTON.—INCOME TAX writes: "In preparing a general balance sheet of liabilities and assets, should stock be valued at market price or not?"

The value of your building stock must be put down at that which it is worth to you, and, consequently, it varies to a certain extent with the market price; but no one could be expected to place his stock at the market value on a day of any sudden fluctuation. If a man possesses that business acuteness to habitually purchase at the cheapest market and in the most favourable season, it would be wrong, of course, to put a value on these goods applicable to the possibly highest market another time. Moreover, a certain allowance must always be made for various considerations, including expense and waste consequent upon marketing, &c.; and the more general figure for adoption in such a case as your own for the purpose stated in your former query (see page 116 of last week's issue) is about 20 per cent. below market price.

C. BRAND.

Adjoining Owners.

LONDON, E.C.—F. D. writes: "I have had some plans for offices and warehouse disapproved by an Urban District Council, solely on account of the adjoining owner on the north side withholding his consent (the Council requesting me to obtain his consent) to my coming forward to the building line, already fixed by the adjoining owner on the south side. The adjoining owner on the north side seeing his opportunity, and evidently knowing the Council will not approve the plans without his consent first being obtained, asks of the building owner practically £400 for his consent; and to this impudent demand the building owner will not agree. Notwithstanding these facts, which have been put before them, the Council still disapprove the plans, though they admit these comply with their by-laws in every other respect. (1) Can I go to an appeal court? (2) If I build without the Council's approval, can they pull down such new work as may have been built, or can they only withhold their final certificate at completion? (3) Assuming I do not build a building, can I build a 10ft. high division wall between my client's property and the adjoining owner's property without asking the Council's approval?"

(1) You have no remedy except an action at law, and there appears to be no ground for that. (2) Under section 156 of the Public Health Act, 1875, the building cannot be brought forward beyond the front of the building on either side without the written consent of the urban authority, who can, under section 158, pull down any work so built without such consent. (3) Probably you could do so, but it depends upon what the by-laws are.

G. H. B.

Under Discussion.

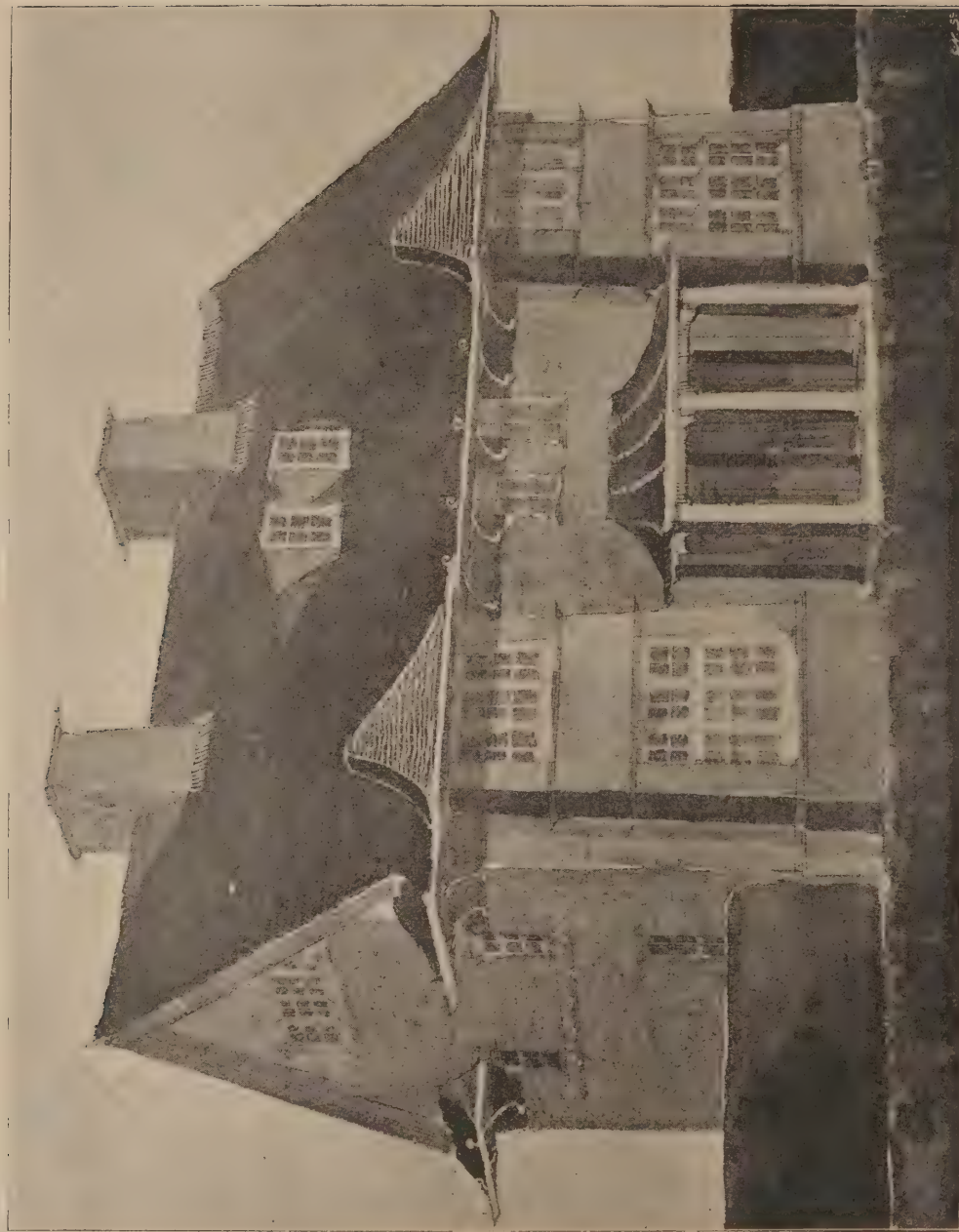
Mediaeval Tithe Barns.

At the concluding meeting of the session of the Birmingham Archaeological Society on March 21st, Mr. F. B. Andrews, A.R.I.B.A., read a paper on "Mediaeval Tithe Barns." He stated that the English monastic barns might doubtless be traced to the Roman nubilarium, which was a roofed structure, partly enclosed at the sides, to receive and protect crops from the weather. As the land was developed they increased in number and size, and these buildings received not only tithe payments but rental payments. It was only in later days that they came to be known under the general name of tithe barns. Some were of enormous extent, that attached to Beaulieu Abbey (Hants) enclosing a floor space of no less than 7,000 sq. ft., while on the Continent there were some of even greater dimensions. Each monastery and religious house had its chief barn, and smaller barns were attached to every parish. Mr. Andrews gave information relating to many barns which still existed in Worcestershire, Gloucestershire, and other parts of the country, the lecture being illustrated by lantern slides.

American Workshops.

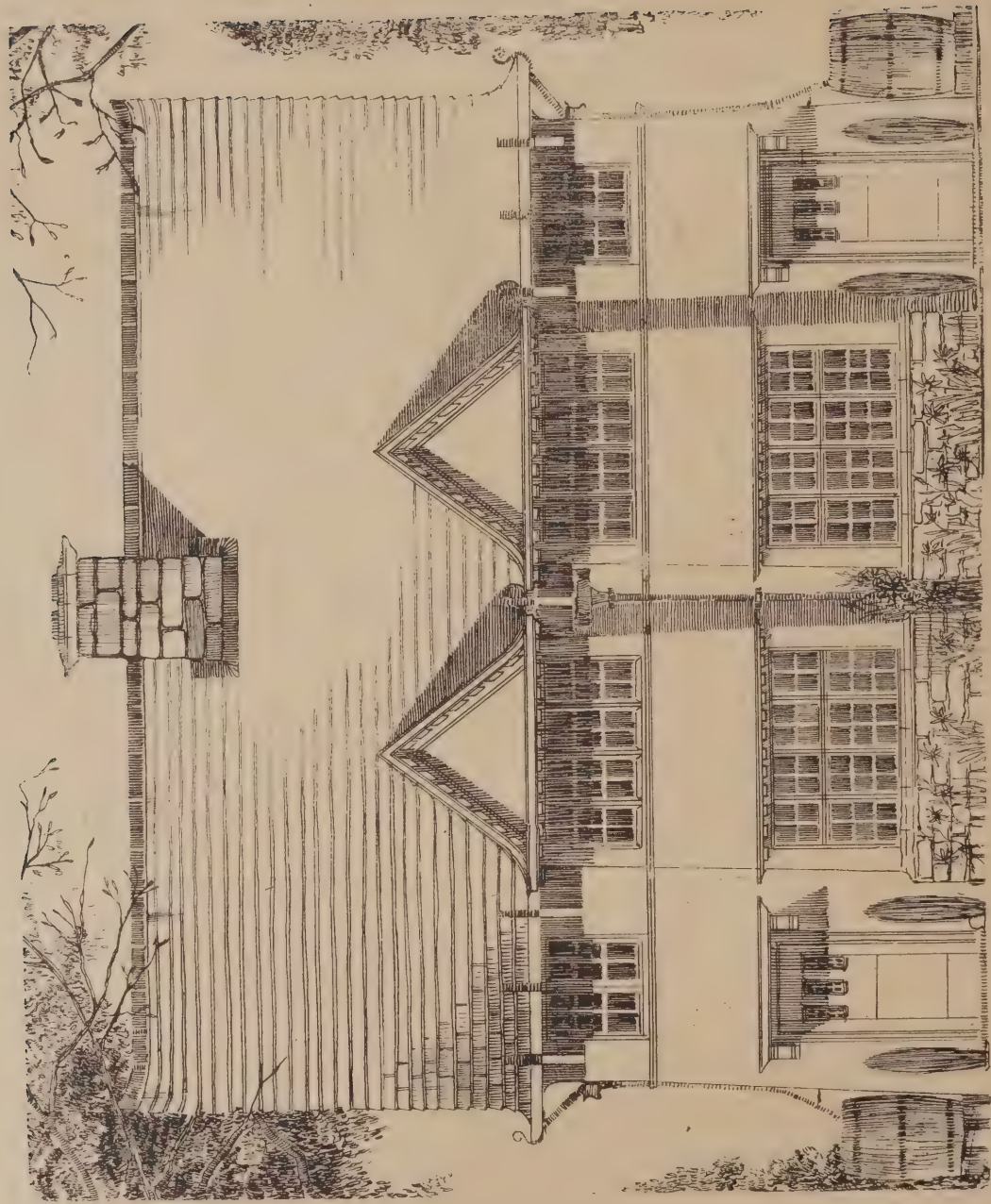
Mr. H. S. Jefferies, a vice-president, read a paper on American workshops before a recent meeting of the Ipswich Engineering Society founded on a visit he paid to the States about two-and-a-half years ago. He said: Generally, all the works throughout struck me as being extremely light, airy, and cleanly kept. Nearly all the large works are provided with washing-rooms for the workmen. These are as a rule large rooms at the works entrance fitted with troughs which are filled with warm water just before the men finish work. Most American shops are extremely well served with electric overhead cranes, varying from five tons to 100 tons lifting capacity, and travelling up to 300ft. per minute. These cranes were made by Sellars, the Shaw Co. and the Morgan Co. In the forge departments I especially noticed the excellent work that was being done under the drop stamping hammers. The boiler work I saw in the States was certainly not up to the standard of this country. One cannot meet the master and principals of American factories without being immensely struck with the vast amount of work and energy they put into their business. In the States many look on their work as the means and end of existence, and seem to understand neither the necessity nor the enjoyment of recreation. They have learnt the pleasure of successful hard work, but they do not seem to appreciate that this is not the only object in life. In nearly all the works I was in the standard hours of work were 60 per week, from 7 to 12 and 1 to 6. No Saturday half-holiday. The Americans are born improvers, as the American patent records prove. They are always ready to try improvements, and are never afraid to give a trial to new ideas and this characteristic is one reason for the success in life; the mere fact of many of their new ideas turning out failures does not discourage them from trying others. In considering the question of American competition I will first mention the points in which I consider the American manufacturer at present has an advantage over his English competitor. These points are, I think, an unlimited supply of cheaper raw material and fuel, and cheaper transport; in many cases better arranged and equipped workshops, and more up-to-date tools; and, finally, a higher rate of output from their workmen. Many of our factories here have been established a long time, and, although we cannot pull all our shops completely down and rebuild them throughout according to the latest ideas, we can keep them properly arranged, and see that our tools are kept up-to-date, and that the work in our factories is properly organised and that the best methods of working are adopted; and I also firmly believe that the British workman can do every bit as good a day's work as his American cousin.

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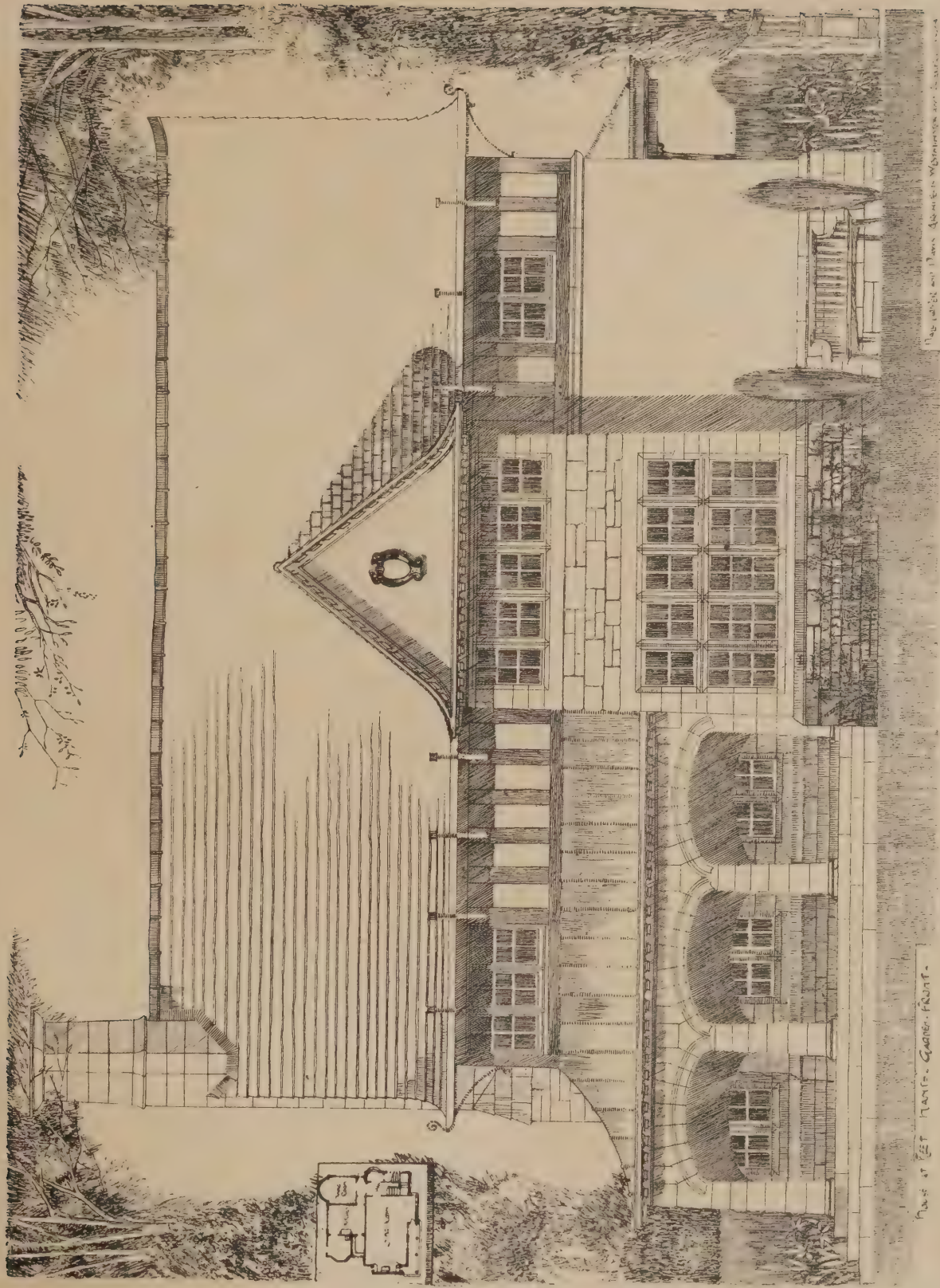


COTTAGES AT EAST HOATHLY, SUSSEX. HALL, COOPER AND DAVIS, ARCHITECTS.

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HOUSE AT FLEET, HANTS. "GARDEN FRONT." HALL, COOPER AND DAVIS, ARCHITECTS.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

*"Suburban villas, highway-side retreats,
That dread the encroachment of our growing
streets,
Tight boxes, neatly sashed, and in a blaze,
With all a July sun's collected rays,
Delight the citizen, who, gasping there,
Breathes clouds of dust, and calls it country
air.—COWPER.*

Our Inset Plates.

THE cottages at East Hoathly, Sussex, for J. Compton Rickett, D.L., M.P., are built upon the beautiful estate belonging to Burham House, and are practically in the centre of an old orchard. The materials used for the exterior are red local tiles and rough-cast. The materials used in the house at Fleet, Hants, are stone, white rough-cast, and green Westmorland slates. The large room is to be panelled 7ft. high, with a brown canvas frieze above to receive stencilling in soft colour. The inglenook is to be under a low, circular stone arch, and will be lined out with deep red rubber bricks. The foregoing buildings have been designed by Messrs. Hall, Cooper and Davis, architects, of Scarborough.

In Danger of Destruction.

A NEWCASTLE correspondent gives us some particulars of the threatened destruction of the picturesque village of Runswick, on the north-east coast, through the landslide which occurred on the 27th of last month. In a letter published in the "Whitby Gazette," and signed on behalf of the inhabitants of the village, Mr. Sayer says: "Already the cart-road leading to the beach is impassable, and one old building has been completely demolished. Large and ominous fissures, reaching in two cases to the very doors of the houses, have shown themselves in many places; and it is impossible to doubt that unless a strong sea-wall is built—and built quickly—our quaint old village is doomed. . . . Meetings have been held, and an estimate obtained of the probable cost of such a sea-wall as we have indicated. This estimate amounts to £500, a sum which is utterly beyond our unaided means to raise. We have, however, collected the sum of £68 amongst ourselves, but this exhausts our capabilities, and unless our friends come to our help our homes will be lost to us, and one of the few remaining old-world villages on the north east coast will cease to exist. We know that the present is an unpropitious time to appeal to the public for pecuniary assistance, but immediate action is absolutely necessary if our village is to be spared, and we are compelled, therefore, to make this appeal to the generosity of our friends." We feel sure that the editor of the "Whitby Gazette" will be happy to receive any sums which interested readers may care to subscribe towards this most deserving fund.

"Punch."

THERE are many large improvement schemes now in progress in London, but the comparatively small scheme of alterations at St. Bride's Avenue, Fleet Street, deserves mention, because it will shortly be the cause of the disappearance of Mr. Punch's old publishing office. This little avenue, which gives the only view of St. Bride's Church from Fleet Street, was constructed with some architectural style, and considerable éclat, after a fire in 1825. Until that year St. Bride's was so closely invested with houses that parishioners who wished to admire their church had to take a walk to Blackfriars Bridge to see it. Flaxman opposed the making of the avenue, holding that Wren's church was "an ugly thing, and better hid," but that is not the opinion of architects and plain folk. Richardson, the novelist, lies under one of the pews.

The Homeric House.

MR. MYRES read an interesting paper on the Homeric House at the last meeting of the Hellenic Society. The author, in the opinion of most of those present, succeeded in showing that the details of the house of Ulysses given in the Odyssey correspond fairly closely with the palaces of Mycenæ and Tiryns discovered by Schliemann. It follows, therefore, that the architecture which Homer had before his mind's eye was Mycenaean rather than Hellenic. But to go from this, as some would have us do, to the conclusion that the culture of the Homeric age was that which we call Mycenaean is too great a jump. Architecture is an art which evolves very slowly, and its memorials last long after the civilisation which inspires it has perished. The gigantic stone buildings found in different Polynesian islands, for instance, were certainly not placed there by the ancestors of the present inhabitants. How the ruins of the houses of the military orders in Rhodes and Malta will some day puzzle the antiquaries of the future! The Mycenaean civilisation is, however, itself a puzzle. All that we really know about it is that somewhere between 2000 and 1500 B.C. a people took possession of Greece and the isles of the Ægean who possessed a civilisation a great deal higher than that of the natives. Although they were not acquainted until later with the use of iron, they were more advanced than most peoples who have not emerged from the bronze age. They built stately palaces with walls of enormous stones, showed great skill in architecture, and even fortification, and a considerable knowledge of painting and sculpture. They engraved gems, used gold, silver, amber, and lapis lazuli for ornaments, and buried their dead in very elaborate tombs. When dispossessed by the Dorian invasion, a good many of them seem to have betaken themselves to Italy, where they were afterwards known as the Etruscans. Others went to Asia Minor, where they laid the foundation of the later Ionian civilisation. The wonder is where these people can have come from. The Swedish scholar, Professor Montelius, thinks they reached Greece from the shores of Caria, where graves of the same kind as the Mycenaean have been found. He also thinks that they were influenced by the Hittite civilisation. As we have no Hittite remains so early as those of Mycenæ, it is difficult to compare them; but those of a later date which have come down to us are in every way ruder and less artistic than the spoils of Mycenæ and Tiryns.

Exeter Guildhall.

AN Exeter correspondent sends us a cutting from a local newspaper referring to the work of restoring the Guildhall front, and says in the letter accompanying it: "Our grand old Guildhall front has now been boxed up with floor boards, so that it is impossible to see what is being done to it, or what will be done, until this packing-case-like covering be removed. Instead of consulting our cathedral architect, Mr. E. H. Harbottle, of this city, in the matter, the City Council handed the restoration over to Mr. Donald Cameron (of septic tank fame), our city surveyor, who does not profess to have the remotest idea of architecture. He gives it, in turn, to the Society for the Protection of Ancient Buildings, who, you may read in the paragraph marked, are 'architects' and 'experts'! The 'local sculptor' who has just commenced the work for them has never, to my knowledge, ever carried out the restoration of the stonework of any old building before; so that, one way and another, the second chief glory of our ancient city seems in a sore sort of state!" We note, however, that the writer of the paragraph mentioned concludes with these words: "I do not think there is a likelihood of any vandalistic treatment of the old building, and hope that when the present wooden cage has been removed there will be nothing more than renewal visible." The Society for the Preservation of Ancient Buildings has done excellent restoration work in the past, and it may fairly be taken for granted that they will, contrary to our correspondent's views, carry out the work in a manner worthy of the reputation they have acquired.

Our Ugly Capital.

"Is London unlovely; if so, does it matter very much; and what can be done to make this great city beautiful?" These three questions Mr. Whiteing (the author of "No. 5, John Street") set himself to answer last week at a meeting in the Passmore-Edwards settlement, Tavistock Place, W.C. Ugliness, he reminded his audience, was a relative expression, and dealing with London by way of contrast he pronounced it, with the solitary exception of Madrid, the ugliest city in Europe; yea, of the whole world. Compared with Paris, it fell far short for beauty in architecture, civic arrangement, or cleanliness. Dealing with the latter point, he asked why our streets were not cleansed on Sundays, as they were in Paris. The objection that it would involve Sunday labour was mere sentimentality. In the small but important matter of lamp-posts, too, we were disgracefully behind the Parisians. The latter provided standards for which it could be claimed that they were ornamental as well as useful. The eyes of Londoners were, on the other hand, confronted with a "groggy" looking structures that always seemed to be qualifying for the waste-iron merchant (attention to this fact was drawn in our "On Reflection" column a short time ago).

Remedies.

But what was to be done to make London more attractive? The lecturer recalled the fact that Mr. Howard would have them get rid of London altogether. That gentleman's "Garden City" scheme was ingenious and suggestive, but he regretted he could say no more of it at present. Mr. Walter Crane fathered a scheme which could not be regarded as one for the immediate present. His idea was to separate each of the new boroughs by belts of trees and shrubs, so that when one looked down upon them from a balloon they would see the thickly-populated districts of London intersected by immense masses of foliage. That proposal was, he feared, doomed, because it would not carry the London ratepayer with it. Curiously enough, however, there were not wanting artists of the front rank who cried "Leave London alone." He heard Mr. Pennell declare that London was the loveliest city in existence. Why? Because, forsooth, it had a natural, hazy mist, partly smoke and partly damp, invariably hanging over it. Foreigners who came here revelled, according to Mr. Pennell, in this exquisite mist. The narrow streets were charming—Fetter and Chancery Lanes and other similar thoroughfares were, despite all the uncharitable language they provoked from passing Jehus, simply incomparable. None of the schemes he had referred to were, he thought, possible at present. But there was a compromise, and that was to empower or compel—for local authorities did nothing until they were compelled—vestries and other governing bodies to bring about the beautifying of the areas under their charge. The duty of the local authorities towards beauty had never been fully realised; there had always been a shamefaced way in doing anything that tended towards it. Vestries, in fact, had evinced great jubilation when a thing had been done cheaply, when nothing was "wasted" on adornments. He held it to be the duty of the citizens to make their representatives feel, as the people of the Italian Republic felt, that there was a great duty cast upon them in this matter. With men acting on local bodies in the spirit he had indicated, they would not have such grievous eye-sores as the Cobden statue in Camden Town. Instead of obtaining designs from the most competent sculptors, the order for the erection of the memorial was placed in the hands of a local grave-stone mason, who produced a statue that might be taken for that of a retired publican. But Camden Town did not stand alone. Trafalgar Square statues were, artistically speaking, no better, considering the eminence of the heroes they commemorated. Concluding, Mr. Whiteing insisted that, if they could only infuse into vestrymen a spirit of reform, London would become the glory of the British race in more senses than one.

Correspondence.

Ellipse by Compasses.

To the Editor of THE BUILDERS' JOURNAL.

ASHTON-UNDER-LYNE.

SIR,—In reply to Mr. Ramm's communication in your issue for March 21st I beg to say that I am willing to comply with his proposal, and have forwarded to him my address. In doing so, I have stipulated that Mr. Ramm shall employ only one of the two methods already illustrated and that the lines shall be drawn as fine as possible consistent with clearness. I do not, however, anticipate that the result will be of any service to your readers, as presumably they will not have the opportunity of inspecting Mr. Ramm's *full-size* figure with any points of difference that I may find. Those of your readers who may have studied Mr. Ramm's methods and the criticisms thereon may easily prove for themselves whether or no the author is correct in claiming that the result is a *true ellipse*; and so far as I am concerned that is the question at issue.—Yours truly, J. A. PERCIVAL.

The Architectural Museum, Westminster.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—It is some years since I had an opportunity of visiting this most useful museum, but I possess two of its very handy guides or catalogues, both of them published at one shilling. The earliest is dated 1877 and is entitled "Royal Architectural Museum. Catalogue of Collection: With a Guide to the Museum by Sir G. Gilbert Scott, R.A." This brochure contains 76 pages. The second, which is rather smaller (about 24 pages), but is spiritedly illustrated, has on its outer cover:—"Royal Architectural Museum, Tuffon Street, near Dean's Yard, Westminster. Caskets and Jewels: a Visit to the Architectural Museum written for students by John P. Seddon, F.R.I.B.A. 'Our Own Casket,' with illustrations from photographs and copies of sketches by T. Raffles Davison." It is dated 1884.—Yours obediently, H. H.

Portland Cement.

To the Editor of THE BUILDERS' JOURNAL.

GRAVESEND.

SIR,—Mr. W. Day, in his otherwise interesting paper on "Portland Cement," published in your issue for March 14th, has got somewhat mixed in his statements. He writes of me as the *late* Mr. I. C. Johnson, and that I left the country and *died abroad*. I am still in the country and am still alive, although some way on in my ninetieth year. I am by the trade recognised as the oldest cement maker and the inventor of Portland cement *proper*, and patentee of three appliances.

I am not aware that it is of any public importance as to whether I am alive or dead but if you should think it worth while to insert a paragraph, by way of correction, some readers of your valuable paper may be edified by it.—Yours obediently, I. C. JOHNSON.

[Mr. Johnson sends us a copy of the "Abstainers' Advocate" for November, 1898, giving an illustrated account of his life. We note that he first introduced the manufacture of his cement to the firm of J. B. White and Sons, and afterwards started on his own account on the Medway.—Ed.]

"A Doomed Church."

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—Under this heading "C. G. H.," of Richmond, in your issue of February 28th, whilst correcting me upon a topographical point, falls into error himself. He writes, when the site for St. Pancras Station was cleared, "the church and graveyard" I referred to "were destroyed." This is inaccurate. The church in question, situated in the New Road (now Euston Road), was known as St. Luke's. Its nominal west end and spired tower abutted the New Road, and private houses stood

against its north and south sides. It was removed *in toto* in 1866 or thereabouts, but no graveyard was destroyed, as it possessed none! "C. G. H.," in his suburban retreat at Richmond, has evidently mixed up in his head the graveyards of two other churches not far from St. Luke's, namely, those of St. Pancras and of St. Giles-in-the-Fields, whose burial grounds adjoined one another. The disinterred coffins from these had previously (about the year 1864) been reverently removed by Mr. Titford, undertaker, of Euston Road.

It was the large district known as Agar Town—not the actual parish of St. Pancras—that was practically demolished by the railway company. Edward Walford, in his "Old and New London," describes St. Pancras as "the mother of which Camden, Kentish, Agar, and Somers Towns may be said to be the offspring." As a matter of actual fact, not only do the few streets "C. G. H.," mentions still represent St. Pancras, but, the same author tells us, a third of Highgate and all Tottenham Court Road and its immediate neighbourhood are included in this enormous parish.

Mr. Walford speaks "of the great clearance of houses which was effected in this locality by the formation of the Midland Railway. The district which is—or was—known as Agar Town consisted mostly of small tenements of the lower class, named after one Mr. William Agar (or, as he was commonly called, "Councillor Agar"), an eccentric and miserly lawyer, to whom the site was let on a short lease for building purposes about the year 1840. Mr. F. Williams in his "History of the Midland Railway" tells us that for St. Pancras passenger station alone a church and seven streets of three thousand houses were swept away. He draws a dreary picture of the destroyed Agar Town, one that vividly recalls it to my mind as I recollect it as a boy and young man. He writes "those who knew the district at that time have no regret at the change. Time was when the wealthy owner of a large estate had lived here in his mansion; but after his departure the place became a very 'abomination of desolation.' In its centre was what was termed La Belle Isle, a dreary and unsavoury locality, abandoned to mountains of refuse from the metropolitan dust-bins, strewn with decaying vegetables and foul smelling fragments of what had once been fish; or occupied by knackers' yards and manure making, bone boiling, and soap manufacturing works, and smoke-belching potteries and brick-kilns. At the broken doors of mutilated houses canaries still sang, and dogs lay basking in the sun, as if to remind one of the vast colonies of bird-fanciers and dog-fanciers who made Agar Town their abode; and from these dwellings came out wretched creatures in rags and dirt, and searched amidst the far-extending refuse for the filthy treasure, by the aid of which they eked out a miserable livelihood; whilst over the whole neighbourhood the gas works poured forth their mephitic vapours, and the canal gave forth its rheumatic dampness—extracting some of the more poisonous ingredients in the atmosphere and spreading them upon the surface of the water in a thick scum of various and ominous hues. Such then was Agar Town before the Midland Railway came into the midst of it."

It will be seen from this that whilst the L. and S. Western terminus at Waterloo, in recent days, has wiped out an entire parish, the Midland Company, in the creation of St. Pancras Station and its approaches, in the sixties, practically demolished a whole town.—Yours obediently, HARRY HEMS.

The Emperor's new Portrait.—Professor Herkomer's portrait of the German Emperor on which he is now engaged at Berlin is to be in enamel, and will be the largest portrait ever executed in this medium.

The Catacombs at Rome.—Subscriptions are invited for the further exploration of these catacombs. Those interested are requested to apply for further information to Mgr. P. Crostarosa, Via del Quirinale, 24, Rome, secretary of the Commissione di Archeologia Sacra.

Surveying and Sanitary Notes.

Street Improvements at Chesterfield.—At a meeting of ratepayers of Chesterfield held on March 19th (convened by the Mayor), a resolution was adopted expressing approval of the three following schemes:—(1) Widening of Burlington Street and Knivesmith Gate by setting back the properties lying between the north side of Dr. Green's premises in Burlington Street and the north-west corner of the Churchyard, in Holywell Street; (2) a new street from Packer's Row in a north-easterly direction into Burlington Street; (3) a new street being a continuation of Gluman Gate, to the south side of Newbold Road at its junction with Sheffield Road.

The Sanitary Institute.—The ordinary general meeting of the Sanitary Institute was held last week at Parkes' Museum, Margaret Street, W., Sir Thomas Salt, vice-president, in the chair. The annual report stated that the question of additional premises for enlarging the museum and extending the work of the institute had received the careful consideration of the council, and it had been decided to start a building fund. There had been a steady increase in the number of students brought to the museum by lecturers and demonstrators, showing an appreciation of the teaching value of the museum.

Refuse Disposal was dealt with by Mr. James Munce, A.M.I.C.E., M.S.I., before the Belfast Society for the Extension of University Teaching on Wednesday last. The cost of carting refuse, he said, was a very heavy item, and those responsible for the work were turning to motor vans. Recent reports proved that the work could be done by these for about 3s. 4d. per ton per mile, exclusive of repairs and depreciation. They carried from 3½ tons to 6½ tons at a speed of between five and six miles an hour. Sir W. H. Preece, C.B., in his presidential address to the Sanitary Institute last year, stated that the best code of sanitary law in the world was that given by Moses to the Israelites, as recorded in the Book of Leviticus, and the fact that the Jews were the most healthy people in the world was largely due to their burning of refuse outside the walls of their cities. Paris, Mr. Munce said, had found that cremating refuse was preferable to raising ramparts with it as in years past; and their medical friends regarded that method as most effectually disposing of disease germs.

Engineering Notes.

For Electric Lighting Extensions at Rathmines the Council propose to spend £21,000. A Local Government Board enquiry was held last week.

For Water Supply and Sewage Disposal Works at Burnham £2,500 are proposed to be spent. A Local Government Board enquiry was held recently into the application.

The Institution of Civil Engineers held its annual dinner at the Merchant Taylors' Hall on March 21st. Sir William Preece, past-president, occupied the chair in the absence of the president, Sir Douglas Fox, and about 250 sat down to table. "The Institution" was proposed by Lord Balfour of Burleigh, who metaphorically characterised the profession of the civil engineer as the one which laid down the rails upon which our civilisation ran. No profession had made greater progress in the Victorian Era. A century ago a Dutchman had to be employed to supply London with water, and a Swiss to build a bridge at Westminster, but now we were able to supply other nations with skilled engineers. In modern life we did not so much require men of much knowledge as men who knew how to apply their knowledge in emergency; therefore he expressed his unbounded astonishment that the Institution should have succumbed to the age for examination.

L.C.C. Electric Tramways.—A Bill promoted by the London County Council to enable them to use electricity as the motive power on their system of tramways came before a Select Committee of the House of Commons last week. Mr. Pope, Q.C., said that the conduit system, which avoided many difficulties, would promote uniform and continuous connection and would give the least possible disturbance of electrical equilibrium, by the use of insulated return, would be generally applied. Mr. J. Williams Benn, chairman of the Highways Committee of the London County Council, stated that they had effected reductions of fares, and would be able to effect further reductions by electric traction, which was about 3d. per mile cheaper than horse traction. This would yield a profit of £81,000 per annum above that yielded by horse traction. The streets of London would be relieved of 15,000 horses, less space would be occupied, and a higher speed would be attained. Dr. Kennedy gave evidence in favour of the conduit system. It would be tried between Tooting and Westminster on part of the line, the other part being worked on the surface contact system. The Committee passed the preamble of the Bill.

Keystones.

A new Primitive Methodist Chapel at Penzance has been erected at a cost of £1,500. The front is of cut granite, the main feature being a central window filled with cathedral glass.

Hull Royal Infirmary Extensions.—It is proposed to add an east wing to this building at a cost of £20,000, and it is stated that operations will be commenced before the summer is out.

New Church at Aberdeen.—A new church is to be built for the congregation of Free Ruthrieston, Aberdeen, in front of the existing church buildings in Broomhill Road. The church will provide sitting accommodation for 550 worshippers and will cost £3,600. The work is to be proceeded with at once. Messrs. Brown and Watt, of Aberdeen, are the architects.

Old Cockington Church is undergoing considerable repair. The whole of the plaster of the western part of the nave has had to be removed and it has been found necessary to strengthen and brace together the timbers of the roof; these have been in position some hundreds of years, but the heart of the oak is so hard that ordinary tools cannot be used. A blacksmith's drill has to be brought to bear upon it.

Peterborough Cathedral, which at present is being restored, was originally the monastery of Medeshamstede (the homestead in the meadows), and was founded by Peada, King of the Mercians, in the seventh century. In the ninth century it was utterly destroyed by the Danes. It was rebuilt, and though some parts of it may be seen to this day, it was plundered and destroyed by Hereward, the Saxon patriot, in 1116. Next year John of Sais commenced the building of a new monastery, and the church then begun is the minster we now see.

Archæological Discoveries in Paisley Abbey.—The work of excavation in connection with the restoration of Paisley Abbey is being carried on daily, and several interesting discoveries of archæological interest have been made during these operations. Among these are two finely-chiselled stones, 5ft. 8in. by 1ft. 10in., which were found at the bottom of the foundation of the west pier of the tower, lying side by side in a bed of sand. On the face of each are elaborately carved crosses, which are so well preserved that they might be passed off as recent work, though they must be at least 600 years old. Built into the walls are carved jamb mouldings, fragments of finely-moulded bases and capitals, and these, if not also the above-mentioned stones, it is thought, must have been part of the ancient monastery on the site of which the Abbey now stands.

The late Mr. W. H. Tonks, of Birmingham, died worth £90,374.

Theatre Francais.—A credit of 2,200,000 francs (£88,000) has been voted for the rebuilding of this theatre.

A new Board School at Pebbles is to be built at a cost of £12,000. A site has been secured at the north-west end of the town.

Notice of Removal.—Mr. G. H. Bruton, F.R.I.B.A., architect, surveyor and valuer, has removed his offices from 15, Queen Street, Cardiff, to Alexandra Buildings, 119, Queen Street, Cardiff.

The Work of Completing South Kensington Museum has at last been commenced. To prepare the foundations will probably take about two years, and some five or six more are likely to elapse before the superstructure is completed.

The Sussex Archæological Society held its annual general meeting at the Town Hall, Lewes, on March 21st. As a difficulty had arisen about the turning-up of the ground by the proposed excavations at Pevensey Castle, it was decided to spend the money allocated for excavations at Lewes. It was stated that a full paper was being prepared on the mural paintings in Sussex churches, and would be printed in the new number of the Society's journal. Mr. P. M. Johnston read a paper on "Ford and its Church," and Mr. Boyson one on "The Black Marble Columns at Lewes Priory."

New Stock Exchange Buildings in New York.—So great has been the increase of business on the New York Stock Exchange since the war with Spain that the present building has been found inadequate, and a new building, which will cost £600,000, is, therefore, about to be built, but in order that business may not be interrupted the new structure is to be put up in sections. Instead of the present low house, the new one will be ten storeys high on the Broad Street side and may run up seventeen storeys on the opposite or New Street side, where the frontage is about 152ft., as against 135ft. on Broad Street.

Oriental Architectural Works.—The following illustrated books on Oriental architecture (published by Messrs. Kegan Paul, Trench, Trübner and Co., Ltd., Paternoster House, Charing Cross Road, W.C.) will be useful to some of our readers:—"Mogul Architecture of Fathpur-Sikri," by Smith (4 vols., £5); "Mohamedan Architecture in Gujrat," by Burgess (£1); "Portfolio of Indian Architectural Drawings," by Smith (Vol. I, 12s.); "Technical Art Series of Illustrations of Indian Architectural Decorative Work," published yearly since 1886, price from 2s. 6d. to 6s. each part.

Royal Parks and Pleasure Gardens.—The following extra items of expenditure on works to be executed in the coming financial year have been sanctioned by the Treasury:—Rebuilding stables at Bushey Park, £350; general improvements and completion of new footpath in Greenwich Park, £750; reconstruction of plant-houses, &c., in new Frame Ground, Hampton Court, £1,000; improvements near the Trophy Gate, Hampton Court, £250; purchases for the museums, Kew Gardens, £200; completion of new filter beds, ditto, £185; new potting shed, ditto, £100; experimental well, ditto, and laying new main and continuing works, £900.

New Hydro for Whitby.—A new hydro-pathic establishment, costing from £30,000 to £35,000 and to be called Cliff Hydro, is about to be erected at Whitby. The site is nearly opposite the Metropole Hotel, and the plans, which have been prepared by Mr. Harold G. Walker, architect, of Whitby, show a brick and stone building in the French Renaissance style. It is to contain smoke room, billiard room, dining room about 50ft. square, drawing room about 60ft. by 30ft., reading room, a very large recreation hall and lounge, and a big lounge at the entrance. There will be 170 bedrooms and baths of all kinds conveniently distributed, besides which a suite of Turkish baths is to be provided in the basement. The new hydro is to be opened by Easter 1901. The surveyor for the work is Mr. W. Hoffman Wood, of Leeds.

A new Physical Laboratory at Kew is to be built at a cost of about £12,000.

A new Rectory House for Radcliffe Church has been built at a cost of about £2,000.

Change of Address.—Mr. P. Morley Horder has removed his offices from 118, New Bond Street, to 148, New Bond Street, W.

Large Timber Fire.—Messrs. J. Lemanton and Sons' timber yard at Millwall, E., was gutted by fire on Saturday. The damage is estimated at £40,000.

An Arts and Crafts Exhibition at Huddersfield has been opened at the Municipal Art Gallery, and will remain open until Easter.

Housing Question at Merthyr.—The Merthyr Urban District Council has decided to build 500 cottages for the working classes in the district.

A new Free Church at Culter, Aberdeen, is to be built from designs by Messrs. D. and J. R. McMillan, selected in competition. The cost is £4,000.

A new Fever Hospital at Grimsby has been erected by the Corporation. It is about a mile from the town, at Little Coates, and is of corrugated iron.

Christ Church, Rathgar, is being enlarged under the supervision of Mr. W. M. Mitchell, architect, Belfast. Mr. W. Creighton, of Rathgar, is the builder.

The Statue of Alphonse Daudet, upon which M. Falguière, the sculptor, is at work, is not yet finished; but it will be sent to Nîmes early next month and deposited in the Square de la Couronne.

A DISPUTE ABOUT DRAINS.

THE recent case in the Court of Appeal of the *Vestry of the Parish of St. Mary, Islington v. The Hornsey Urban District Council* was an appeal against a decision of Mr. Justice Kekewich's. The object of the action was, in substance, to compel the defendants to disconnect some sewers in their district from a sewer belonging to the plaintiffs in the Stroud Green Road, North London, and to restrain the defendants from permitting any future connection of drains or sewers in their district with the said Stroud Green Road sewer. In 1865 the Tottenham and Hampstead Junction Railway Company constructed the above-mentioned sewer under part of their railway and along the Stroud Green Road, and this sewer was connected with, and discharged into, the metropolitan sewer known as the northern high-level sewer, vested in the London County Council. The Stroud Green Road formed part of the boundary between the parish of St. Mary, Islington, and the parish or district of Hornsey. In 1868 the owners of a piece of land in the Hornsey district proceeded to develop it as a building estate, sewers being made under each of the roads formed and connected with the plaintiff's Stroud Green Road sewer. The plaintiffs alleged that the result of this was that after heavy rains the discharge of the additional sewage and surface water from the sewers in these roads choked up the Stroud Green Road sewer and rendered it incapable of carrying off the sewage and surface water from the part of the parish of St. Mary, Islington, which, as the plaintiffs alleged, it was constructed to drain; so that serious floodings had been caused, endangering the health and property of the inhabitants and ratepayers of that parish. The defendants denied that the sewer in question was constructed for the sole benefit of the parish of St. Mary, Islington, and asserted that it was constructed partly at the expense of the owners of property in the defendants' district abutting on the Stroud Green Road, and for the benefit of the owners and occupiers thereof; that the defendants had acquired a right by prescription to drain into the sewer; and that, although the sewers in the above-mentioned roads were vested in the defendants, under the Public Health Act, 1875, that vesting gave them no right to stop up the connections with the Stroud Green

Road sewer. Mr. Justice Kekewich dismissed the action, declining to grant an injunction.

The appeal was heard on February 22nd, 23rd, 26th, and 27th, and on March 20th the Master of the Rolls delivered the considered judgment of the Court allowing the appeal. He said: The appeal in this case raises two important questions—namely, whether the defendants are entitled to have the sewage from part of the parish of Hornsey pass down a sewer called Stroud Green Road sewer, some part of which, at all events, is in the parish of Islington and is vested in the plaintiffs; and secondly, whether, if this question is decided against the defendants, the plaintiffs are entitled to an injunction to prevent such passage, seeing that, if it were prevented, a very serious public nuisance would be the consequence. The learned judge has dismissed the plaintiff's action and they are the appellants. The order of the Court was as follows: Allow the appeal and reverse the judgment of the Court below, and order the defendants to pay the costs of the action and of the appeal. Declare that the Stroud Green sewer in the pleadings mentioned is throughout its whole length in the parish of Islington, and is vested in the plaintiffs, and that the defendants are not entitled to send sewage from any sewer in the parish of Hornsey into that sewer without the consent of the plaintiffs. And let the plaintiffs be at liberty to apply to the judge to whose Court this action is attached at the end of twelve months from the date of this order for an injunction to enforce their rights as above declared.

Masters and Men.

The Lanarkshire Joiners have struck against the proposed reduction in wages from 9d. to 8½d. per hour.

The Bradford Plumbers' Strike has been settled. The masters have given the 9d. per hour demanded, whilst the men have made certain concessions in regard to by-laws.

The Aberdeen Joiners' Strike.—The Aberdeen Master Builders' Federation have resolved to recommend to the several associations of master builders forming the local Federation that each of these associations shall arrange for all its members to pay off the whole of their men in order to settle the dispute. This lock-out would affect not only the joiners, but masons, slaters, plumbers, plasterers, painters, &c., to the number of about 2,000.

London Plasterers' Dispute.—The dispute between the masters and employees in the plastering trade which has been going on for the past three weeks has been settled, and the men have returned to work. The Conciliation Clause, which has been the main subject of dispute, has been altered, deleting the part referring to the awarding of damages against either party in default, and substituting an undertaking on the part of both masters' and men's associations either to inflict a fine upon, or to expel the members or member who may transgress the rules. The masters have also officially recognised the advance of 1d. per hour demanded by the men, and a clause referring to the payment of fares has also been inserted in the rules.

Cardiff Corporation Contracts.—A deputation of Cardiff Master Builders waited upon the Cardiff Public Works Committee at their meeting last Thursday with reference to three clauses for insertion in the corporation form of tender, which the master builders considered essential to protect themselves. The first is a strike clause and the second a lock-out clause. The form of contract the corporation is asked to adopt is the one adopted by the Royal Institute of British Architects. The third point is that of arbitration as to whether the architect's decision, upon points arising between himself and the builder as to the conduct and condition of the work, should be final. The chairman of the committee asked the deputation to submit the points they wished to bring

before the committee in writing, when the matter would be gone into.

The Chicago Building Dispute.—The great strike in the building trades in Chicago has entered upon a rather strange phase. The object of the working-men is to secure the employment of unionists only. Building contractors, in opposing this demand, obtained the assistance of dealers in plumbers' supplies, who agreed not to sell to any plumber who did not renounce his union. The plumbers responded by ordering all members not to handle materials sold by Chicago dealers, and the boycott has been so effective that sales have fallen to an unprecedented point, and business is conducted at a loss which, if continued, means the ruin of half the firms engaged in the struggle. To avoid disaster, they are removing all distinctive marks from their materials, and the work of union plumbers in identifying it will thus be rendered doubly difficult and expensive. Whatever answering device the union adopts, it would appear that the boycott policy on both sides has failed.

New Patents.

These patents are open to opposition until April 28th.

1899.—Fanlight Openers.—4,199. R. F. BLACKETT, Newcastle-on-Tyne. A segmental split arm is pivoted to the frame and passes through a fastener fixed on the light itself. This fastener has a spring bolt for locking the arm in position, and a pulley through which a cord passes for operating the window.

Tough Incandescent Mantles.—4,589. O. HENTZE and H. MÜLLER, both of Leipzig, Saxony. To make the mantle proof against rough usage it is impregnated with Carlsbad salts and Carlsbad mineral spring-water. This, it is claimed, increases rather than decreases the candle-power.

Fixing Back-plates of Locks.—6,113. C. R. HECKFORD, Wolverhampton. Instead of using screws to secure the back-plate, this is sprung into position by pressing out the fore-end of the lock case until the back-plate passes under a shoulder.

Colour Spraying Apparatus.—6,608. G. E. HOLLOWAY, London, E.C. A closed vessel of tin or copper floats on, or is suspended in, the liquid to be applied, and receives an internal supply of compressed gas or air. On its upper surface are nozzles with spreaders, fed by tubes that pass through the vessel into the liquid.

Dovetailing Machines.—8,272. J. PARNALL, J. BARTER, and W. PANES; all of Bristol. The machine has movable bearings and cutters, enabling the positions, sizes, and number of the dovetails to be varied as required, and a table for doing mortise and pin-dovetailing upon which may be detached and a cramp substituted, so that the machine will then dovetail drawer-fronts.

Sectional Hot-Water Boilers.—8,368. J. KEITH, London, E.C. Combined with a main hot-water boiler composed of water-containing sections jointed together and enclosing a central combustion chamber is an auxiliary water-jacketed furnace, having a central fuel space with a firing door at the top and a fire-grate at the bottom, the fuel space of the heater being connected with the combustion chamber of the main boiler by a flue.

Draught Excluders.—8,416. J. SWARBRICK, Salford. At the bottom of the door several brackets with rollers at their lower ends are pivoted, and to them is attached a strip of cloth for excluding the draught.

1900.—Wall Ties.—1,220. O. IMRAY, London, E.C. (J. G. McDowell, Pittsburg, U.S.A.). The tie consists of a strip of metal (preferably steel) with a right-angled lug at one end, the other end (that is, the outer end) being jagged at the edges, with the teeth inclining inwards.

The following specifications were published on Saturday last, and are open to opposition until

May 7th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1898.—24,982, SMITH, appliances for overhead electric traction.

1899.—1,808, RAMSAY, hangers for sliding doors and shutters. 4,138, MUGNA, apparatus for washing or purifying smoke from furnaces or fireplaces. 4,275, GIBBS AND DOWNING, sustaining apparatus for pulley blocks and lifting tackle. 4,336, BRANDSTAEDTER, bolting machines. 4,389, ADAMS, means for operating fanlights. 4,907, THIRIAULT, treatment of sewage. 6,194, GATESHEAD STAINED GLASS CO., LTD., and SNEE, combined process for working designs in or upon plate, sheet, or other flat glass. 6,648, MORGAN, stoneware drain pipes. 6,766, J. DUCKETT AND SON, LTD., DUCKETT, AND DUCKETT, channel gulleys, sinks, and sink fittings. 6,858, MERRILL, automatic flushing syphon. 7,182, PAIDASSY, hydraulic apparatus for closing doors. 7,616, WORCESTER ROYAL PORCELAIN CO., LTD., and RANFORD, decoration of articles of porcelain and other earthenware, glass, &c. 7,864, STANLEY, surveying instruments. 8,030, MARCHAND, centrifugal pumps. 8,058, HELMECKE, process for manufacturing durable incandescent gas mantles. 8,323, BOURGEOIS, paint containers. 8,654, PILKINGTON and ORMANDY, treatment of waste sand from glass grinding or polishing, or certain other sand or minerals containing iron. 8,722, JOHNSON, construction of plastic and stiff-plastic brick machines. 8,760, CHISHOLM, KIRK AND CHISHOLM, wrenches. 8,883, WATSON, safety guard for slate-cutting machinery. 9,047, HOLDEN, apparatus for closing gates. 9,055, HEINZEL, chimney for incandescent gas lamp burners. 9,380, FIRTH, BENTHAM and STOTT, incandescent gas burners. 9,784, LANTZKE AND JUENGER, non-conducting and fireproofing materials. 11,041, ERNEST and PHILLIPS, manufacture of material for purifying acetylene gas. 14,169, CANDLISH AND GODDARD, portable elevator for use of builders for bricks, slate, mortar, &c. 14,336, GUEST, spanners, pipe wrenches, and similar tools having adjustable jaws. 20,074, SABINE and SABINE, edge pan runners for grinding clay. 20,263, WAREHAM, window blind fittings. 24,699, ALLEN, method of making metallic castings.

1900.—703, BLÉRIOT, acetylene generators. 953, BODE, folding gates. 1,142, McKIBBEN, devices for bending pipes, tubes, bars, &c. 1,167, FABRE, adjustable suspension device for electric lamps. 1,273, GRIMWADE, method of decorating china and earthenware. 1,385, HOFFMAN, sectional boilers for hot-water heating purposes. 1,492, DYMOND (Clarke), heat radiators. 1,554, LEYSEN, straight arches. 2,220, MCGREGOR, apparatus for excavating or dredging earth.

New Companies.

British and Italian Mosaic Co., Ltd.

This company has been registered in Scotland with a capital of £1,500 in £1 shares, to acquire the business of G. Zani, Ricci and Co., Glasgow, and to carry on that of marble and glass mosaic manufacturers, &c.

Fenarth Cottage Improvement Co., Ltd.

This company was registered on March 3rd, with a capital of £2,000 in £10 shares to acquire any real or personal property, and to develop, deal with, work, and turn to account the same; as builders and contractors.

Metropolitan Brick Company and Builders' Supply Association, Limited.

This company was registered on March 14th, with a capital of £10,000 in £1 shares to acquire certain premises in White Hart Lane, Tottenham, and to carry on the business of brick and tile manufacturers, potters, carpenters, engineers, &c. The first directors (to number not less than two nor more than seven) are H. Kerby and C. H. Hunter. Registered office: 4, Lancaster Place, W.C.

John Cooper and Son (Nottingham), Ltd.

This company was registered on March 8th with a capital of £3,000 in £1 shares to carry on the business of builders, contractors, stone merchants, brick and tile makers, &c. Registered office: 11A, Ayr Street, Nottingham.

The Avon Bridge Granite and Whinstone Quarries, Limited.

This company has been registered in Scotland with a capital of £12,000 in £1 shares to acquire and carry on Craigbank Quarries, at Avonbridge, belonging to Allan Waugh, of Craigbank.

The Notkin Syndicate, Limited.

This company has been registered in Scotland with a capital of £10,000 in £1 shares to acquire letters patent of an invention for automatically and continuously carburetting air for illuminating and heating purposes. Registered offices: 28, Queen Street, Edinburgh.

John Morgan and Co., Limited.

This company was registered on March 12th with a capital of £1,608 in £1 shares to acquire the business carried on by the executors of the late John Morgan at 23 and 25 Holly Street and 52, Richmond Row, Liverpool, and to carry on the business of wholesale and retail paint, oil, colour and varnish merchants, &c.

Thomas Woodward and Son, Limited.

This company was registered on March 14th, with a capital of £3,000 in £1 shares to carry on the business of carmen and contractors.

Cope, Roberts and Co., Limited.

This company was registered on March 8th with a capital of £8,000 in £1 shares to carry on the business of dry-salters, ship store dealers, oil merchants, and manufacturers of and dealers in petroleum products, colours, varnishes, soaps, glue, turpentine, enamel, blacking, &c. The first directors (to number not less than three nor more than four) are G. Cope, T. S. Roberts, G. Kyffin-Taylor and Joseph H. Glover.

Hartlepool Cement Company, Limited.

This company was registered on March 17th with a capital of £14,000 in £5 shares to acquire land at Longhill, Seaton Carew, West Hartlepool, Durham, together with the cement works, plant, and machinery, &c., belonging to G. Booth and M. Bolton, of West Hartlepool, and to carry on the business of cement and concrete manufacturers, brick, tile and pipe makers, &c. The first directors (to number not less than three nor more than seven) are G. Booth, M. Bolton, J. W. Crosby, J. K. M. Hessler, T. Joplin and F. Siveright.

Workshop Brick Company, Limited.

This company was registered on March 10th with a capital of £6,000 in £5 shares to

acquire the business carried on by the late Mrs. M. S. Garside, as B. Garside and Son, at Worksop, Nottinghamshire, and to carry on the business of brick manufacturers, lime burners, tile and pipe manufacturers, and fire-clay merchants, &c. The first directors (to number not less than five nor more than six) are C. J. Saunders, J. Saunders, E. Mitchell, Reuben Wragg and C. W. Robinson (chairman).


Caerlau Navigation Collieries, Limited.

This company was registered on March 8th with a capital of £25,000 in £1 shares to carry on the business of colliery and mine owners, sellers of iron, ironstone, brickearth, bricks, tiles and pipes, &c. The first directors (to number not less than three nor more than five) are O. Hawkins, C. Hoyle, J. S. Jennings and T. Whitaker. Registered office: Temple Buildings, Russell Street, Keighley, Yorkshire.

Gwendraeth Anthracite Collieries Company, Limited.

This company was registered on March 17th with a capital of £10,000 in £5 shares to carry on the business of miners, smelters, engineers, colliery proprietors, brick, tile and pipe manufacturers, &c. The first directors (to number not less than three nor more than five) are D. Lewis (of Glynea), D. Lewis (of Gorseinon), T. Protheroe, D. Richards and G. H. White.

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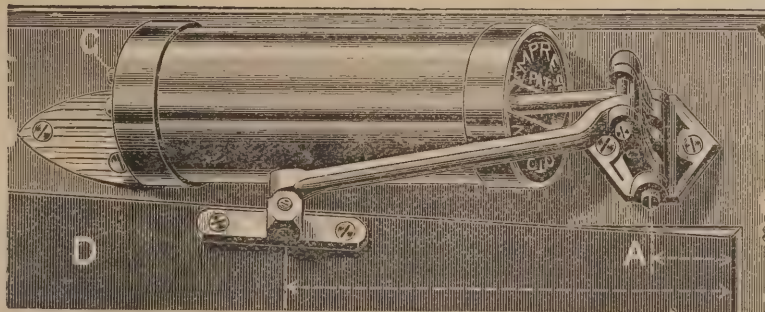
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FORAGE.			
	£ s. d.	£ s. d.	
Hay, best	per load	3 10 0	4 0 0
Sainfoin mixture ...	do.	8 15 0	4 5 0
Olover, best	do.	4 3 0	5 0 0
Beans	per qr.	1 6 6	—
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ...	per cwt.	1 8 7	1 10 4
Colza Oil, English ...	per cwt.	1 8 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 13 3	—
Linseed Oil	per cwt.	1 5 3	—
Petroleum, American ...	per gal.	0 0 7 9/16	0 0 7 3/4
Do., Russian	per gal.	0 0 7	0 0 7 3/4
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 7 3	1 11 3
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 19 9	1 9 10 1/2
Lead, white, ground, carbonate per cwt.	do.	1 2 6	—
Do. red	per cwt.	1 0 4 1/2	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	3 0 0	—

METALS.

Copper, sheet, strong ...	per ton	38 10 0	—
Iron, Staffs, bar	do.	10 10 0	11 10 0
Do. Galvanised Corrugated Sheet ...	do.	15 0 0	—
Lead, pig, Spanish	do.	16 12 6	—
Do. do. English common brands	do.	17 0 0	—
Do. sheet, English, 3lb. per sq. ft. and upwards ...	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut, clasp, sin. to sin. ...	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 7 6	—
Tin, Foreign	do.	134 10 0	135 0 0
Do. English ingots	do.	141 10 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne ...	do.	27 6 6	—
Do. Spelter	do.	21 5 0	—

TIMBER.

Soft Woods.			
Fir, Dantzic and Memel ...	per load	3 0 0	4 0 0
Pine, Quebec Yellow ...	per load	4 7 6	6 5 0
Do. Pitch	do.	3 12 0	3 15 0
Laths, log, Dantzic ...	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4 1/2	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd. do.	do.	12 10 0	14 0 0
Do. do. do. unsorted do.	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	do.	14 0 0	17 15 0
Do. do. 2nd do.	do.	8 15 0	12 0 0
Do. do. Unsorted do.	do.	10 15 0	11 0 0
Do. do. White do.	do.	7 15 0	11 5 0
Do. Swedish	per P. Std.	11 5 0	15 10 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st do.	do.	23 15 0	—
Do. do. 2nd do.	do.	18 15 0	—
Do. do. 3rd & 2nd do.	do.	9 0 0	10 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd do.	do.	10 5 0	—
Do. New Brunswick do.	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	10 10 0
Hard Woods.			
Flooring Boards, 1 in. prepared, 1st	per square	0 12 0	—
Do. 2nd	do.	0 9 9	0 10 6
Do. 3rd & 2nd	do.	0 8 6	0 10 0

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, 1 in., Cuba	per ft. sup.	0 0 4 1/2	—
Do. Honduras	do.	0 0 3 25/32	—
Do. Tobasco	do.	0 0 3 25/32	—

Elm, Quebec	per load	2 s. d. 0 12 6	£ s. d. 5 10 0
Mahogany, Average Price for Cargo, Honduras ...			
Do. African	per ft. sup.	0 0 5 1/16	—
Do. St. Domingo	do.	0 0 5 23/32	—
Do. Tobasco	do.	0 0 31	—
Do. Cuba	do.	0 0 6 3/8	—
Oak, Dantzic and Memel ...	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks ...	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk) ...	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

COMING EVENTS.

Wednesday, March 28.

SOCIETY OF ARTS.—Mr. Christopher Rawson on "The Manufacture and Use of Indigo." 4.30 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. Alfred Hill, M.D., F.R.S.E., F.I.C., on "The Appearance and Character of Fresh Meat, Organs, Fat, Blood, Fish, Poultry, Milk, Fruit, Vegetables, and other Food, and the conditions rendering them, or preparations of them, fit or unfit for Human Consumption." 8 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Debate on "Whether in the Education of Architects Office Work can best be supplemented by the Preparation of Measured Drawings of Old Work." Opened by Mr. A. Muir. 8 p.m.

BUILDERS' FOREMEN AND CLERK OF WORKS' INSTITUTION.—Quarterly Meeting of the Directors at 8 p.m.

Thursday, March 29.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Arthur Thomson, M.A., M.B., on "The Anatomy of the Human Form: The Face; Expression, Posture, Proportion, and Modifications due to Sex, Race, Growth and Decay; Proportion." 6.15 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. Charles E. Keyer, F.S.A., on "The Norman Doorways in the Diocese of Oxford." 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Valedictory Presidential Address by Mr. G. P. Sheridan. 8 p.m.

GLASGOW INSTITUTE OF ARCHITECTS.—General Meeting at 2 p.m.

MONUMENTAL BRASS SOCIETY.—Annual Meeting at 32, Sackville Street, Piccadilly, W. Paper on "Brasses of Founders of Schools." 7.30 p.m.

Friday, March 30.

ARCHITECTURAL ASSOCIATION.—(Discussion Section.)—Mr. T. W. Aldwinckle, junr., on "Ventilation and Warming." 7 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. James King, M.R.C.V.S., on "Diseased Meat, with a Demonstration of Morbid Specimens Collected from Meat Markets." 8 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XIII. 11.30 a.m.

ASSOCIATION OF MUNICIPAL CORPORATIONS.—Sir A. K. Rolitt, M.P., presides at the Annual Dinner at the Whitehall Rooms. 7.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—(Students' Visit.)—Visit to the Cement Works of Messrs. John Bazley White and Brothers, Limited, at Swanscombe, at 1.45 p.m.

Saturday, March 31.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS (Newcastle-upon-Tyne).—Council Meeting at 1.30 p.m.

ASSOCIATION OF MUNICIPAL CORPORATIONS.—Annual Meeting at Guildhall.

BOROUGH POLYTECHNIC INSTITUTE.—Annual Exhibition of Students' Work. 4 to 10 p.m.

Monday, April 2.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Messrs. John Honeyman, R.S.A., F.R.I.B.A., Henry Spalding, F.R.I.B.A., W. E. Nallis, A.R.I.B.A., and Owen Fleming, A.R.I.B.A., on "Artisans' Dwellings." 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Paper on "The Hygiene of Byres, Lairs, Cow Sheds and Slaughter Houses, and all places where animals destined for the supply of food are kept, and the Hygiene of Markets, Dairies and other places where food is stored, prepared or exposed for sale and transported." 8 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Mr. E. I. Hinde, A.R.I.B.A., on "Notes on School Buildings." 8 p.m.

SOCIETY OF ENGINEERS.—Dr. G. Sims Woodhead, M.A., and Mr. W. J. Ware, on "Disinfection of the Maidstone Water Service Mains." 7.30 p.m.

ROYAL INSTITUTION.—General Monthly Meeting at 5 p.m.

Tuesday, April 3.

SOCIETY OF ARTS (Applied Art Section).—Mr. Carl Hentschel on "Process Engraving." 8 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Mr. Henry Deane, M.A., M.I.C.E., on "Economic Railway Construction in New South Wales," and Mr. Robert Stirling, M.I.C.E., on "The Tocopilla Railway." 8 p.m.

Wednesday, April 4.

SOCIETY OF ARTS.—Ordinary meeting at 8 p.m.

SANITARY INSTITUTE.—(Lectures and Demonstrations for Sanitary Officers: Part III.)—Mr. R. Sydney Marsden, D.Sc., M.B., F.R.S., on "Practical Methods of Stalling and Slaughtering Animals; Preserving and Storing Meat and other Foods." 8 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. W. H. Hole, A.R.S.A., on "Inside Decoration of Public and Ecclesiastical Buildings." 8 p.m.

BRITISH ARCHAEOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

DROGHEDA (Ireland).—For the erection of six dwellings and shops, Stockwell-lane, for Mr. John Leland. Mr. Fredk. Shaw, architect, 20, Laurence-street, Drogheda:—
S. F. Roche £1,637 B. Collins £1,120
T. Smullen and Son 1,393 P. McCann, Laurence-street, Drogheda* 1,111
B. McDonnell 1,340
F. Gogarty 1,200 * Accepted.

HILGAY (Norfolk).—For the erection of new rectory house. Mr. H. J. Green, architect and surveyor, 31, Castle meadow, Norwich:—
S. Hutchins £2,913 0 0 E. Willmott and
R. Dye 2,838 8 2 Sons, Cam-
J. S. Smith 2,725 10 0 bridge* £2,486 0 0
J. W. Collins 2,590 0 0 * Accepted.

LONDON.—For rebuilding Nos. 30 and 32, Ludgate-hill and Nos. 7 and 8, Stationers Hall-court. Mr. Charles Reilly architect, 23, St. Swithin's-lane, E.C. Quantities by Messrs Gardiner and Theobald, of 110, Great Russell-street W.C.:—
Mowlem and Co. £15,682
J. Carmichael 15,230
Barnley and Son, 14,888
Birmingham 14,885
Colls and Sons 14,475
Dove Bros. 14,273
B. E. Nightingale 14,273

Woodward and Co. £14,190
Kilby and Gayford 13,970
Patman and Fother-ingham 13,960
Ashby and Horner 13,840
Patrick and Son 13,780
Holloway Bros. 13,500



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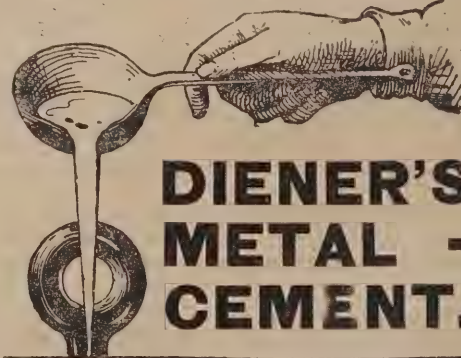
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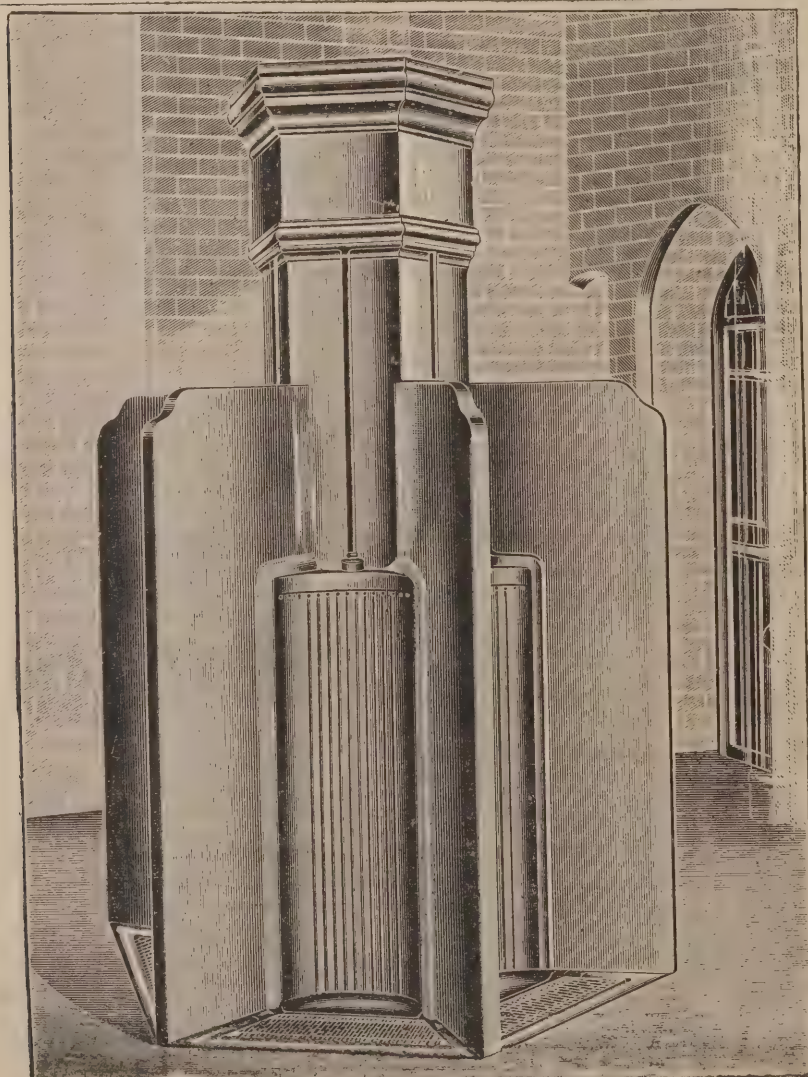
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
March 30	London, S.E.—Flats	Lambeth Walcot Charity Trustees	Waring and Nicholson, 33, Parliament-street, Westminster.
" 30	Backworth, near Newcastle—Church	Primitive Methodists	T. Johnson, West Holywell.
" 30	Chester—Extensions	Corporation	H. Beswick, Newgate-street, Chester.
" 30	Eddis Ford—Bridge	Rural District Council	J. E. Parker, Post Office-chambers, Newcastle-on-Tyne.
" 30	Low Foulshaw, near Kendal—Farmhouse	Mr. M. Bromley-Wilson	J. Stalker, Architect, Kendal.
" 30	Peterculter, Scotland—Alteration	Congregationalists	J. Philip, Sawmill, Drumoak.
" 30	White Roding, Essex—Chapel		The Rev. J. E. Rattee, Abbots Roding.
" 31	Solva, Pembrokeshire—Residence		D. E. Thomas, Architect, Haverfordwest.
" 31	Workington—Club		J. Howse, 23, Curwen-street, Workington.
" 31	Wolverhampton—Abattoir	Market Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 31	Swindon—Church	Primitive Methodists	W. Drew and Sons, Victoria-street, Swindon.
" 31	Scammonden—Mill		C. F. L. Horsfall and Son, Lord-street Chambers, Halifax.
" 31	Ambler Thorn, near Halifax—Works		S. Spencer, 344, Great Horton-road, Bradford.
" 31	Belfast—Mart	Hume and Gray	Young and Mackenzie, Scottish Provident-bldgs., Belfast.
" 31	Carnkie, Cornwall—Chapel		S. Hill, Architect, Green-lane, Redruth.
" 31	Cheadle, Staffs.—Hospital	Guardians	F. S. Cox, Clerk, Cheadle, Stoke-on-Trent.
" 31	Dartford—Institute	Urban District Council	J. C. Hayward, Sessions House, Dartford.
" 31	Linkinhorne—House		J. Sargeant, Bray Shop, Callington.
" 31	Trealaw, Wales—Additions		A. O. Evans, Architect, Pontypridd.
" 31	Windsor—Passage	Guardians	Edgington and Summerbell, Architects, Windsor.
April 1	Ammanford—Chapel		R. Jones, Tanyfan, Hendra Chapel, Ammanford.
" 2	London, N.—Additions	St. Pancras Vestry	Superintendent, St. Pancras Cemetery, East Finchley, N.
" 2	Gosforth—Additions	School Board	W. Beddington, 23, Eldon-square, Newcastle.
" 2	Sunbury-on-Thames—Mortuary	Urban District Council	C. E. Goddard, Council Offices, Sunbury-on-Thames.
" 2	Nether Kellet, near Carnforth—House		R. S. Wright and Sons, Queen's-square, Lancaster.
" 2	Prestwich, Manchester—Cottages	Co-operative Society, Limited	The Co-operative Society, Ltd., Warwick-street, Prestwich.
" 2	Havodryrns, near Crumlin, Mon.—School	School Board	Landowne and Griggs, Metropolitan Bank-chambers, Newport, Mon.
" 2	London, W.—Alterations	Paddington Vestry	G. Weston, Vestry Offices, Paddington.
" 3	London, N.—Schools	Edmonton School Board	J. Moule, Brettenham-road, Upper Edmonton.
" 3	Spennymore—School	Wesleyans	J. W. Taylor, Architect, Newcastle-on-Tyne.
" 3	Bristol—Extensions	Great Western and Midland Rly. Co.'s	The Engineer, G.W.R. Station, Bristol.
" 3	Liskeard—Hotel		H. W. Collins, Architect, Walredon, Redruth.
" 3	Liverpool—House	Guardians	H. P. Cleaver, Brougham-ter, West Derby-rd., Liverpool.
" 3	Acton—Mortuary	Urban District Council	D. J. Ebbetts, 212, High-street, Acton.
" 4	Shalford, near Guildford—Bridge	Rural District Council	E. L. Lunn, 36, High-street, Guildford.
" 4	Halifax—Villa	Dr. E. Hughes	W. C. Williams, 29, Southgate, Halifax.
" 4	Bicester—Walls	Urban District Council	C. A. Branford, Church-terrace, Bicester.
" 5	Banagher, Ireland—Hall	Presbyterian Church Committee	M. A. Robinson, Richmond-street, Londonderry.
" 5	Pontefract—Walls		A. Oddy, Surveyor, Town Hall, Pontefract.
" 5	Thorne, near Doncaster—Additions	School Board	H. B. Thorp, Architect and Surveyor, Goole.
ENGINEERING—			
March 30	Sunderland—Cables	Corporation	J. F. C. Snell, Dunning-street, Sunderland.
" 31	Athlone, Ireland—Heating and Ventilating	Guardians	P. J. Prendergast, Engineer, Athlone.
" 31	Keighley—Wiring	Corporation	J. M. Smyth, Bridge-street, Keighley.
April 1	Girsby, Lincs.—Cleaning out Pond		W. Walker, Girsby Grange, Lincoln.
" 2	Sheffield—Condenser	United Gaslight Company	J. W. Morrison, Co.'s Engineer, Commercial-st., Sheffield.
" 2	Bedford—Boilers	Corporation	T. S. Porter, Town Clerk, Town Hall, Bedford.
" 2	Cromer—Gas Mains	Protection Commissioners	Douglas and Arnott, 15, Victoria-street, Westminster, S.W.
" 2	London, S.E.—Works	Metropolitan Asylums Board	T. D. Mann, Board Offices, Victoria Embankment.
" 3	Cardiff—Wiring	Corporation	Electrical Engineer, Eldon-road, Cardiff.
" 3	Colwyn Bay—Promenade Works	Urban District Council	W. Jones, Surveyor, Colwyn Bay.
" 3	Llanelli Dock—Subways	Great Western Railway Co.	Engineer, G.W.R. Station, North.
" 3	Maidstone—Pipes	Corporation	Stevens and Barker, St. Peter-street Maidstone.
" 3	Nairn, Scotland—Harbour Works	Harbour Trustees	D. and G. Stevenson, 81, George-street, Edinburgh.
" 4	Hove, Sussex—Lengthening Groyne		H. H. Scott, Town Hall, Hove.
IRON AND STEEL—			
March 31	Pontycymmer, Wales—Pipes	Garw Water Co.	A. J. Laurence, Secretary, Pontycymmer.
April 3	Burton-upon-Trent—Railing	Corporation	G. T. Lynam, Engineer, Burton-on-Trent.
ROADS—			
March 30	Aylesbury—Granite	County Council	B. J. Thomas, County Hall, Aylesbury.
" 30	Market Harborough—Granite	Rural District Council	C. Burgoine, Clerk, Market Harborough.
" 31	Winton, Bournemouth—Granite	Urban District Council	W. T. Streather, Wimborne-road, Winton.
" 31	Lymington, Hants.—	Corporation	I. Pym-Jones, Borough Engineer, Lymington.
" 31	Crown, near Chesterfield—Slag	Rural District Council	E. H. Barber, Firbeck, Whitwell, Chesterfield.
April 2	Stockton-on-Tees—Materials	Rural District Council	W. Burton, Surveyor, Billingham, Stockton-on-Tees.
" 2	Sunbury-on-Thames—Kerbing	Urban District Council	H. F. Coles, Surveyor, Council Offices, Sunbury-on-Thames.
" 3	London, W.—Cartage	County Council	H. T. Wakelam, Guildhall, Westminster, S.W.
" 3	London, W.—Materials	Middlesex County Council	H. T. Wakelam, Guildhall, Westminster, S.W.
" 3	Bury St. Edmunds—Streets	Corporation	J. C. Smith, Town Hall, Bury St. Edmunds.
" 3	Worksop—Slag	Rural District Council	F. Hopkinson, 40, Bridge-street, Worksop.
" 3	Whickham, Durham—Materials	Urban District Council	T. Lambert, Clerk, Town Hall, Gateshead.
" 3	Middleton, near Manchester—Materials	Corporation	W. Welburn, Surveyor, Town Hall, Middleton.
" 3	London, N.—Road Materials	Tottenham Urban District Council	E. Crowne, 712, High-road, Tottenham.
" 3	Bishop Stortford—Improvements	Urban District Council	E. S. Scott, Surveyor, Council Offices, Bishop Stortford.
" 4	Penryn, Cornwall—Stone	Rural District Council	J. H. Chubb, Surveyor, Belmont, Penryn.
" 4	Middleton, Lancs.—Street Works	Corporation	W. Welburn, Surveyor, Town Hall, Middleton.
" 4	Hove, Sussex—Paving		H. H. Scott, Town Hall, Hove.
" 4	Heaton Norris—Materials	Urban District Council	J. G. Banks, Council Offices, Heaton Moor.
" 4	Greenwich—Works	Board of Works	J. Spencer, 141, Greenwich-road, Greenwich.
" 5	West Bridgford, Notts.—Works	Urban District Council	W. Fare, George-road, Bridgford.
SANITARY—			
March 30	West Hartlepool—Sewer	Corporation	J. W. Brown, Corporation-buildings, West Hartlepool.
" 31	Seacroft, Leeds—Sewers	Rural District Council	W. Spinks, Park-row, Leeds.
April 2	Settle, Yorks.—Sewage Works	Rural District Council	Barber, Hopkinson, and Co., Craven Bank-chbrs., Keighley.
" 3	Whitchurch, near Cardiff—Sewers	Urban District Council	W. Fraser, Council Offices, 35, St. Mary-street, Cardiff.
" 4	Featherstone, Yorks.—Sewers	Urban District Council	F. B. Rothera, Council Office, Featherstone.
" 5	Edinburgh—Sewers	Magistrates and Council	The Engineer, Council Offices, Edinburgh.
" 5	Shrewsbury—Drainage Works	Sanitary Committee	W. C. Eddowes, Surveyor, The Square, Shrewsbury.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
March 28	Andover—Pavilion	£5 5s.	T. E. Longman, Town Clerk, Andover.
" 30	Rawtenstall—Laying-out Park	£50, £30, £20	A. W. Lawson, Surveyor, Municipal Offices, Rawtenstall.
" 31	Walsall—Municipal Buildings	£100 awarded to each selected competitor.	J. B. Cooper, Town Clerk, Borough Offices, Walsall.
" 31	Springfield, Essex—Constabulary Headquarters	£100, £50, £25	H. W. Gibson, Shire Hall, Chelmsford.
" 31	Blackpool—Poster		C. Noden, Town Hall, Blackpool.
April 1	Lurgan, Ireland—Cottages		W. J. Corner, Clerk, Lurgan.
" 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 20	Buckie, Scotland—Bridge		J. A. Buige, Burgh Surveyor, Buckie, Scotland.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight—Buildings	£50, £250	W. H. Wooldridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
" 31	Riviera—Villa for Sir William Ingram	£78 15s., £21 5s., £5 5s.	"Architectural Review."
June 1	Bury, Lancs.—Schools	£100, £50, £30	S. Woodcock, Clerk, Broad-street, Bury.

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POTTERY WORKS, MIDWAY,**

Near Burton-on-Trent



APRIL 4, 1900.
NO. CCLXIX.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

here. No. 68, by C. J. Watson, "York Minster." Nos. 69, 70, Ponte Vecchio, Florence, and Santa Maria Salute, Venice, by Arthur Evershed. No. 76, Cloisters, Christchurch, Oxford, an example of aquatint, by Charles O. Murray. No. 82, a beautiful little Dutch belfry, by Miss C. M. Pott. No. 85, the Cloisters, Chester Cathedral, by L. Dectur. Nos. 87 and 119, the old "Spaniards' Inn," Hampstead, and Earl's Eye, in the county of Chester, a wonderful panorama of flat-land laid out on geometrical lines. These two by W. Monk. No. 90, Old

"Unlovely London." A SHORT time ago Mr. Richard Whiteing opened a debate at the Passmore Edwards Settlement on the unloveliness of London, and a good deal of correspondence has emanated from the remarks which were made during the course of the lecture. It does not seem a matter of vital concern whether the author of "No. 5, John Street" considers London the ugliest city in Europe, with the possible exception of Madrid, or merely the ugliest capital; it is at least apparent that, in the lecturer's opinion,

An Architectural Causerie.

Architectural Etchings. AN architect, not merely an engineer, is expected to have a sympathetic understanding of other arts than his own, and etching is certainly one of the things he should know something about, for what meets the eye in a building, either to please or offend, is the outline, and, although not his only possession, the etcher's command of line is what distinguishes his work from another's. Let Rembrandt's most exquisitely etched little indications of landscape be compared with his drawings in pen and wash; it will immediately be seen how happy in the hand of the master is the precise little etching-needle and how the natural value of line is emphasised and increased by the action of acid. The etched line is a bitten line, and such is its strength that it must either give pleasure or pain—the latter if rightly placed. A superfluous line is a terrible eyesore here. There is excellence and its reward in mere reticence. What has been described as "classical parsimony" in the writings of one of our masters is the *sine qua non* of the etcher, and of a great many artists besides.

There is a broad distinction between etching proper and dry-point, which is in effect a peculiar kind of engraving, or freehand sketching on copper—a thing by no means easy, and one which only a few should attempt. The rich and velvety effects of burr are peculiar to this kind of etching, if etching it must be called, for the plate is not cleaned and the impression is as much from the ridge as the furrow. Considering the frailty of such a surface, it follows that a plate which has been dry-pointed will yield but a few impressions. The perfection of this kind of work may be seen in the exhibition now open of the Royal Society of Painter-Etchers and Engravers in the daring examples exhibited by M. Helleu. The bewitching creature called Alice, who leans on her elbows and looks, is something to see and to dream of, whether one thinks of the manner of work, or, what is more likely, of the enchantress, with her eyes so quietly fastened upon you that you are chained, so to say, to the spot. Her raiment may have been of velvet or not, but such is the effect of the burr that it would be supposed to be.

The reader of this short paper may feel that I am only wasting his time, since I half-promised to tell him what etchings of buildings there are, but there is this very obvious advantage in being guided by some sort of principle that it reduces the number of things to be praised, whether they represent churches or chamber-maids, by one-half at the very least, and even so there remains enough of really desirable etchings to provide one with talk for an hour. The most delightful of Mr. Axel Haig's elaborate architectural plates is his representation of The Baptistery, San Marco, Venice, No. 20. No. 52, one of three bits of "Vanished Hampstead," by A. W. Bayes, a snow scene, including a Georgian house front, seems to reflect to perfection the mood of the artist, and, notwithstanding its diminutive size, is impressive as anything



ST. MARY'S CHURCH, BRIGHTON.

WILLIAM EMERSON, ARCHITECT.

Archway, Bedford, by M. Bramley-Moore. All these are things to be noticed, and last, most important of all from this limited point of view, are three views of New Inn, Strand—about to be demolished—No. 234, by Walter W. Burgess, which are in themselves as telling as they are beautiful, and awaken feelings of embittered regret, which must, I suppose, be repressed. It is a pity that these and some others cannot be reproduced, but the object of writing is, after all, to persuade people to see the real things, and the quality of an etching, like the bouquet of a wine, may be said to be incommunicable.

ERNEST RADFORD.

it is a city composed mainly of narrow, dull thoroughfares, whose tortuous, haphazard streets are ill-planned, ill-conceived, ill-kept—hence "Unlovely London." One might be tempted to question the wisdom of debating such a subtlety as "unloveliness," so impossible is it to define, so much is it a matter of sense, feeling and intuition; is there, one wonders, any arbitrary standard—any rightness or wrongness in loveliness? As illustrating the difficulty of arriving at any consensus of opinion upon such a subject, no more apposite instance could be found than the divergency of ideas produced in the debate on Mr. Whiteing's lecture.

If one were prepared to grant the lecturer's axiom which, although possibly not baldly stated in so many words, practically settled as a non-combatable fact, that open spaces in large cities were synonymous with loveliness, provided that they were well-planned, carefully laid out, and so forth, one might be more ready to accept his comparisons between London and Paris as being helpful towards remedying the unloveliness of our own capital. Unfortunately, however, there are people who consider the narrow streets with their vistas, their mystery, their colour, and the hundred little "surprises" which the wayfarer happens upon as he treads their cobble-stones, have a beauty and an atmosphere which he would not exchange for all the County Council "improvement" schemes which could be given him. A writer in the "Pall Mall Gazette" in a carefully written article on the subject, admirably sums up this phase of the question when he says:—"Nobody who sees London would wish to have her delivered over to the tender mercies of a Baron Haussmann, and 'improved' as Paris was improved out of all semblance of a picturesque past into a present of dull, spacious, rectangular monotony." It is obvious, therefore, that on a question of aesthetics there must always exist divergencies of opinion; it is as well to recognise this before promulgating any particular scheme based upon one set of ideas. Whilst, however, there are many people opposed to transfiguring London in any attempt to imitate a city like Paris, all lovers of the beautiful are unanimous in their anxiety concerning every new erection which, nolens-volens, is thrust upon the acceptance of the Londoner. Most particularly does this apply to important changes in our thoroughfares, such as are contemplated between Holborn and the Strand. The question is not whether such a change is beneficial—which few can doubt—but whether, now that the matter is actually in progress, the frontage of the new street will be the very best which English architects can design. Once again one is met with the extraordinary difficulty of obtaining a unanimity of opinion as to the qualification of the "eminent" architects who have been invited to submit designs for the County Council. One is considerably surprised sometimes with the list of names in a selection such as has been made in the present instance, and one can only hope that the case in point may not prove as unsatisfactory as its predecessors, founded on similar lines.

Who, for example, can conscientiously maintain that some great names in the Profession were not omitted in the recent selection of architects for the new Government Offices in Whitehall? One has to go to the first cause in matters of this kind, to enquire into the qualifications of the selection committee, not to cavil at the works of the architects selected, who are presumably doing the very best work they can. There are a great many circles bound together by much red-tape, but it does seem an important and urgent necessity to arrive at the inner circle, which, as a rule, is some governing body wholly incompetent and indifferent as to matters architectural. If Mr. Whiteing's lecture has stirred up any real interest in the mind of the average Londoner concerning the streets he lives in, it will have done much—very much—in the right direction; but until the average Londoner insists on delving deep into the heart of these new schemes to "improve" London, until he acquaints himself with every detail of the preliminary organization, no radical improvement can be expected in the architecture of our great metropolis, which had better be left alone until those who would disturb it can prove their entire competency for their responsible undertaking.

H. S. M.

On Reflection.

The Furniture Exhibition.

ARCHITECTURE and furnishing are, or should be, so closely allied that an exhibition of furniture should interest architects and designers as well as members of the furnishing trades. It is worth while, then, to consider whether any useful suggestions may be derived from the Furnishing Trades' Exhibition which has been held during the past ten days at the Agricultural Hall, Islington. Let it be said at once that neither the artist nor the craftsman will find here much that is worthy of admiration or imitation. If of a philosophic spirit, he might, it is true, derive some benefit on the *lucus a non lucendo* principle. It is useful sometimes to have before one an example of how not to do it, and the Furniture Trades' Exhibition might prove really valuable to art workers as a museum of things the designer should avoid—a kind of artistic chamber of horrors. Besides, it is surely some gain if the contemplation of the meretricious and vulgar productions of Curtain Road inspire us with greater respect for the art craftsmen of the past, and if the sight of the "art pottery" of Stoke-on-Trent fill us with a new thankfulness for the ceramic treasures of South Kensington Museum. For these reasons it is somewhat to be regretted that the Exhibition at the Agricultural Hall is not open to the public, but is confined to members of the furnishing trades. The fact that admission is thus restricted suggests one or two considerations which must not be overlooked lest we should do injustice to the furnishing trades. It would be wrong to suppose that the furniture to be seen at the Agricultural Hall represents the highest standard to which British manufacturers have attained. Many of the best wholesale firms in London and the provinces are not represented at all, while those who do exhibit send not their best and most artistic but their most saleable goods to what is in reality rather a market than an exhibition; and of course those manufacturers who appeal, not to the retailer, but direct to the public (and these include such firms as Heal's, Waring's and other makers of genuinely artistic furniture), are entirely unrepresented at an exhibition of this sort.

Modern Taste in Furnishing.

PERHAPS the chief interest of the show to those who are neither buyers nor sellers lies in the index it affords of the trend and development of taste in furnishing. The things one sees at the Agricultural Hall are the things that are being manufactured by the hundred for the adornment of the homes of the enlightened British Public. It is not a cheering thought, for though here and there one comes upon an oasis in the desert of mediocrity—as in the case of the well-designed mantelpieces that are being shown by the Bath Cabinet Makers Company—yet the majority of the exhibits are either indifferent or positively bad. It is true, of course, that the manufacturer no longer asks us to recline on a horsehair sofa or decorate our drawing rooms with wax fruit and flowers. These horrors, indeed, are gone, but in their place are settees covered with cheap and showy saddlebags or velvets finished off with incongruous trimmings, and "art pots" that repel by their aggressive vulgarity. In the matter of bedsteads there seems to be a slight tendency towards a better style than we have been accustomed to since the reign of the metal bedstead began; the familiar brass bedstead with its elaborate and meaningless decoration is still in evidence, but side by side with it are others designed on simpler and more tasteful lines. The "Sheraton" bedstead, as it is called, is formed

of plain square pillars without any useless excrescences, the design being suggested, perhaps, by some of Sheraton's cabinet work. If not thoroughly satisfactory, it is a great improvement on the vulgar rococo stuff that is still sold in great quantities. Wooden bedsteads seem to be gaining ground in popularity; and this is well, for while they are unexceptionable on sanitary grounds, being made with iron base and laths, they offer considerable possibilities to the designer, and can be made to harmonise with the other furniture in the room. Unfortunately the examples at the Exhibition do not show much appreciation of these possibilities. In regard to settees and easy chairs makers seem to be very successful in producing furniture that is luxuriously comfortable, but much of it is sadly lacking in elegance and grace. One sees little besides individual pieces of furniture at the Agricultural Hall; there are very few interior fittings, and the fitted room is conspicuous by its absence.

Public Baths: Some Suggestions.

MR. SAXON SNELL asks in his paper on public baths and wash-houses, which we published last week, why the Roman ideals should not be copied, and he suggests "an establishment where, for the sum of sixpence, you might enjoy at will a modified form of Turkish bath, a swim, and a few gymnastic exercises, with the opportunity of an adjournment afterwards to the lounge for a cup of coffee, the daily papers, and the latest war telegrams." This suggestion is worthy of the consideration of our authorities. It is not proposed to introduce baths like those of Titus, Diocletian or Caracalla, which were of immense size (the Caracalla baths had, it is said, 1,600 seats for the use of bathers and the Diocletian 3,200), but to adopt a modification of them. It might be noted that the largest of these Roman baths had a stadium for the games of the young men, with raised seats for spectators, and places from which philosophers and literary men could discourse or read aloud their latest compositions. Everything was done on a magnificent scale, so much so in fact that Seneca says: "To such a pitch of luxury have we reached that we are dissatisfied if we do not tread on gems in the baths." Probably few British bathers are likely to tread on gems in their baths; certainly not in those of the London vestries. A feature, however, of these Roman baths that might easily be adopted in those of the present day was the planting of trees in the interior open space near the porticoes. The relation between trees and water is eminently suited to the former being used in the manner described, and the appearance of a public baths with a row of columns against a background of green would surely be excellent. In their baths, as in everything else, the Romans exhibited technical skill of the highest order, and the way in which they rendered their walls impervious to moisture, carried and heated their water, and constructed flues for the conveyance of hot air through the walls was remarkable. We may therefore well take a lesson from this great people in the matter of baths, though, perhaps, we shall never be able to make such low charges to the users as they did, for their charge was only a quadrans, or about half a farthing. A suggestion which we might make as a modification of Mr. Snell's is that at the end of a public swimming bath there should be a row of columns dividing off a large hall lighted from the top, having a glazed tile or mosaic floor, and fitted with gymnastic apparatus of all kinds. Bathers could thus exercise themselves in two ways, and when they became tired of the bath could go to the hall, and *vice versa*. An addition like this would not entail a very large extra expenditure, and would certainly add much to the popularity of the baths. We should like to see it carried out somewhere.

Men Who Build.

No. 59.

WILLIAM EMERSON, F.R.I.B.A.

THE very widespread interest which has been shown in connection with the recent presidential address delivered by Mr. Emerson before the members of the Royal Institute of British Architects will give a special interest to the following notes upon his work and career. It is usual in the case of any man famous for high excellence in his profession to examine the records of his ancestors in order to trace the rise of the particular talents for which one's subject is noted. Such a course, however, in the present case affords us no light. The architect who now honourably occupies the presidential chair of the Royal Institute does not appear to have had any forefathers immediate or remote who were specially interested in architecture. It can only be said that William Emerson was born in the year 1855 of parents not in the least connected with architecture or the pictorial arts, and that at an early age he began to show a great liking for drawing all sorts of buildings. His unguided talent selected intuitively its own material, and the early predilection for sketching architectural subjects showed unmistakably that the boy was meant to become a designer of what he so industriously copied. This fact was so impressed upon an architectural friend of the family that he urged the parents of William Emerson to place their son with an architect. This wise step was accordingly taken, Mr. Emerson being a pupil first of Messrs. Hatherston and Pite, and then entering the office of William Burges, one of the most original exponents of pure Gothic at the time of the mediæval revival. Mr. Emerson's early training therefore was all in favour of Gothic, and it may be mentioned here that if one cannot trace the origin of Mr. Emerson's talents to his ancestors, one is able to see that some of his best attributes were strengthened by his excellent training with Burges. Some of Mr. Emerson's earliest architectural work was in connection with Cork Cathedral, in which Burges showed a wealth of invention in mediæval detail, which few architects of this age have approached. Burges's work evidently impressed his pupil, for Mr. Emerson in his address bore eloquent testimony to his former chieftain's genius.

It was not Gothic alone, however, which came before him during his period with Burges. The designing of the Bombay School of Art fell to Burges, and when the drawings were completed William Emerson was fortunate enough to have the task given to him of conveying the designs to Sir Bartle Frere, the then Governor of Bombay. Burges, of course, had produced a fine design, but owing to a lack of knowledge of the peculiar requirements of Indian architecture it was thought desirable not to carry out the building on his lines. Mr. Emerson's task was therefore completed, but seeing great opportunities for a resident architect in India, he decided not to return to England. The choice was evidently a wise one, for his hands were soon full of important commissions. Mr. Emerson was lucky in commencing work in Bombay at a time when a considerable amount of money was being spent on public works and in beautifying the city in many ways. The margin of expenditure to which the architect might go was never fixed with any mean hand. It would make many an English architect's mouth water to hear the freedom which was allowed in the matter of cost. One of his most interesting works at Bombay was the markets, which are still considered to be a show sight in one of the most beautiful cities in the world. In the centre of the market buildings Mr. Emerson placed a fountain, which was decorated by a series of sculptured panels by none other than Mr. Rudyard Kipling's father, who was at that time instructor to the Sculpture Department of the Bombay School of Art, which had been erected on plans more in accordance with Indian hygiene than those of Mr. Burges to which reference has already been made. In

most of his Indian works Mr. Emerson followed the indigenous styles on broad lines. Naturally he found that any slavish following of Indian architecture was incompatible with modern requirements, the number of rooms required alone necessitating a semi-European treatment. In many cases, the special needs of the building dictated to a large extent the treatment which should be adopted. The Allahabad University, for instance, was a Mohammedan institution, whereas the Bhaunagar Hospital was for Hindoos. Both buildings required radically different arrangements, materially affecting the architecture of the buildings. The accompanying reproduction (see inset sheet) will give a good idea of the external architecture. Reproductions are also given herewith of Mr. Emerson's designs for a palace for the late Maharajah of Bhaunagar,

him in Queen's Gate (with its fine billiard room in panelled cedar), and of his drawings for the proposed Liverpool Cathedral. It is not surprising that the president looks with favour upon his cathedral design, for it has a very large measure of that romantic mystery which is the charm of Gothic. The great dome in front of the choir is as fine as it is strikingly original in conception. The reader can gain some idea of Mr. Emerson's Gothic work at its best from the reproduction given this week. For various reasons which need not be detailed here Liverpool still awaits its cathedral, but it is probable that in the near future the question will again come to the fore, when it is to be hoped Mr. Emerson will at last gain the opportunity of putting his designs into lasting stone. St. Mary's, Brighton, is another good example of Mr. Emerson's



MR. WILLIAM EMERSON, PRESIDENT F.R.I.B.A.

which is interesting for its Oriental beauty. The building itself, however, owing to the sudden death of the late Maharajah, has not yet been erected.

Mr. Emerson altogether did a considerable amount of work for this Indian prince, but his work during his sojourn in India was not all in Oriental styles. Several English churches in Western India are from his hand, perhaps the most conspicuous being the Gothic cathedral of the diocese of Lucknow at Allahabad. Before dismissing this part of the president's work, it may be said in brief that Mr. Emerson found great pleasure in the designing of Oriental buildings, the necessary verandahs and other covered ways for admitting air, producing interesting arcaded effects, of which, it is evident, Mr. Emerson took full advantage.

Of his work in England, since his return from India, mention may be made of his Hamilton House and the house erected by

best work. The stalls, pulpit, and font are all excellently done.

Though his early prejudices were all in favour of Gothic, Mr. Emerson takes anything but a one-sided view of the present vexed question as to the suitability of Gothic or Classic for modern town architecture. Both styles are imperfectly adapted to modern needs, especially in the matter of fenestration, and, in his recent address, after speaking of the Classic period of the present century and the ensuing Gothic revival period, the president added: "In the third distinctive period of the century we see architects abandoning purism and betaking themselves to an eclectic treatment of the two great branches of style. May we not hope that along this line a national architecture may eventually be reached, at once good in an artistic sense and flexible and useful from a practical point of view?"

TAXATION ON RATABLE PROPERTY.*

By HENRY J. SABIN.

THE phenomenal fall in farm rents and the increased and increasing requirements of urban authorities have combined to re-arouse and to deepen the interest in economic questions involved in the incidence of imperial and local taxation on ratable properties. This taxation is levied upon an occupier, not in any visible relation to his income or to his real ability to pay, but in relation to a yearly sum payable, or deemed to be payable, to another party. If it be true, in the strictest sense, that taxes are levied on persons, not on things, that "it is not property which is taxed, but the person or persons who are in enjoyment of it," who is it that pays taxes and rates on houses and land? The party who has the pleasure of paying, or the party who has the enjoyment of ownership? If it is a divisible burden, what principles, if any, govern its division? Questions

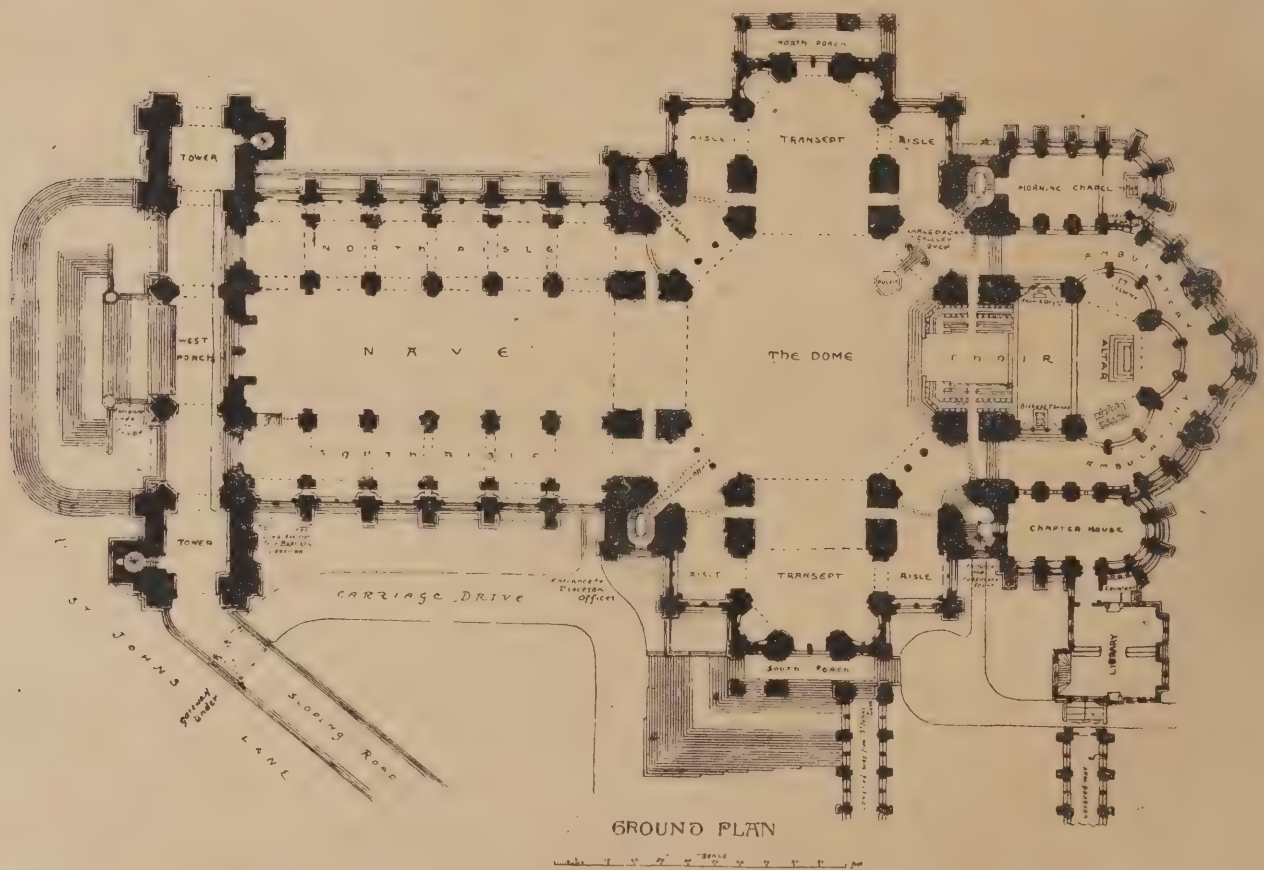
However, much of the outlay is unavoidable, and the Royal Commission in search of information for a final report has obtained assistance to that end and has published in Blue Book C. 9528, 1899, a memorandum by Sir E. W. Hamilton, K.C.B., himself one of the Royal Commission, and observations by financial and economic experts in reply to questions submitted to them. No such array of valuable material on the subject of the true incidence of taxation has been brought together in convenient form before.

In discussing the incidence of taxation as surveyors rather than as students of political economy, acquaintance with the relationship between landlord and tenant leads, I suggest, to this important general conclusion: that the closer the economic contact between the taxpayer and the party who can be finally made to share the burden, (1) the greater will be the proportion shifted, (2) the quicker will be the process, (3) the smaller will be the loss by friction, and (4) the higher will be the percentage of the final impost that will accrue to the rating authority.

In considering the true incidence of taxation

house is built and while the house is vacant. It is, in fact, created by the occupier in the act of occupying, and is collected by him along with a tax which he deducts from his rent. As he has no authority to deduct the house tax, the first inference is that the occupier pays it as in the nature of an income tax, according to Mr. Blunden's view, and that it does not fall upon the owner as averred by Mr. G. L. Gomme. Most authorities agree that it comes under the head of a tax on commodities, "theoretically a house being regarded as a sort of product grown upon the land." I suggest that in respect of houses well above the limits of remission or exemption, and where the tax actually reduces the amount available for outlay on other necessities or on luxuries, the house duty may be in some sort an income tax, but that this is less likely to be case in houses below £65 rental, or in respect of the whole tax in any case.

That a house tax diminishes the demand for sites, as predicated by Professor Edgeworth, is borne out by experience in provincial towns; it scarcely applies in London. In such towns sites for houses below the exemption



PROPOSED LIVERPOOL CATHEDRAL: GROUND PLAN. WILLIAM EMERSON, ARCHITECT.

tions such as these are not "mere theoretical conundrums," they are interesting economic problems, and they bear so directly on the work of land agents and surveyors that we ought to be competent to form opinions in regard to them, not cast in the mould of a narrow, professional prejudice, but shaped by experience and strengthened by a knowledge of facts relating to the buying, selling and letting, of the things rated.

While it is alleged that the method of raising funds for local purposes by rating is faulty, inasmuch as there is no security of "ability to pay"—the essence of equality in taxation—most of the remedies adopted, and some of those proposed, have equivalent faults. In fifty years rates, tolls and dues raised by local authorities, and taxation raised for local purposes by Parliament, have risen from about fifteen millions to about fifty-five millions; while the proportion of the parliamentary share has risen from one-twentieth of the local share raised by rates to more than one-fifth.

* Résumé of a paper read before the Surveyors' Institution on March 26th, 1900.

on houses we must differentiate between the building and the land. Together they are in law real property; in political economy the land is, the house is not; it is consumable and a commodity. Our conclusions may therefore vary according to the view we take of the true ownership of the house as distinct from its site. It is held, at first sight paradoxically, that an occupier of a house is the owner of the commodity, purchasing it for the period during which he pays rent; that therefore whether taxes fall on real property or on commodities, tenants of houses have to bear taxation actually as well as apparently. But if the tenant be a purchaser of the user on a limited hire system, the article purchased is diminished in value by the impost upon it, and the vendor (the landlord) is therefore the loser in the transaction and actually bears the tax.

The problem will have more light thrown upon it when we consider: What is the real incidence of (a) the Inhabited House Duty? This tax is levied on the united value of land and house; it is non-existent both until the

figure are saleable and fetch higher prices than sites for higher rented houses, and this, I think, quite apart from any other considerations. The freeholder, of course, will neither gain nor lose if he be a mere rent-charger, but in respect of land to be marketed, freeholders in general would gain or lose in price, or rental, a part of the tax remitted or imposed. We are justified therefore in inferring that owners do bear part of a tax levied upon land applied to a specific use, such as building houses.

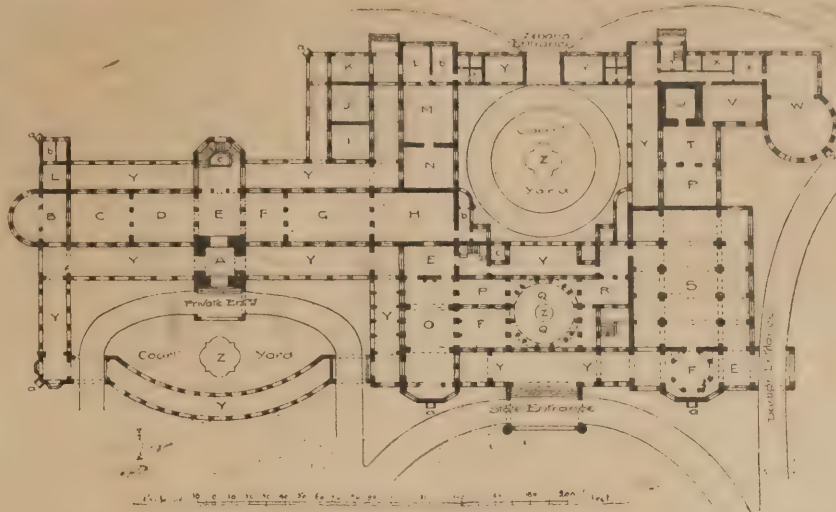
Sub-question (b) makes the same enquiry as to rates on houses and trade premises. This question is not encumbered by the introduction of the disturbing factor of remissions. The general arguments used in the last enquiry apply to all ordinary rates so far as they are uniform, and in respect of burdensome as distinguished from beneficial charges. Political economists may distinguish between imperial taxes and local rates. An agent does not ordinarily do so when letting premises.

In London we are (1) greatly under the influence, benignant or otherwise, of the lease-

hold system, and (2) possess, much more acutely than in other cities, certain districts which are, as it were, centres of gravity for values. At such centres there is an absolute monopoly of a certain quality of building space. Monopolists cannot transfer to others the whole of a burden primarily laid upon them or theirs, and this will follow:—The rents of sites and of houses at such points as Threadneedle Street and Grosvenor Square will be enhanced by the fact that only the most profitable businesses and the richest tenants can pay the rents that can there be demanded; they will be reduced by a proportion of the rates and taxes attaching to the limited area included in the monopoly, reaching practically the whole at the centre. As such centres are receded from, centrifugal force is exerted and values diminish until the limit of building is reached. At or beyond the limit the land, as regards building value, is stricken with sterility; inside the limit the owner will have the potential value reduced by no more than the proportion of the tax on the ground value. Outside the limit entirely new conditions arise.

It would be idle to assume that rates for real services all equally fall on the house-owner or landowner. It requires a stretch of imagination to admit that the cost of cleaning the streets of snow has become a rate falling entirely on owners because an Act of Parliament has relieved the occupier of the normal duty of keeping his own doorstep clean and placed it upon the local authorities. Yet it is clear that if the duty had been placed upon one parish and not upon another, the tendency would have been to depreciate the value of houses in the extra-rated parish, unless—a very unlikely case—the whole management of the parish was so good as to attract cleaner and more respectable occupiers prepared to pay for the benefits. It may be, too, that in some districts a free football ground would be deemed worth paying for, and in others that a free library was of value. I believe it is therefore safe to assume that, apart, of course, from so-called "rates" for water and other purely valuable services, payments for benefits do not immediately or always affect rents, and that they should not, being properly occupiers' charges.

One of the difficulties in providing labourers' cottages is that the outlay will not bear a return on the lowest remunerative scale, partly on account of the rates to which they become subject when erected. Professor Marshall's suggestion for a remission of rates on improvements for a period is a valuable one, whatever the prospects of its acceptance may be. I hold that rates on farm rents fall on landlords, subject to the resistance of existing contracts in the case of new or increased imposts.



PALACE FOR HIS HIGHNESS THE LATE MAHARAJAH OF BHAUNAGAR. WILLIAM EMERSON, ARCHITECT.

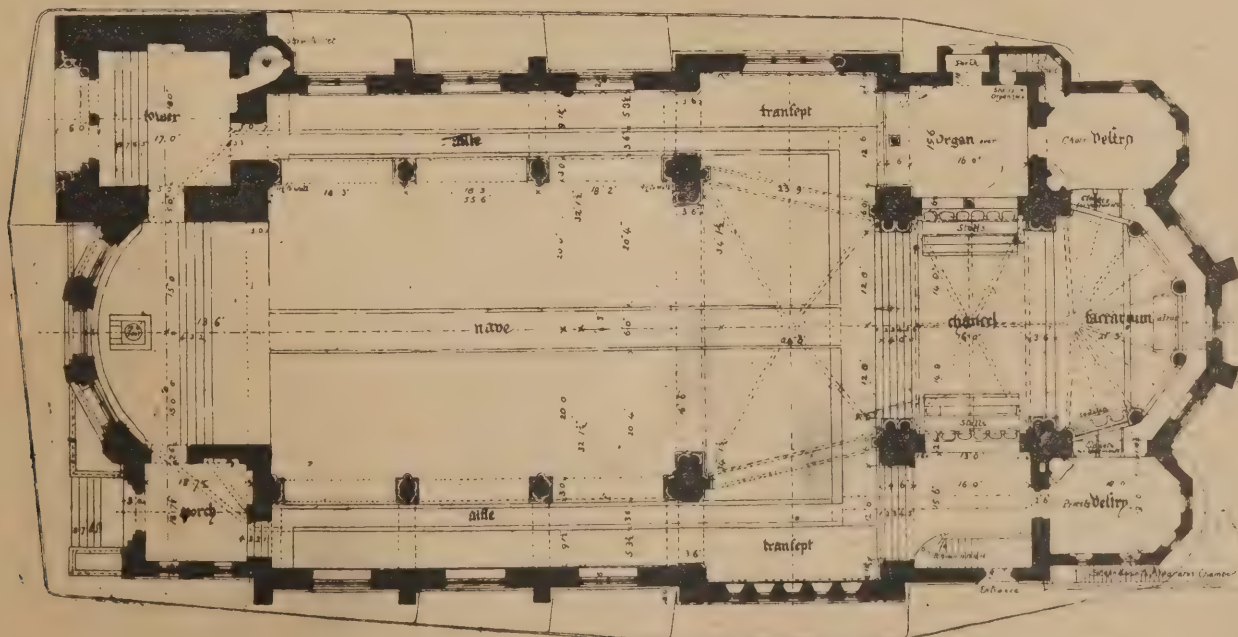
A Tower. B Smoking Verandah. C Smoking-room. D Billiard-room. E Vestibule. F Ante-room. G Dining-room. H Picture Gallery. I Service. J Jamdar Khana. K Barber. L Bath. M H.H. Bedroom. N H.H. Dressing-room. O Drawing-room. P H.H. Retiring-room. Q Hall. R Sitting-room. S Durbar Hall. T Muniment-room. U Strong-room. V Clerks'-room. W Guard-room. X Water room. Y Verandah. Z Fountain. a Sentry Box. b W.C., Sweepers' Stairs, &c. c Lift.

Should ground values be separately rated for local purposes, and, if so, on what principles? This subject had considerable attention from the Town Holdings Committee. Sites, or ground values, already bear a share of rates, they cannot escape the initial load of rating, and when first fixed in respect of any leasehold property they were deprived, not unjustly, of their highest potential amount by the rates of the locality.

Apart from rating purposes, two reasons are urged for a separation of site values. First, to remedy an injustice in regard to deductions for repairs where the ground rent is an appreciable part of the value. At present premises rated to say £900 a year gross, with a ground rent of say £300, receive an allowance of one-sixth and are rated net at £750; whereas the building alone being subject to decay, and the sixth being a maximum allowance and always granted, the reduction should be allowed on £600 only and the net be fixed at £800. Such a method of adjusting inequalities that will occur to any of us would not of itself be unfair, and would be preferable to an invidious and expensive examination of premises for the purpose of determining what should be allowed in each case—a method that would put a premium on neglect and make dilapidations remunerative.

Secondly: It is proposed to place site values on the rate list to secure a remission of house duty on that part of the total annual value; inasmuch as a house duty becomes an onerous land tax when levied in respect of anything more than the house itself. However desirable this remission might be, it would clearly not be consistent with the views of those who desire to see the site value taxed *per se*. If the house duty were transferred to local authorities there would be less reason for this separation, as relief would be given to this extent to local charges and the proportion chargeable to sites might be deemed to be a tax on ground values.

I am at one with Mr. Blunden in believing that it is not so much in rural districts as in great towns and some smaller ones that the pressure of rates and rent is felt. While I cannot, however, admit that because the final incidence of a rate is long delayed its natural and inevitable resting place is not equally on owners, there is much more reason for intervention on behalf of urban ratepayers to secure relief while economic laws are working. It appears to me sound policy to hasten the incidence to its final goal by all equitable and honest means, and I am satisfied that owners would gain rather than lose by an early transfer of their just burden. Anything which



ST. MARY'S CHURCH, BRIGHTON: GROUND PLAN. WILLIAM EMERSON, ARCHITECT.

raises the physical or moral tone of a community, and which enables its members to successfully compete with outsiders, must tend to the benefit of the capitalist. But other capitalists than the owners of the land are benefited, and I am entirely puzzled by an argument which suggests that a great public good, such as extended education or the provision for a nation's poor, should be made to fall absolutely upon the ground rent or land-owners.

SOME COMPARISONS OF GRAPHIC STATICS APPLIED TO ROOFS.*

By HENRY ADAMS, M.I.C.E., M.I.M.E., F.S.I.

I PROPOSE now to deal with some elementary work in graphic statics, which may be more or less known already to many of you, but I hope to be able to put it in such a way that new points of usefulness may be brought out; and as I want to build up the work from simple data, I must begin at the beginning and endeavour to explain it so that those who have absolutely no knowledge of the subject will be able to grasp it and afterwards turn it to practical use. We all have an idea of what is meant by force, but the greatest scientific men of the day are unable to give a definition of it that is quite satisfactory; for our present purpose we may look upon it as pressure that will produce movement if it gets the chance. Now, to fix upon paper what we mean by any given force, we must have four items of information:—(1). *Its magnitude*.—This is shown by the length of a line drawn to some suitable scale, as 1 in. to 1 ton. (2). *Its direction*.—This is shown by the position of the line, whether up or down, horizontal or sloping, and if the latter, how much. (3). *Its sense*.—This is shown by an arrow head placed on the line of direction, to show towards which end it is pushing. (4). *Its point of application*.—This is where the force is to be placed with regard to something else.

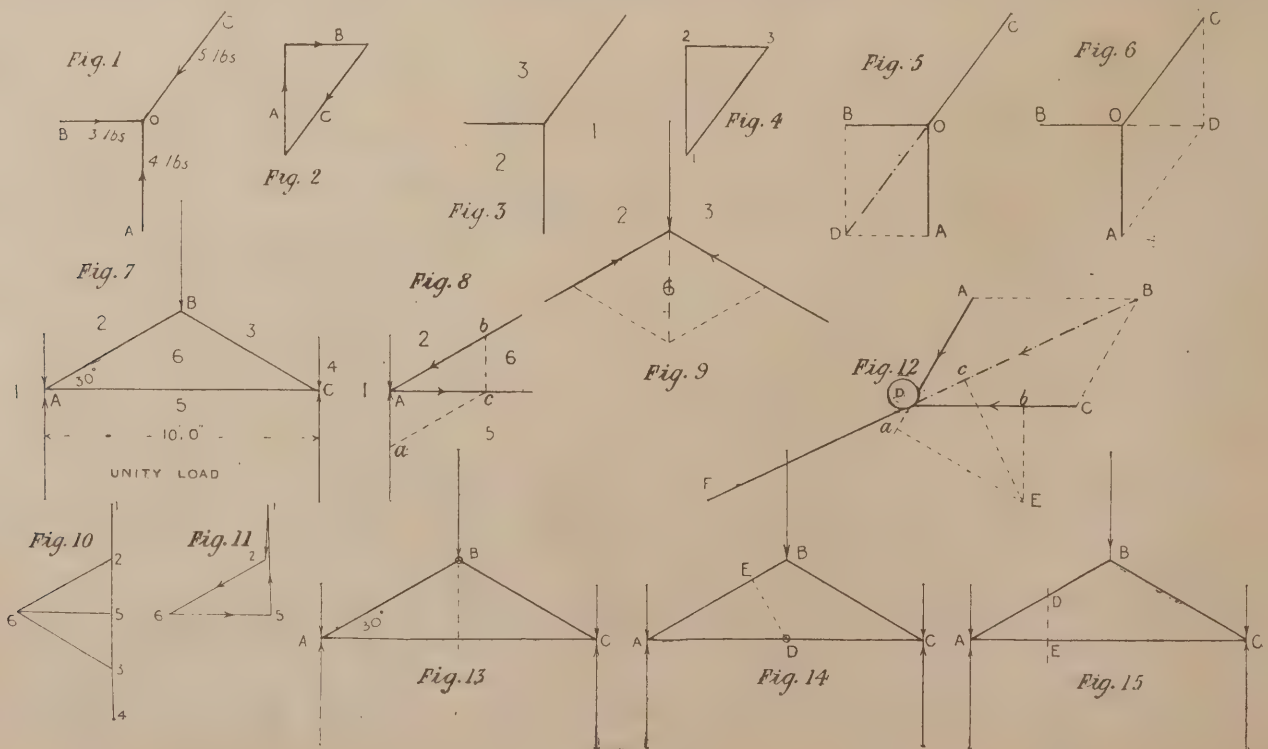
Let us represent three forces, A, B, C, acting upon a particle O, Fig. 1. A and B may act at right angles to each other or in any other direction, and then C may be put in such a position that it will just balance the other two. If now we take these three lines and

make a triangle with them (Fig. 2), taking them in order and seeing that the arrow heads run the same way round, we shall have produced what is called the triangle of forces, but I prefer to call it the reciprocal of the former diagram, and should like to mark it differently. Taking the same figure over again, let us number the spaces between the forces (Fig. 3) instead of the forces themselves; then what was before called force A will now be the force between spaces 1 and 2, or, more briefly, it will be force 1-2, force B will be 2-3, and force C 3-1. Now, to make the triangle (Fig. 4), draw a line 1-2 equal in magnitude and similar in direction to the force 1-2, line 2-3 similar to force 2-3, and line 3-1 similar to force 3-1. It is a property of reciprocal figures that lines meeting in a point in the original make a closed figure in the reciprocal, and *vice versa*. You may say you understand so far all very well, but what is the use of it? Well, suppose we only had forces A and B, that is 1-2 and 2-3, we should draw those two sides of the triangle, and the third side, or the distance and direction from 3 to 1 in Fig. 4, would give us the magnitude, direction and sense of the force required to balance the other two.

I must just say a word or two about the parallelogram of forces, and we will make use of the same three forces, A, B, C. From end of A (Fig. 5) draw a line parallel to force B, and from end of B draw a line parallel to force A. Let these intersect at D, and join D O; then A D B O is a parallelogram of the forces A and B, D O is in its diagonal or resultant, in other words a force D O would have the same identical effect as the two forces A and B together; force C is equal and opposite to the resultant and is technically called the equilibrant. These forces being in equilibrium, we might take any two of them to find the third. For instance, taking A and C in Fig. 6, O D is the resultant and B becomes the equilibrant. A simple couple-close roof truss A B C, Fig. 7, may now be taken to show the application of these principles. First, we must place arrows to show the external forces. There are two sorts, active and passive, or forces and reactions. The former are produced by the weight of the roof timbers, the covering on the roof, and the temporary loads of snow and wind pressure. The reactions are the forces supporting the ends of the truss, according to one of Newton's laws, which says, "Action and reaction are equal and opposite." If you press your hand down upon the table the table is pressing up against your hand with an equal force, not theoretically so only, but actually and practically, as would be visible to you if the table were made of soft india-rubber.

The load acts all the way along the rafters and produces a bending or cross strain. This cross strain is sometimes a very serious matter, and it is one of the defects of reciprocal diagrams that they cannot take any account of cross strains, so we must put the arrows representing the external forces of the load at those points where the rafters are supported, namely, at A, B and C. If the total load be taken as equal to unity, then $\frac{1}{2}$ will be at A, $\frac{2}{3}$ or $\frac{1}{3}$ at B, and $\frac{1}{3}$ at C, while the reactions at A and C will each be $\frac{1}{2}$. To work this case by parallelogram of forces we have first three forces meeting at A, as shown in Fig. 8, two of which are known and two unknown. The two known forces are the load 1-2 and the reaction 5-1 which are partly neutralising each other, leaving the balance A $a=\frac{1}{2}$ to act through the truss. Complete the parallelogram as shown, cutting off the lines 2-6 and 6-5 in the points b and c. The distances A b and A c show the amount of force in those two directions to produce the known balance of load and reaction A a, and gives, therefore, the stress in those two parts of the truss. But the sense of the two forces is different, as shown by the arrow heads, the rafter being in compression and the tie in tension, because the arrows are acting respectively towards and away from the joint. At the ridge we have the three forces shown in Fig. 9. The amount of 2-3 is known to be half, and as this is the equilibrant at the joint, produce the line downwards to give an equal and opposite force which shall be the resultant of 3-6, 6-2. Complete the parallelogram, when the proof of accuracy will be that the force now found necessary in 6-2 will equal what was found to be required in Fig. 8. We have found no difficulty because we took a very simple figure, but easy as the working may be, it is easier by the method of reciprocal diagram. Fig. 7 is called the frame diagram, and this is always drawn before commencing the reciprocal or stress diagram. The stress diagram begins with the line of loads as in Fig. 10, 1-2, 2-3, 3-4, 4-5, 5-1 forming a closed polygon bounded by the junctions 1, 2, 3, 4, 5, 1, and looking like one straight line, because the parts overlap. Next we want the stress in 2-6 and 6-5, so working from the known to the unknown we draw lines from points 2 and 5 parallel to these parts, giving point 6 by their intersection. Having point 6, we now join 6 and 3, and the whole figure is completed. By using the same scale with which the line of loads was drawn, we can measure off the lengths of 2-6, 6-5, 3-6 in Fig. 10, and that will give us the stresses in those parts. The nature of the stress, whether tension or compression, will be found by tracing the concu-

* A paper read before the British Institute of Certified Carpenters on March 3rd, 1900.



Correspondence.

Valuation of Houses (Repairs and Empties.)

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I regret having to encroach further upon your space, but Mr. Brand's explanatory letter affords such abundant occasion for criticism that some comment seems desirable. I will, however, be as brief as possible. I would first assure that gentleman that in drawing attention to some indisputable facts (on p. 59 of your issue of February 28th) my object was not so much to question his statements (p. 26, February 14th) as to utter a protest against a general practice that I feel to be discreditable; his statements being merely the occasion and not the cause of my letter. His position is, however, a little obscure, as he first commends and then opposes my attitude—twice impressing your readers that "it is as easy to paint the picture black as to gold." This may be a truism, but it is not true in the case of the house agent, for it seems to be much easier for him to whitewash or "to gold" the picture.

Mr. Brand's justification of what I have shown to be inadequate figures may be shortly stated:—1. That the expenses and risks of house property are so variable that no one can "venture to estimate a fair average" upon property in general or upon a suppositious case. 2. That the percentages given were only in illustration of the methods of valuing, and not in any way intended to represent an average of fact; in other words, that reasonable figures are immaterial. I do not agree, for nothing is more distressing to the struggling student than to meet with puzzling inconsistencies; and Mr. Brand should—as he easily could—have quoted reasonable averages. I have never seen any examples in any text-book that did not have a colour of probability. His explanation—No. 1 above—as to the uncertainty of things is quite beside the point, and not borne out by the facts which he himself shows by quoting other persons' general averages. Exceptional cases are, of course, to be met with, but every surveyor knows that there is a well-defined area of averages—say, from 10 per cent. to 25 per cent. for repairs; and I go further and say that it is practically impossible for any expert breathing the daily atmosphere of valuations to quote other than a reasonable average (e.g., 15 per cent. for repairs and 8 per cent. for empties in such a house as instanced), even if put down hastily.

I would like to have stopped here, but Mr. Brand has taken the opportunity of "pointing out some little defects" in my letter. He objects to my deductions of 25 per cent. for repairs and 8½ per cent. for empties (a special case I quoted) as being excessive and incompatible with "the generally accepted percentage expected from house property." Is not this a little illogical? Surely these figures or any other figures—so long as they represent facts—should be, and are, perfectly compatible with "the generally accepted percentage." In the broad sense it matters not to an investor whether the proportions of outlay are 5 per cent. or 50 per cent., providing he knows it before he buys, and it is the surveyor's duty to ascertain the real facts, correctly value them, and then to advise his client honestly, although he may have to "paint the picture black" and endanger his own fees at the same time; but for his client's sake it is better to do that than to have it go black afterwards.

Mr. Brand, in referring to the heavy periodical but essential expenses on property, says that "the large estimates mentioned can never be included under the head of ordinary repairs." This may be the key of the situation, and may account for the 5 per cent. allowed by Mr. Brand as sufficient for repairs, by which is understood "ordinary" or inexpensive repairs. Should that be so, the question naturally arises: If "the large (and costly) estimates cannot come under the head of ordinary repairs," under what head do they come, and from what fund are they to be paid?

Also, why does not Mr. Brand take into account the extraordinary repairs?

Now as to taxes. I must, of course, and do, accept Mr. Brand's explanation that 5 per cent. or £5 for rates and taxes on the £100 house was "hastily assumed, and not representative," and thank him for the list of rates which that amount is supposed to include; but if he intends the 27½ per cent., or £27 10s. on a £100 house, to be a corrected average, it would not be very far out for the taxes and rates mentioned. But does he mean to say that this amount (or any other produced by the same taxes) is payable by the owner of such a house, and, therefore, to be included in the deductions of a valuation? Permit me to explain that in the absence of any agreement, certain taxes—known as landlord's taxes, such as land tax, special sewers rates, tithe-rents and property tax—are payable by the owner, but it is quite open for either landlord or tenant to pay all or any of them, excepting property tax (and recently tithes), which the landlord must pay or allow, notwithstanding any agreement to the contrary. Landlords, however, pay all rates in small or weekly properties. On the other hand, the poor rates, highway rates, education, water and some other rates are known as tenant's rates and are payable by the occupier, unless the owner contracts to pay them. But so many tenancy agreements now require the tenant to pay "all rates, taxes, charges and impositions," that it more frequently happens that the only tax the landlord has to pay, and the prospective owner to provide for, is the property tax.

I am sorry that the length of this letter precludes my traversing the arguments for and against the consideration of property tax in valuations, but it will be seen that I have not included it in the following summary, which I now submit as a better representative valuation of an average £100 house than that given by Mr. Brand:—

Gross rent	...	...	£100	0	0
Deductions:—					
Ground rent	...	£14	0	0	
Repairs, 15 per cent.	...	15	0	0	
Empties and bad debts, 7½ per cent.	...	7	10	0	
Insurance	...	1	0	0	
Property tax	...	2	15	0	
Collection, etc.	...	2	10	0	
			40	0	0
Net income	...	£60	0	0	

6 per cent. for 45 years = 15½ y.p. = £930 value of leasehold.

Mr. Brand has taken seven per cent. interest—probably to cover contingencies; I have known other men do the same thing; the principle is not good, as all contingencies should be allowed for in the deductions. The example given is assumed to be that of a house under such a modern tenancy agreement as above referred to, wherein the taxes and rates fall upon the tenant; but if there are any further charges likely to fall upon the owner, they should be included. The surveyor should also see that the conditions of the house and neighbourhood are such that the rent calculated upon is likely to be maintained, and if not, some allowance made. While regretting having covered so much paper, I have been pleased to discuss this question, but cannot continue the correspondence further.—Yours faithfully,

F. S. I.

An Industrial Exhibition at Birmingham has been opened in the Bingley Hall.

Edinburgh Architectural Association.—The members of this association recently visited St. Bridget's Church, Dalgety, and Donibristle House, under the leadership of Mr. Frank W. Simon, architect. The church is roofless and has been so frequently altered that few of the Gothic features remain. A very fine Renaissance addition at the west end consists chiefly of a room on the upper floor panelled in polished stone. The remains of Donibristle House are now a quaint ruin with two wings for offices.

rence of the lines in this manner. Suppose we take the forces meeting at point A in Fig. 7, in the reciprocal, they make the closed figure 1.2.6.5.1, and we must remember that this is a closed figure, although at first sight it does not look like it. Distorting it somewhat, or pulling it open, it is as in Fig. 11. Then we know that 1-2 is acting downwards, so we place the arrow-head accordingly; also that 5-1 is acting upwards; and the others follow concurrently as shown. As 2-6 is shown to be acting towards the joint, it represents a push or compression, and 6-5 acting away from the joint represents a pull or tension.

Now to apply the principle of moments, as another method of investigation. We will first take an illustration of a parallelogram of forces with moments in order to make the matter quite clear. In Fig. 12 the forces A D, C D meeting at point D have for their resultant, B D. If any point E be taken, the moments of the resultant B D about point E will be equal to the sum of the moments of A D, C D, about the same point. Let fall perpendiculars from the directions of these three forces on to point E, as a E, c E, b E, these will be the lever arms, and we then have B D × c E = A D × a E + C D × b E, and we get an equation, i.e., a balance on both sides of the sign =; we can omit any one component part and find it again by means of the others. Thus, if B D were missing we should find it by working out the

result of $\frac{A D \times a E + C D \times b E}{c E}$. The equi-

librant of these forces would be D F equal and opposite to B D, and its lever arm would be c E the same as for B D, because it is in the same direction although of opposite sense. The force F D tends to turn the system clockwise round E, whereas A D and C D tend to turn it the reverse, or counter clockwise. The former direction being called + and the latter — the result of any system can be worked out arithmetically to prove whether it balances. In the simple roof truss we have already been working at (Fig. 13) let us take moments about point B. The forces to consider first are the load on A, the reaction at A, and the stress in A C. $\frac{1}{2}W$ at A × $\frac{1}{2}l - \frac{1}{4}W$ at A × $\frac{1}{2}l -$ stress in A C × $\frac{1}{4}l = 0$.

or stress in A C = $\frac{\frac{1}{2}W \text{ at A} \times \frac{1}{2}l - \frac{1}{4}W \text{ at A} \times \frac{1}{2}l}{\frac{1}{4}l} = \frac{1}{4}W$.

*43 W. The stress in A B does not affect this working, because it acts through the fulcrum and does not tend to turn the bars round that point. To find the stress in A B by this method we must assume the fulcrum at, say, intersection of centre line with A C, which we will mark D (Fig. 14). Then the reaction at A and the load on A will have the same leverages as before, while the stress in A B will have the leverage D E shown in Fig. 14, which will make stress in

A B = $\frac{\frac{1}{2}W \text{ at A} \times \frac{1}{2}l - \frac{1}{4}W \text{ at A} \times \frac{1}{2}l}{D E} = \frac{1}{2}W$.

There is yet another method by which stresses in any framework may be determined. This is called the "method of sections" and is based on the principle that for equilibrium all the resolved parallel forces acting in one direction must equal all those acting in the contrary direction. In Fig. 15, draw any vertical line D E between A and B; the stress in A B may be resolved into horizontal and vertical components, but the vertical component must be equal to the loads which have to be transmitted through it. Hence stress in A B = $\frac{\frac{1}{2}W \text{ at B}}{\sin. D A E}$ or, avoiding the appearance

of trigonometry, stress in A B = $\frac{\frac{1}{2}W \text{ at B}}{\frac{D E}{A D}} = \frac{1}{2}W$ as before. The stress in A C = stress in A B × cos. B A C, which is equivalent to stress in A C = A B × $\frac{A E}{A D}$.

In these comparisons I have taken the simplest possible case, in order that anyone coming to the subject for the first time may be able to comprehend.

"BUILDERS' JOURNAL" SHILLING FUND.

A GOOD LIST THIS WEEK.

WE are glad to say that our readers are not slackening in their efforts to help in the erection of the proposed Homes for Discharged Soldiers, this week's list being one of the best we have yet had. Our offer of a copy of the current issue of "Specification," the invaluable reference book for all connected with the building trades, sold at 5s. nett, is still open to anyone who collects twenty shillings for our fund.

The following subscriptions have been received since the publication of our last list:—

	Shillings.
Previously acknowledged...	2,257
Per E. D. S.; mostly collected from employees of H. Hutchinson, builder, of Haslemere:—	
J. H. H. ...	1
R. D. M. ...	2
Miss Window ...	1
D. S. ...	1
E. W. S. ...	1
E. D. S. ...	2
W. S. ...	1
H. H. ...	1
W. S. ...	1
E. D. ...	1
R. A. D. ...	1
R. S. ...	1
W. G. C. ...	1
A. A. F. ...	1
H. R. S. ...	1
G. C. ...	1
J. G. ...	1
A. I. S. ...	1— 20

Per Walter Ingram Smith, builder and contractor, Quay Street, Woodbridge:—

W. Leech...	1
F. Powell...	1
F. Durrant...	1
A. Lloyd...	1
C. Skinner...	1
A. Jessup...	1
R. Barnes...	2
F. Nunn...	1
F. St. John...	1
W. Edmonds...	1
J. Hill...	1
H. Gooch...	1
F. Leech...	1
A. Mauthrop...	1
W. Adams...	1
A. Fosdick...	1
J. Jay...	1
F. Fenn...	1
W. I. Smith...	5

From Works at Aldeburgh:—

H. Crisp...	1
A. Wightman...	1
J. Hakin...	1
F. Burwood...	1
C. Wooderidge...	1
A. Dudley...	1
James Day...	1
Frank Hakin...	1
D. Bacon...	1
W. Drew...	1
C. Hakin...	1
H. R. Block...	1— 36

Per H. Dorset, builder and contractor, Cradley Heath, Staffordshire (second contribution) ... 2

Per F. W. W., Adelaide Road, Brockley, S.E.:—

F. W. W. ...	5
H. W. ...	5
A. I. W. ...	4
A. J. W. ...	2
E. C. R. ...	1
J. G. ...	1
W., J. and S. ...	1
K. R. W. ...	1
A. W. ...	1
H. L. ...	1— 22

Per W. A. W., building inspector, Birkenhead:—

C. F. H. ...	5
R. E. H. ...	5
S. L. F. ...	5
A. G. ...	5
W. Thompson ...	2½
J. Richards ...	2½
F. Gaskill ...	1
E. and J. Jones ...	1½
W. W. N. ...	1
J. R. H. ...	1
— Dean ...	1— 30½

Per Thomas Jay Evans, Durrell Road, Fulham, S.W.; contributed by the Boys and Girls of the Science Day School of the Chelsea Polytechnic:—

Form V., Miss Penny-cuick ...	7½
Form V., A. Baker ...	10
Form IV., Miss D. Richards ...	8
Form III., Miss W. Reed ...	6½
Form III., L. I. Pozzorini ...	3
Form II., Miss D. Crawford ...	2½
Form II., A. Blackwood ...	5½
Other Friends ...	16½—60

Per John William Harrison, Rock Ferry, Cheshire (Second Contribution):—

W. Williams, jun. ...	2½
R. Keay ...	2
W. Brown ...	2
W. H. Edwards ...	1
C. Newman ...	1
W. Roberts ...	1
O. W. Parry ...	1
T. Parry ...	1
W. Thomson ...	1
T. Myers ...	2½
D. J. Davies ...	2
J. Manning ...	1
R. Baines ...	2— 20

Per E. Steel, foreman at the Whittington Hall Farm Buildings, near Stourbridge; contributed by the workers and others there:—

— Pecksniff ...	20
Tom Pinch ...	20
E. Davies ...	4
E. Steele ...	2½
W. P. Chesney ...	2½
G. P. Deeley ...	2
D. Willetts ...	2
W. Fiddian ...	2
An A. M. B. ...	2
G. Barratt ...	1
A. Cartwright ...	1
G. Steele, junr. ...	1
R. Wade ...	1
R. Chapman ...	1
David Hill ...	1
Squire Meldrum ...	1
R. M. Neale ...	1
J. Breakwell ...	1
W. Poole ...	1
G. Grimshaw ...	1
H. Pickersgill ...	1
John S. James ...	1
J. Brown ...	1
Q. A. C. S. ...	1
W. Carter ...	1
W. Dobin ...	1
W. Worrall ...	1
T. Brown ...	1
Walter Matthews ...	1
D. Hill ...	1
John A. C. Hyde ...	1
Mrs. L. A. Brown ...	1
H. Jeffries ...	1
J. Jones ...	1
G. Brown ...	1
J. Shephard ...	1
G. Hartle ...	1
E. Davis ...	1
J. Shaw ...	1
W. Davis ...	1
Avaya ...	1
A. Friend ...	1— 86

Total ... 2,533½

The following additional contributions in money and kind have been received at the offices of the executive of the Gift:—

Messrs. John Bolding and Sons.—Sanitary fittings for one Home (except baths).
Mr. George B. Davis.—Sanitary appliances for one Service Block.
Messrs. Henry Hope and Sons.—Metal casements for one Home.
Messrs. F. C. Barron and Co.—30 tons Portland Cement.
Messrs. E. R. Burt and Sons.—20 tons Portland Cement.
The Val de Travers Asphalt Co.—500 yards super. fin. paths.
The French Asphalt Co.—Asphalt paths (main site).
Messrs. Fletcher, Russell, and Co.—Grates to the value of £50.
Mr. Alfred S. Tucker.—250ft. super. marble flooring.
Messrs. Blackburn, Starling, and Co.—Three lightning conductors.
Hard York Nonslip Stone Co.—100 cub. ft. stone.
Messrs. W. G. and L. England.—Ten patent reversible windows.
Messrs. Bryce, Junor and White.—Mouldings to the value of £10.
Mr. Robert Adams.—Door springs and fanlight openers for two Homes.
Messrs. Chas. Nelson and Co.—Thirty tons blue lias lime.
Mr. W. J. White.—10,000 red facing bricks.
Mr. Alfred S. Tucker (second gift).—Chimney-piece and stove.
Waltham Art Metal and Engineering Co.—Ornamental covers for electric light pushes and bell pushes.
Messrs. A. C. W. Hobman and Co.—Artificial stone to the value of £20.
The Chester Engineering Co.—Six large patent casements for connection corridors.
Messrs. James and Son.—The inside blades for the recreation house.
Messrs. Long and Coles.—Wrought ironwork to the value of £25.
Messrs. Bradshaw and Co.—The asphalt for roofs and footways.
Mr. Samuel E. Spencer.—Art metal work to the value of £5.
Messrs. Lancaster and Co.—One 450-gallon cistern and one hot-water cylinder.
The Lambeth Brass and Iron Co.—Steam barrel and fittings.
The Phoenix Lead Mills.—Lead pipe, soil pipe, binds, traps, Junctions, and tacks for one home.
Messrs. Rufford and Co.—Two baths.
Messrs. W. B. Bawn and Co.—One tank and cylinder.
Messrs. W. Harland and Sons.—Twenty gallons of Enamel.
Messrs. A. Emanuel and Sons.—Two porcelain baths, four w.c.s, and four lavatories, all complete with fittings.
Messrs. A. H. Lavers Limited.—The whitening for the whole of the homes.
Messrs. Lamigeon and Co.—Ten sacks marble cubes for mosaic.
Messrs. A. and J. Main and Co.—Wire fencing to the value of £20.

FOR THE ELECTRIC LIGHT INSTALLATION (per "Electrical Review").

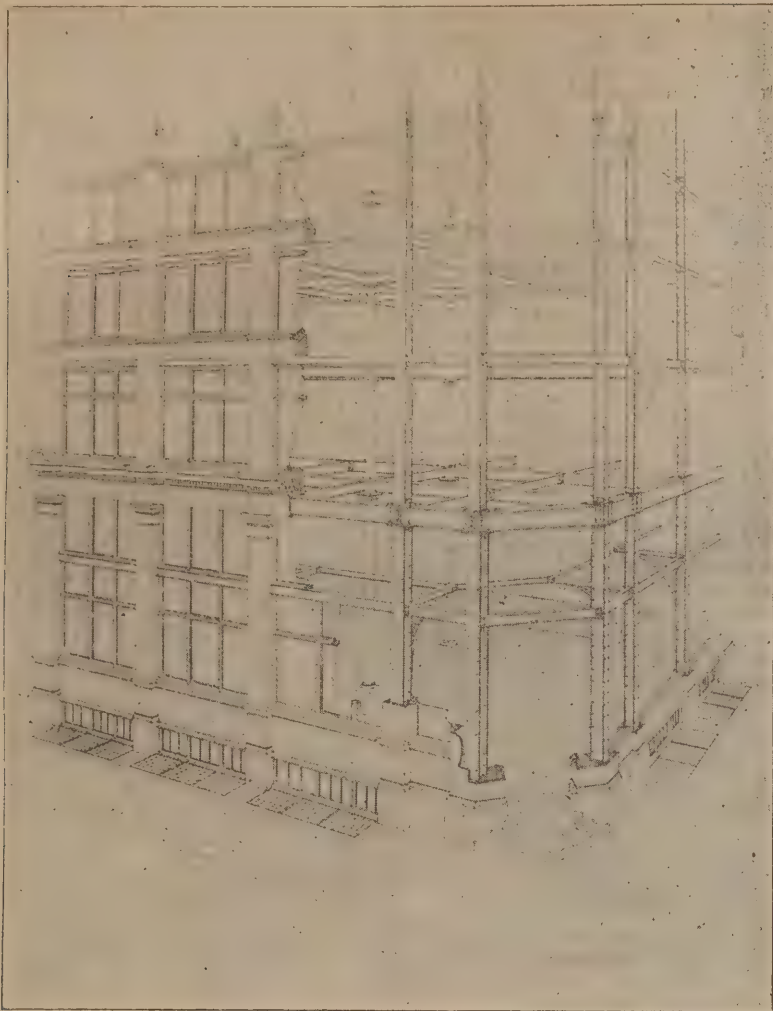
Messrs. Dorman and Smith.—Main switch-board for electric light.
Messrs. Ward and Goldstone.—All the flexible cord required.
Messrs. McGeoch and Co.—426 5-ampere switches and accessories.

FOR THE EQUIPMENT OF THE HOMES.

Messrs. Farrow and Jackson.—The mineral water plant.
Messrs. T. and K. Boote (second gift).—Table and toilet services.

SUBSCRIPTIONS.

	£	s.	d.
Mr. Edwin O. Sachs ...	200	0	0
Messrs. Holland and Hannan ...	52	10	0
Arlesley Brick Company (Beatts), Ltd. ...	50	0	0
Messrs. John Bazley White and Brothers, Ltd. ...	50	0	0
Executors of the late Henry Ryden, Esq. (Highbury) ...	50	0	0
Workmen of Messrs. Holland and Hannan ...	40	16	8
Messrs. Baily and Sons ...	25	0	0
Workmen of Mr. Thomas Boyce ...	16	18	10
Office, Staff, and Workmen of Messrs. Robert Boyle and Son, Ltd. (London and Glasgow Branches) ...	13	10	0
Workmen of Messrs. A. Kellet and Sons, Ltd., per Mr. J. Kershaw ...	11	5	3
Mr. William Benson (Newcastle-upon-Tyne). ...	10	10	0
Messrs. Ernest Matthews and Co. ...	10	10	0
Messrs. A. and W. T. Richardson ...	10	10	0
Builders' Clerks' Benevolent Institution ...	10	6	1
Mr. T. W. Ide ...	10	0	0
General Iron Foundry Company, Ltd. ...	5	5	0
Mr. Thomas Boyle ...	5	5	0
Mr. J. Hubert Podmore ...	5	5	0
Mr. E. J. Wells, per "The British Clay-worker" (Barton-on-Humber) ...	5	0	0
Mr. Alfred Lockhart ...	5	0	0
Mr. Herbert Falkner ...	5	0	0
Workmen of Messrs. Strode and Co. ...	5	0	0
Mr. John Soper ...	3	3	0
Workmen of Messrs. J. Tyler and Sons ...	2	10	0
Mr. Walter Markham ...	2	2	0
Workmen of Messrs. Veitch and Close ...	1	16	0
Workmen of the Mosaic Manufacturing Co. ...	1	3	0
Mr. W. A. Hudson and Workmen ...	1	1	6
Workmen of Mr. A. W. Turnbull, Second Donation ...	1	0	0
Workmen of Messrs. Humphreys, Ltd., Fourth Donation ...	0	15	0
Workmen of Mr. William Murray (Epsom). ...	0	8	3
Workmen of the Berkefeld Filter Company. ...	0	3	6



AMERICAN STEEL SKELETON
CONSTRUCTION *

By BREES VAN HOMAN, G.I.Mech.E.

THE subject of steel skeleton construction is interesting not only to the mechanical engineer but also from an architectural point of view, for in these days of large cities like London, where it is essential to economise every possible inch of area, we are beginning to find it necessary to extend our buildings vertically. It is here that one of the most important uses of skeleton construction becomes manifest, for it offers the only solution of the problem of economising space in the lower floors of high and narrow buildings. In the ordinary methods of building, the higher the wall the greater must be its thickness at the base; but though the lower storeys are necessarily the most valuable, it is in these that the greatest area of a valuable piece of land must be surrendered to enormously thick walls; so that every foot of area gained on the inside measurements increases the capacity of the structure. In buildings erected in the manner now to be described, heavy masonry walls are, of course, unknown, and what appears to be such at first sight is found on closer inspection to be a thin veneer of some fireproof material covering the steel framework which supports the building. By the term "framework" you must not for one moment imagine I mean a mere heap of girders and columns placed one upon the other at the discretion of the architect, for it is at this point we need to call in the engineer who has made a special study of all the necessary details and connections of an immense metal structure, strong enough to carry not only the direct

loads placed upon it (including the weight of the structure itself), but also capable of resisting all lateral strains to which it may be subjected.

The method of skeleton construction consists in using columns or stanchions of cast or rolled iron or steel built up to form various sections, according to requirements which I will deal with later, connected longitudinally with lattice, or, perhaps, some form of compound riveted girder at each floor level. On these girders are built the walls, which are generally of brick, from 12in. to 20in. thick, and reach from the top of one girder to the underside of the next storey girder, extending a sufficient distance outside the girder to allow it to be protected by a casing of some sort (perhaps of masonry or terra-cotta). This construction is continued until the top of the building is reached. Now, there is one point I wish to make clear, and that is, each individual wall is supported by the girder beneath it, and not by the wall on the floor below. Of course there are many possible variations to this general plan, the columns in some cases beginning in the basement and in others at the top of foundation walls at the ground-floor level. Another variation occurs where the columns and walls are separate, the walls being built of sufficient strength to carry their own weight, while the columns merely support the floors and their load. Then, again, the longitudinal girders may be placed in every second floor and the wall made 20in. to 24in. thick below the fourth and fifth tier. When this method of construction was first introduced in Chicago after the great fire, about eighteen years ago, much discussion ensued between eminent engineers as to the expansion of one material over another; but later experience has proved that neither extreme cold nor heat has any appreciable effect on the metal when it is carefully covered, as of course it should be. This special form of construction lends itself most particularly to American cities, where the streets are, one

might say, geometrically planned, a practice which greatly facilitates the work of the designer, as the buildings are for the most part rectangular..

Foundations.

The subject of foundations is rather a large one to deal with in a short paper like this, and I propose, therefore, to give you only a few methods of constructing foundations under variable conditions of soil. In the first place let us take rock. Where you have to build on rock of course very little need be done to the foundation, and it merely requires dressing and the filling-in with concrete of any fissures; but in a case where the proportion of rock is not great it should be taken out, as a mixed foundation rarely proves satisfactory, owing to unequal settlement.

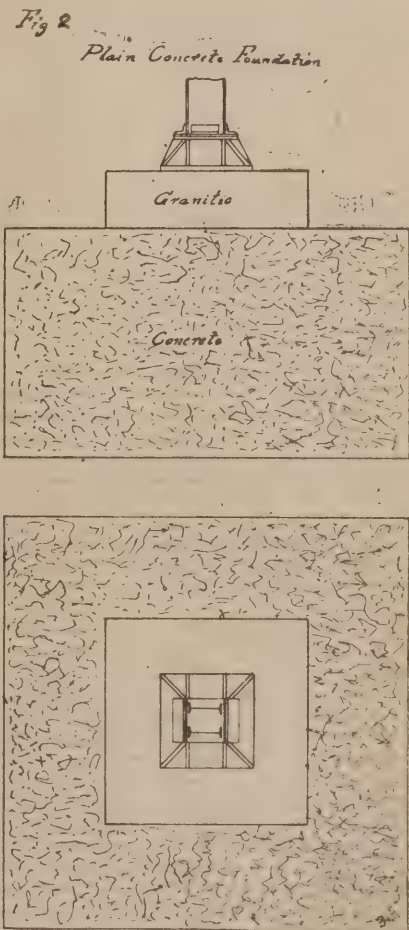
As regards clay, this is not a good soil for foundations when found alone, as it gains and loses water with the seasons; but when found mixed with coarse sand or gravel it will bear nearly as great a load as some of the softer rocks.

One of the best soils for foundations has been found to be some sort of gravel soil which, when confined laterally, is not affected by water, and consequently does not become washed away. With regard to the bearing power of different soils, I cannot do better than quote from a table compiled by Mr. Ira O. Baker for his "Treatise on Masonry Construction," which you will see tabulated in Fig. 1:

DESCRIPTION OF SOIL.	BEARING POWER IN TONS PER SQ. FT.	
	MIN.	MAX.
Rock (hard)	25	80
" (soft)	5	10
Clay (on thick beds always dry) ...	4	6
" (moderately dry)	2	4
" (soft)	1	2
Gravel and coarse sand (well cemented) ...	8	10
Sand (compact)	4	6
" (clean and dry)	2	4

FIG. 1.

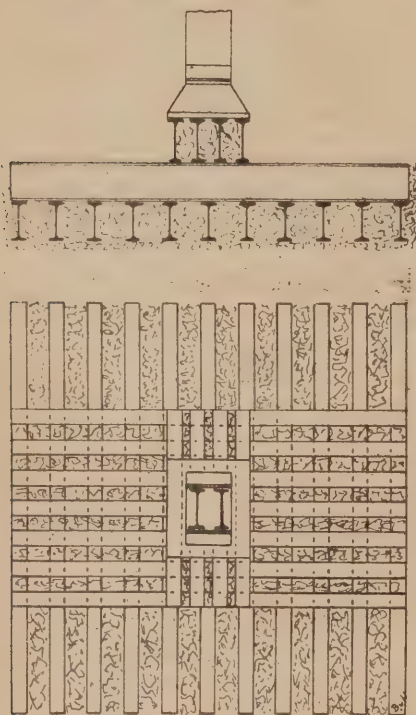
An easy method of determining the bearing power of the foundation bed is by means of a square platform (say 6in. square) having four legs, the load being



*A paper read before the Graduates Association of the Institution of Mechanical Engineers on March 12th, 1900.

put on gradually and frequent levels taken. One-half to one-fifth of the load required to produce settlement is generally taken as the safe load. Under ordinary conditions of building, provided you have a fair gravel soil to work on, it is generally sufficient to have plain concrete foundations something like those shown in Fig. 2, or if you have a soft subsoil it may be better to drive in piles until you reach a firmer bed beneath. These piles should be of taper form, 12in. to 20in. in diameter, and driven in from 2ft. to 3ft. apart, the spaces between the heads of the piles being filled in with concrete, say, to a depth of not less than 12in. Now the above two methods may perhaps be satisfactory for buildings from twelve to sixteen storeys high, but when you reach the height of, say, twenty storeys, it may be necessary to still further strengthen the foundations. This can be done by means of steel beams or rails in concrete. A layer of concrete not less

Fig 3 Raft System.



than 12in. thick is first laid, then a row of beams is placed on top at distances apart which should not exceed the depth of the beam, and, finally, the interspaces are filled in with concrete well rammed down. You proceed in this way for four or five layers, reducing the length of the beams each time and placing them crossways, as shown in Fig. 3. This type of foundation will take a very considerable weight, but with very tall buildings, say, of twenty-nine storeys, supported by columns or stanchions each carrying from two to three thousand tons, you may find it necessary to still further strengthen your foundations. One of the best methods of doing this is by sinking caissons, which was done for the Manhattan Building, the American Surety Building, and other large buildings in New York.

The pneumatic caissons for foundation work of buildings are made of steel plates, generally riveted together in a circular or rectangular form. The excavation is made below or in the caisson under air pressure sufficient to keep out the water which might underlie the foundations of adjoining premises. The foundations are thus carried down to the bed rock without disturbing any foundations of the surrounding buildings. When the bed rock is reached it is carefully levelled off and a massive concrete foundation, perhaps 8ft. thick, built upon it. In Chicago, owing to the peculiar nature of the soil, which is fairly firm to a depth of 12ft. to 15ft. and more but has

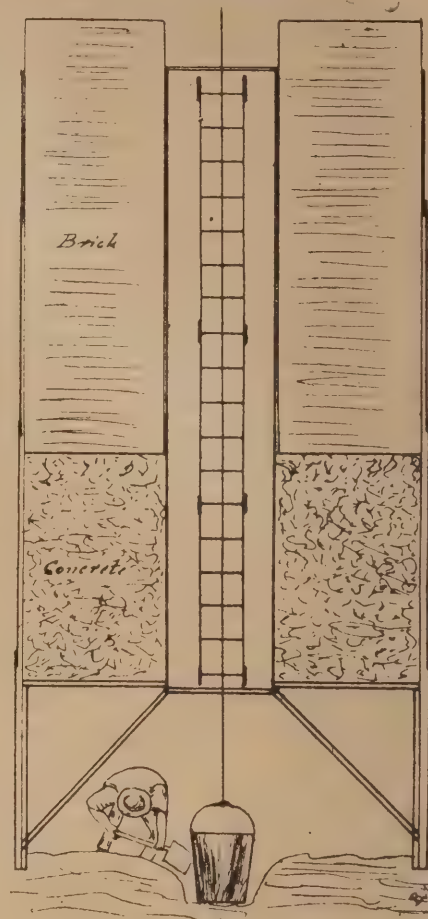
below this a very soft clay soil, the raft method of steel beams in concrete was often adopted, allowing for a considerable ultimate settlement (sometimes as much as 12in. in the building); but the difficulty in this case was that owing to the difference in the bearing power of the soil under different parts of the building it was found very difficult to determine how much to allow for this ultimate settlement. The pile method was also used to a considerable extent in that city.

Before concluding my remarks on foundations, I would refer to a few laws which have been lately published in the New York Building Act relating to the computation of loads. These loads are divided into two branches—the dead load, comprising the whole weight of the building itself, and the live load, which consists of the greatest load it will be assumed to carry when in occupation. In warehouse or factory buildings more than three storeys high, the foundations must be constructed to carry the full dead load and the full live load. In shops and buildings for light manufactures, the full dead load and 75 per cent. of the live load (this also applies to schools and places of public assembly). But in ordinary dwellings and office buildings the full dead load and only 60 per cent. of the live load need be taken. The reason of this is clearly apparent, for supposing the floors were designed to carry 100 lb. per foot super, it is highly improbable that the whole of the floor area in the building would ever be likely to receive that load at one time, and it is for that reason that the above reductions are made. Of course, care must be taken in designing the foundations to distribute the loads as uniformly as possible so as not to exceed the bearing power of the soil. When the foundations are carried down through the earth by piers of stone, brick, or concrete in caissons, the load must not exceed 15 tons to the square foot when carried down to rock, 10 tons to the square foot when carried down to firm gravel or hard clay, and 8 tons where piles are used and driven down to the bed rock.

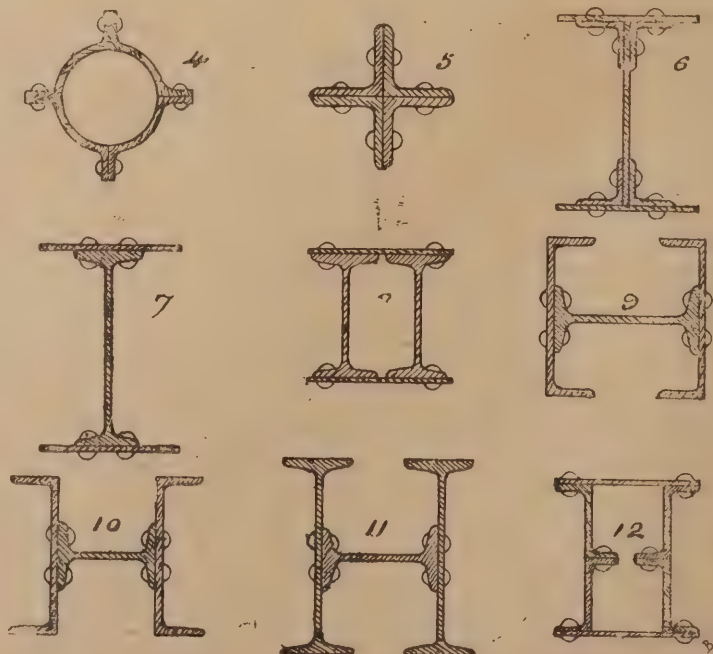
Columns and Stanchions.

The use of cast-iron columns in connection with skeleton construction has of late years been slowly dying out and is being replaced by rolled-steel stanchions, the chief disadvantages of cast-iron in high and narrow buildings being the uncertainty of the strength of the material where connections have to be made with the floor and wall girders, and the liability of the lugs or brackets to break completely off, which, of course, might be very serious. In fact, cast-iron is always such a treacherous material that even with the most careful design the uneven contraction in cooling may set up stresses so great that a slight

Caisson Foundation



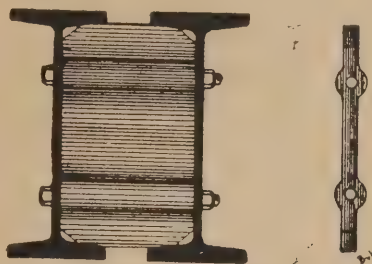
addition to the superincumbent load may cause fracture; hence in practice it is usual to allow a very large factor of safety, say, from one-sixth to one-tenth as against one-third to one-fourth in steel; so that steel is not merely the more reliable, but also the cheaper material. Cast-iron girders are now things of the past, and cast-iron columns will soon be equally rare. Columns made of rolled iron or steel, shaped as shown in Fig. 4, have, on account of their expense in manufacture, almost entirely gone out of use. Another great objection to them is the inability of access to the inside for painting or inspection, and also the difficulty of making suitable connections to the floor and wall girders. The most usual method is the build-



ing-up of stanchions composed of angles, channels, plates, Z-bars or I-sections; the last is now very much used. These five sections are built up in various forms, according to requirements, some of the most common being shown in Figs. 5 to 12. In Fig. 5 you have a section built up of four angles. I do not consider this a good section, as it is a well-known fact that the metal near the neutral axis of a stanchion is of little use, and that the capacity of equal areas varies as the metal is removed from the neutral axis. It seems, therefore, that a better form might be adopted which would meet the requirements of the case. In Fig. 6 is shown a section built up of angle irons and plates, a very common section, but one that costs more to manufacture than the section shown at Fig. 7, as it requires six lines of rivets, whereas in Fig. 7 only four lines are required. Fig. 8 is very similar to Fig. 7, but of greater strength. Figs. 9, 10, and 11 are rather more expensive sections, as the channels cost more to roll, and considerable difficulty is sometimes experienced in obtaining them from the mills when a certain weight and area are required,

and stanchions, the New York Building Act states that where these are used to support iron or steel girders carrying walls they shall be made of cast-iron, wrought-iron, or rolled steel, and on their exposed outer or inner surfaces shall be constructed to resist fire by having a casing of brickwork not less than 4 in. thick and bonded into the brickwork of the adjoining walls. In many cases porous terra-cotta tiles with hollow spaces and set in Portland cement

Fig 15
Cast Iron Separator



are employed, but the brick is the cheaper method and can be accomplished during the building of the walls of the structure. Another method is to use some sort of metallic lathing covered with a plaster made of Portland cement, but in this case the law requires you to put on a second or outside additional covering, having an air space between of not less than 1 in. The chief requirement in fireproofing is to employ some material which shall be as far as possible a non-conductor of heat, such as brick, terra-cotta, plaster, and sometimes asbestos, though the cost of the last-named material precludes its extensive use.

Girders.

The most ordinary form of girder for short spans is the I-section. This may be doubled and separators placed in between, generally about 5 ft. apart, as shown in Fig. 15. A still stronger form may be made of plates and angles, which may also be doubled and additional plates added, bringing the section up to form shown in Fig. 14; or the girder may be deepened, which gives a considerably greater stiffness to the building. Some of the heaviest girders for the Park Row Building, in New York, were made 96 in. deep, having four web plates $\frac{1}{2}$ in. thick with eight angles 6 in. by 6 in. by $\frac{1}{2}$ in. thick, and were designed to carry a load of nearly 3,000 tons. One of the most important points in designing main girders is to have good connections to the columns or stanchions at the different floor levels, for it is these main girders that give the lateral bracing to the whole building and help to transmit to the columns a certain proportion of the wind pressure.

Connections.

The usual method of joining stanchions is by fish and cover plates. It is not necessary to go to the expense of making caps and bases to each separate stanchion, placing one on the other and then bolting together, as is very often done in this country. Connections are made at every two or three storeys, say a third of the whole number of stanchions spread over the ground floor may be joined at the first floor, a third at the second, and the remainder at the third floor so as to avoid too many joints occurring at one level, which would be likely to weaken the building. The joints in the stanchions are generally placed just above the floor level in order that they shall not interfere in any way with the connections to the main girders carrying the floors and walls. Concerning the connections of main girders to stanchions, in the case of box girders it is usual to support them on angle-iron brackets riveted on the stanchions, on the top of which the girder is bolted down. In addition to this an angle-iron cleat is riveted on the end of the girder, which is riveted or bolted to the stanchion when in position, as shown at Fig. 13. The small lacing joists running be-

tween the main girders, which are generally used to carry the terra-cotta tiles for the fire-proof floors, may rest on angle-irons riveted to the webs of the main girders at a suitable level, which is better than running them over the top of the girders, as the floor is then within the depth of the girder and consequently the latter does not project so much below the ceiling; this is rather important, as the head room in a building of this type is limited. It is not necessary to connect every one of these small joists, as they are kept in position by the concrete in the floor, and it is generally found sufficient to bolt up every fourth or sixth one—just enough to form an additional tie and to brace up the main girders.

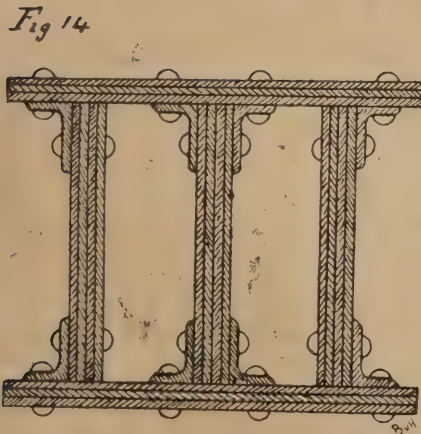
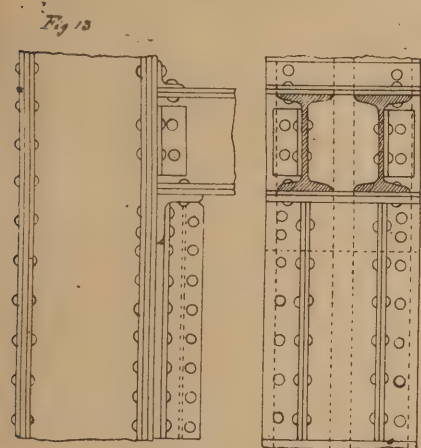
Painting.

This is seemingly an unimportant item in steel or iron construction, but it is one that should always receive proper consideration and should on no account be omitted, as it very often is when a column or lintel is to be built into a wall or otherwise hidden from view; for it is absolutely essential for the preservation of the iron or steel that it should be properly covered with a good sound paint. In the first place, the steel should be carefully cleaned (by scraping or the use of a wire brush) from all rust, scale, dirt, &c., and should receive one coat of metallic paint and pure linseed oil. It is also a good plan to give a light coat of boiled linseed oil to all surfaces before they are riveted together. This first coat should be given to the different parts whilst they are in the works, and should be allowed to thoroughly set before the parts are removed. All machined surfaces should be covered with a coating of white lead and tallow; in the case of cast-iron it is sufficient to give a heavy coat of boiled linseed oil and to brush it well in. When all the parts have been finally fixed in position, the whole structure should receive another two coats of metallic paint, care being taken to let the first set thoroughly before applying the second. In using the term "metallic paint" I wish to imply the use of either oxide of iron or oxide of lead, both of which are very good, some engineers preferring one and some the other. On the whole I should advise the use of oxide of iron for the first coat and oxide of lead for the two last; but it is purely a matter of opinion. There are a few engineers who use quick-drying paints in order that they may expedite the delivery of material from the works to the site, but these paints are always most unsatisfactory, owing to their being made up with benzine and other similar spirits, which, instead of setting hard and adhering well to the metal, dry and crumble into powder in the course of a few months. A good metallic oil paint should not set in less than thirty hours.

Floor Loads.

In calculating the floor loads it is impossible for me to give you any hard and fast rule, for it depends in the first place on what the building is proposed to be used for, and in the second place on where it is going to be erected. In large cities like New York and Chicago they each have their own building regulations, formulated by a Council, who determine what the floors must be constructed to carry, this, of course, varying according to the description of the building.

Some rather interesting experiments were made some time ago by Messrs. Blackall and Everitt, a firm of Boston architects, as to the actual loads on floors, or what we call live loads. They took three large buildings the rooms of which were let out as offices, and after calculating the weights of the persons, furniture, stores, and movable goods occupying the premises, they found that the average load was only 33-3 lbs. per square foot. Now, the Boston Building Law requires you to construct office floors to carry 100 lbs. per square foot, which appears to be a rather large margin. In New York they must be calculated to carry 75 lbs. per foot super; in Chicago, 70 lbs.; although Mr. Birkmire in his book on "High Office Buildings" considers 50 lbs. sufficient; but this seems to be cutting it rather fine. In the London Building Act nothing is mentioned concerning this matter, so that I presume it is left to the discretion of the district surveyor



the demand for them being different to that for angles. The same remarks may also be applied to the Z-bar sections shown at Fig. 12, although this particular section is used to a much greater extent in America than in this country. But for ordinary purposes the I-section shown at Fig. 8 is usually adopted, as it is easily strengthened by employing additional plates, has only four lines of rivets, facilitates connections (as shown at Fig. 13), and is comparatively cheap to produce. Where you require a stanchion to carry a very great load, say 3,000 tons, it will perhaps be cheaper to build one in the form shown at Fig. 14.

In reference to the fireproofing of columns

as acting representative of the London County Council. For places of public assembly in New York 90lbs. is taken; for shops and light manufacturing premises, 120lbs.; and for warehouses, 150lbs. or more, according to the nature of the goods to be stored.

In the case of a factory intended to carry running machinery, the load must be increased in proportion to the degree of vibratory impulse liable to be transmitted to the floor. With reference to dead loads, these again vary to a great extent. The hollow-tile floor illustrated at Figs. 16 when made 6in. thick, the aggregate for the concrete being of ordinary ballast, weighs 60lbs. to the foot, including the plaster. You then have to take into account the light partitions coming on the floor, for which you might allow an additional 20lbs., and, say, 10lbs. for the finish, which is sometimes of wood block, floor boards, and fillets, mosaic, &c.; this brings up the total dead load to 90lbs. per square foot, which, I think, may be taken as an average weight

Fig. 16

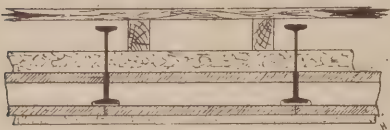
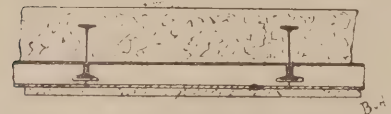
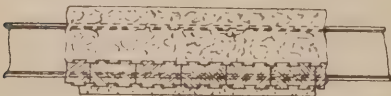


Fig. 17

Solid Brick Floor.



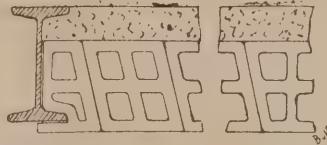
for a floor of that description. In computing the weight of walls, brickwork is taken at 115lbs. and granite and other kinds of stone at 170lbs. per cubic foot. In calculating these floor loads it is essential to make them just strong enough and no more, not only for economy but in order to reduce the dead loads on the foundations as much as possible. The construction should be just as light as is consistent with perfect stability. In America it is the usual practice to allow the minimum of about 75lbs. for the upper floors, 85lbs. or 90lbs. for lower floors (say below the fourth storey), increasing the first and second floors from 150lbs. to 170lbs. per square foot, which may be taken as the computed live loads.

Fireproof Floors and Roofs.

I intend to deal with these two items in skeleton construction at the same time, because most buildings of this type are constructed with flat roofs, so that what applies to one will apply equally to the other; of course, the roof need not necessarily be made flat; the Washington Life Building is a very fine example in the other style. Mr. J. J. Webster, M.Inst.C.E., in his paper on "Fireproof Construction," says:—"There is of course no such thing as a fireproof structure, if the phrase be taken in a strictly literal sense, no known substance being able to resist a change of state when submitted to an intense heat." This is true, but these high buildings are practically fireproof in the sense that they will safely resist any fire which can exist in or around them.

At Fig. 18 is shown a typical fireproof floor as used in America. Hollow bricks or voussoirs are placed between the girders as

Fig. 18



shown, the number and sizes varying with the span. Iron tie-rods connecting the girders are fixed at intervals of a few feet, and concrete is laid on the top of the bricks to a depth of 3in. or more. In the construction of this floor it is necessary to use temporary centering. The concrete may be composed of concrete or some form of ballast, the former being the better if it is intended to finish the floor with floor boards and fillets as it is lighter and more convenient for the nailing down of the fillets. If it is proposed to use coke-breeze, it is absolutely essential to mix with it a fair proportion of coarse sand, say one-fifth to one-third, according to the quality and texture of the breeze. The London jerry-builder very often omits to do this, and he is thus constructing a so-called fireproof floor of the same material that is used on the Continent as a patent fuel. It must always be borne in mind that any concrete formed with Portland cement will only resist fire for a time; hence the importance of supporting it with a fireclay brick, a material which is practically indestructible by fire.

Of course you occasionally hear of a fire-resisting building being destroyed by fire, but then, I think, you will always find it due to some defect in the fireproofing, as was the case with the Chicago Athletic Club, in which the columns gave way. Wooden strips had been wedged between the flanges of the columns every 3ft. or 4ft., and the fireproofing built between them. These strips were burnt out and the fireproofing fell to the floor. But now that we realise what an important point proper fireproofing really is, such faulty construction would never be for one moment entertained. According to the New York Building Act, "when the height of a fireproof building exceeds twelve storeys, or 150ft., the floor surfaces shall be of stone, cement, tiling, or some similar incombustible material, or, if of wood, must be treated by some satisfactory process which shall render it fireproof."

Wind Pressure.

This is a very difficult subject to deal with owing to the absence of really trustworthy experiments which can prove what is the greatest force the wind is likely to exert in the various sites on which buildings are proposed to be erected. It is generally considered that in America the velocity of the wind is not so great as in Great Britain, excepting, perhaps, in the case of tempests of the most unusual and violent kind, such as that which occurred in St. Louis in 1895, the force of which Mr. Stobel (in a letter read before the Institute of Civil Engineers) likened to that arising from an earthquake. It is therefore probably not necessary in a compact city such as Chicago or New York to construct wind-bracing to resist such enormous pressures. The New York Building Act states that in buildings less than 100ft. high, provided the height does not exceed four times the average width of the base, the wind pressure may be disregarded, but that all structures more than 100ft. high exposed to the wind must be designed to resist a horizontal wind pressure of 30lbs. per square foot of surface exposed. This may be done in two ways, one method being to insert a system of diagonal tie-rods which really form a system of trusses whose depth is the width of the building; the objection to this system is that the rods are very liable to interfere with the window openings. By another method portals made of steel web-plates are used, with angles connecting the vertical stanchions, but this is more expensive and throws bending stresses on the stanchions at the corners of the building which must be taken up by the longitudinal girders. The usual method is merely to

deepen the girders and strengthen the connections to the stanchions.

Simplicity of Construction.

One of the chief advantages of this style of building is the rapidity with which it is erected. This is made possible by the great similarity of one floor to another right throughout the building, and the geometrical lines on which it is planned. An office building of fifteen or sixteen storeys can be erected and ready for occupation in from seven months to a year. The weight of the steel framework varies from 1½lbs. to 2lbs. per cubic foot, and costs in America from 2½d. to 3d. per cubic foot, being about one-seventh to one-ninth of the cost of the building. The tendency in London is to increase the height of our buildings. Any casual observer must be struck by the fact that nearly every new building is taller than its neighbours, and no doubt if all restrictions were removed by the London County Council the same causes that have created the "sky-scraper" in America would bring about a similar result in this country.

NO. 17, FLEET STREET.

THE report of the General Purposes Committee asking the London County Council to sanction the expenditure of a sum not exceeding £27,300 for the acquisition of the freehold of this building, and for their restoration, was crowded out at the last meeting. The house is described by lettering displayed on its front as the Palace of Henry the Eighth and Cardinal Wolsey. "This," the Committee point out, "is an incorrect description, as the house was built in the reign of James the First—about the year 1610—for Henry, Prince of Wales, as an officer of the Duchy of Cornwall. It continued to be used as offices of the Duchy until the death of the Prince in 1612, and probably after that date; but not long subsequently it was converted into a tavern and has since been used for business purposes. This house represents an almost unique specimen of its kind of the architecture of the period, and the ceiling of the room on the first floor has been described as the finest remaining in situ in London; the wood paneling, moreover, comprises some exceedingly good carving." The Council's architect has made a thorough survey of the building and it has been definitely ascertained that the existing front, as visible from the street, is merely a false screen, and that the original front is, on the first floor, some 20in. behind this. The old carved pilasters which were on the original front are still in existence. "It is proposed," the Committee say, "that the ground floor only shall be set back to the line of the street improvement, the upper floors remaining in their present position and being supported on cantilevers; the front of the house to be restored to its original condition (the false front being removed), and the back portion of the premises (which has already been demolished) rebuilt. The price asked for the freehold is £20,000, to which must be added a further sum of £300 for costs, and the amount of the architect's estimate for rebuilding the back and restoring the front of the building £7,000; making a total outlay of £27,300. Against this sum must be set (1) the promised contribution of the City Corporation of £2,500; (2) the sum which will be contributed in respect of the widening of the roadway, and (3) the rent which the Council will receive in respect of the premises. The net result shows that the scheme of preservation would cost the Council the sum of, on an average, £172 a year for 59 years, after which period the premises would be a valuable asset in the hands of the Council and would be free of the charge. This allows for the historic room on the first floor being reserved for the public benefit. . . . We may add, in view of a suggestion which has been made that the whole house should be rolled bodily back, that the architect has reported on this point, and he states that, if this suggestion were adopted, the cost would be £2,000 more than the scheme which we now put forward."

R.I.B.A.

ARTISANS' DWELLINGS.

A MEETING of the Royal Institute of British Architects was held on Monday evening, when Mr. J. M. Brydon (vice-president) occupied the chair. Mr. Alexander Graham announced with much regret the deaths of Mr. F. W. Steevens, the eminent Indian architect and engineer, Mr. E. J. Lowther, Mr. Charles H. Purday, and Mr. W. J. Anderson, and it was agreed that a letter of condolence should in each case be sent to the relatives. Papers by Mr. John Honeyman, R.S.A., Mr. Henry Spalding, Mr. W. E. Wallis, and Mr. Owen Fleming on working-class dwellings were then read.

Mr. Honeyman's Paper.

Mr. Honeyman, discussing the effect of injudicious legislation in the matter of building regulation, said that local authorities seemed to ignore the fact that the more their restrictions as regards number of storeys, height of ceilings, width of passages, &c., increased the cost of the dwellings, the higher must be the rent. Dwellings of the early Peabody type, though the ceilings were low and the buildings high, were perfectly healthy, the death rate being lower than the average. The building regulations of most of the large provincial cities made the erection of dwellings at moderate rents impossible. The artisan class was sufficiently catered for. The great and growing difficulty was the provision of wholesome houses for unskilled labourers and the poor, whose earnings were not more than £1 a week; and not only the respectable poor, but the families of the dissolute, the intemperate, and even the criminal. As modern regulations made the erection of dwellings for the poorest class unremunerative to private enterprise, the municipality itself should undertake the work. But municipal corporations failed to recognise their responsibility. The author gave Glasgow as an instance. To meet the immediate needs of that city 2,000 dwellings were required, with an annual addition of 200 more to keep pace with the increase of population. The corporation, however, had confined itself to the erection of a class of dwellings which could be provided without their assistance, with the result that in 1898, 4,642 such houses—chiefly artisans' dwellings—were tenantless. Some relaxation of present building regulations must be permitted in order to provide houses which the poor can afford to pay for. They must be content with what is essential and avoid what is merely desirable. Criticising a regulation prohibiting single-room dwellings, the author contended that for the very poor a house of one apartment for married couples and small families of young children was a perfectly suitable dwelling, both on economical and sanitary grounds. Compelling people to have more accommodation than they needed or were able to pay for only led to the overcrowding of houses by the introduction of lodgers. The lower in the social scale, the less a man could afford for rent in proportion to his income. Discussing remedies, the author said the alternative was forced upon the authorities either to relax building regulations or to supply the houses at unremunerative rates. The adoption of the latter alternative the author deprecated on economic grounds, and as increasing the burdens of the ratepayer. The difficulty, he considered, could be solved by either modifying building restrictions or exempting such houses from their operation. The principle of exemption had been recognised by the promoters of the Glasgow Building Regulations Bill now before Parliament, which proposed to empower authorities to relax or modify any enactments or by-laws in the case of blocks of labourers' dwellings containing more than twenty-four separate dwelling-houses. Similar powers might safely be entrusted to the municipalities of large cities with private Acts; in other cases the

sanction of a superior independent authority should be required.

Mr. Spalding's Paper.

Mr. Henry Spalding, whose paper dealt with the associated dwelling and self-contained tenement systems, said that however successful block buildings may have been as schemes for housing the working-classes, as re-housing schemes they had signally failed. Slums had been swept away, and the inhabitants had gone to overcrowd other places, while quite a different class of people had occupied the new buildings. The great difficulties they had to face were the ever-increasing cost of building and of obtaining land suitable for the erection of dwellings at a reasonable price. In this class of work architects must practise the most rigid economy in planning and fittings. Little money could be spared for ornamentation, but by a judicious use of the materials at their disposal a good effect could always be obtained. Block dwellings, broadly speaking, were divisible into two classes: (1) associated dwellings, in which the offices were common to two or more tenements, or, if separate, were placed in blocks away from the living rooms and approached from the staircase or corridors; (2) self-contained tenements in which all the offices were inside the front door. The associated dwellings could be made the more economical, and should be used for tenants of the poorest class. One objection to having common sculleries and w.c.'s was that a certain amount of supervision was necessary, and when two or three of the tenants were responsible, cleanliness was often neglected. If separate offices were provided for each tenement, and these were all placed in one block, accessible from the corridors, a great deal of space was taken up for which there was no return in rent. Of the two systems the author favoured the self-contained tenements, provided the class of tenants the buildings were intended for could afford the increased rent. The plan must depend upon the class of tenants to be housed. Tenements might consist of one, two, three, or even four rooms. The single-room tenements were on the associated plan. In dwellings for the poorest, sculleries were not provided, and the sink was placed in the living room. Where there was a scullery, a copper should be placed in it and balcony space provided for drying purposes. If a copper was not provided, laundries might be conveniently placed in the courtyard or in the attic storey. A convenient but less economical plan was to provide separate laundries to every five tenements. In the courtyards might be placed such buildings as workshops, where the tenants could do small repairs, and a place where tools, barrows, &c., could be stored, and, especially in dwellings of the associated type, extra urinals and w.c.'s. In both the associated and the self-contained systems the tenements might be approached direct from the staircase, or from a balcony running the entire length of the block, with two or three staircases according to the number of tenements. The author described in detail the plan and arrangements of the Oldham Road block of labourers' dwellings erected by the Manchester Corporation in 1893. The site occupies a superficial area of about 7,832 square yards, of which about 3,430 are covered by the buildings. The site is rectangular and the buildings are ranged round its four sides, leaving in the centre a spacious recreation ground. The block comprises sixteen shops and cellars, four laundries and drying-rooms, 237 two-room and 48 single-room tenements. The double tenements were for families of four or five persons, the single for one person. Details were also given of the dwellings proposed to be erected by the London County Council on the Millbank Estate, Westminster. The author laid stress on the importance of securing cross-ventilation from front to back of houses, as had been arranged in the Millbank Estate. Such tenements were far healthier than the houses usually occupied by artisans. An official report showed that during the five years 1894-98 the average death-rate in five blocks in Houndsditch was 12 per thousand, whilst for London during the same period it was 18 per thousand.

Mr. Wallis's Paper.

Mr. W. E. Wallis, who followed, gave an account of the buildings erected by the Peabody Trust. The sum left by Mr. Peabody amounted to £500,000, his object being to provide good and wholesome dwellings for the poorer working classes which could not only be let at considerably lower rents than those ordinarily charged, but would also return a fair percentage on the capital expended. That the original object was attained was shown by the fact that £1,300,000 had been spent on land and building up to the end of last year. The average weekly earnings of the head of each family in residence was £1 3s. 1d. The average rent of each dwelling was 4s. 9½d. a week, and of each room 2s. 2d. The rent included free use of water laundries, sculleries, and bathrooms. Having briefly described the earlier Peabody buildings, the author turned to those of more recent date. These were superior in every way to anything that had preceded them. The blocks are five storeys high, except the centre portion containing laundries and drying-rooms, which is six storeys. There are ten rooms on each floor, with two sculleries and two w.c.'s in well-ventilated corridors outside the dwellings. Keeping sculleries and w.c.'s outside the dwellings the author considered far better than making the dwellings self-contained. The rooms are divided into dwellings of one, two, and three rooms, and are let at average rents of 3s., 5s. 6d., and 6s. 6d. respectively. The laundries are fitted up with four sets of coppers and washing tubs, with water laid on to all. The windows are louvred, and the floors asphalted on concrete. Space is economised in corridors and passages, and ample light secured to all parts. The rooms are 8ft. 6in. in height; the living rooms 13ft. 6in. by 11ft. 9in.; bedrooms, 13ft. 6in. by 9ft. 9in. The single living rooms are 14ft. 6in. by 12ft. 6in. Dust shafts were attached to each scullery. These the author considered were far preferable to sanitary pails, both on the score of health and convenience. Dealing with ventilation, Mr. Wallis disagreed with the opinion that buildings could not possibly be healthy unless the wind could blow completely through them—an idea that had even been extended to staircases and dwelling rooms—and that bedrooms should not be entered direct from the living rooms. In deference to this view the L.C.C. architect had to provide in the Council's buildings back passages, although neither direct light nor air could be given to them. Such passages were bad in the extreme, besides adding considerably to the cost. As to the bedrooms opening out of the living rooms, where fires were daily kept going, there must always be a considerable change in air in all the rooms. In these dwellings the birth rate for the year was 33.1 per thousand, 3.6 above the average for all London; and the death rate, including fifty-four tenants who died in hospital, 14.7 per thousand, 4.0 per thousand below the average London rate.

Mr. Fleming's Paper.

Mr. Owen Fleming, one of the assistant architects to the London County Council, followed with a paper on the re-building of the Boundary Street estate. The first buildings were designed in a plain, simple style; though not architecturally suitable for the position, they were good, comfortable buildings, and were now very popular with the tenants. By the time the second section was completed the deficit had been cleared off and surpluses were accumulating. Architecturally this second section was more satisfactory. It contained also the cheapest buildings ever built by the Council. Cleeve Buildings cost £79 per room; Sonning £68; Marlow £67; Shiplake £68. Mr. Fleming next described the plan of the estate, and gave full details of the various extra buildings and grounds for the convenience and recreation of the tenants (these particulars were given in the issue of the BUILDERS' JOURNAL for March 7th). The cost of erection was about £91 10s. per room, including all foundations, while the cost of the land worked out at about £21 16s. per room.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Book on Bowling Greens.

MANCHESTER.—ENQUIVERO writes: "Is there a book published on bowling greens, or one giving hints in laying these?"

We have never seen or heard of any work on this subject.

Book on Geometry.

WESTMINSTER, S.W.—T-SQUARE writes: "I should be glad to have some particulars of a good book on practical geometry for general use."

"Practical Plane and Solid Geometry, including Graphic Arithmetic," by Prof. H. J. Spooner, A.M.I.C.E., will probably suit your purpose. It can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C., for 2s. 8d., post free.

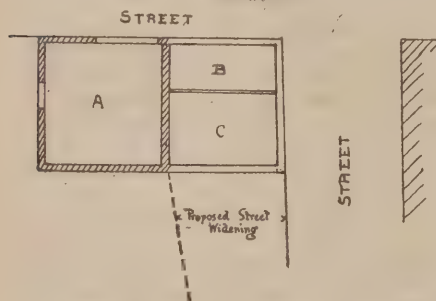
Liability for Repairs: Landlord or Tenant.

LETTONSTONE.—M. B. writes: "A water pipe ends in a U-bend from which the water cannot be run off, the result being a broken pipe after every hard frost. Also, the stop-cock on the supply pipe is faulty. Is the landlord or tenant responsible for repairs? Who is responsible when the following clause is inserted in an agreement for one year:—The tenant agrees to keep the premises and all glass in the windows, and all locks, fastenings, bells, and other internal fixtures in, upon, and belonging to the premises in good and sufficient repair during the tenancy, and the same in good and sufficient repair to deliver up at the end thereof (reasonable wear and tear and damage by fire excepted)."

The tenant is responsible. H. P. B.

Corporation and Old Buildings.

WISBECH.—DUBIOUS writes: "Our Corporation are proposing to widen the end of a street by purchasing and pulling down part of an old brick and tiled building (used as stables and warehouses), and adding this area to the



CORPORATION AND OLD BUILDINGS.

street. Three people, A, B, and C (see accompanying sketch), respectively, own part of this building. On the ground floor a brick wall divides A's portion from B and C, but in the loft above a roughly improvised (not weather-proof) partition of vertical boards is the only division up to the rafters, and the roof is continuous throughout the entire length of the building. If the Corporation demolish B and C's property, are they compelled to build a brick gable to A's loft next B and C? Inasmuch as the whole building has now four brick walls enclosing it, would it not follow that the Corporation must leave enclosed by four brick walls whatever portion of the building is left standing?"

We think that the Corporation are bound either to construct such walls, &c., as will after give to A's premises such support for

his roof and such protection from the weather as those premises enjoyed before the removal of the premises of B and C, or else to give to A compensation for the injury done to his premises by such removal. H. P. B.

Finding Centres of Arches, &c.

CATFORD, S.E.—W. H. G. writes: "Which is the best way to find the centres of arches, cusps, &c., in measuring Gothic monuments? Was there any formula used for striking three- or four-centred arches, or must one rely alone upon an application of the rules of geometry?"

The only thing to do is to ascertain at least three points in each curve by measurement, preferably by the use of a plumb line suspended from a known point, the centres being then determined by geometrical construction. There appear to have been no formulae used, and it is quite doubtful in many cases whether the curves were struck from centres at all. It will greatly facilitate measurement if small pieces of coloured wool are tied to the plumb line at regular distances apart. Horizontal distances (offsets) from this plumb line would be measured with a 2ft. rule or 5ft. rod. G. A. T. M.

Damp-Proofing Walls.

BELFAST.—IRISHMAN writes: "I shall be glad to know how to render walls damp-proof. The house in question is built of red brick (9in. walls) with sandstone dressings, faces the west, and is fairly well exposed; after showers of rain damp spots appear on the interior of the walls. I have heard of Szerelmey's Stone Liquid as being very effective, and I would like to have your opinion on the matter."

The conditions of a thin wall of porous material exposed to the westerly (Atlantic) wind in moist Ireland are such as to render it doubtful whether anything less than covering the external face with tile-hanging, or slates, would prove really efficacious. A rendering of cement and rough cast might suffice, though it would hardly be so sure; but the application of any such preparation as that mentioned, though it might be perfectly satisfactory under a less severe test, would probably lead to disappointment. G. A. T. M.

Drying Walls of New House.

EGREMONT, CHESHIRE.—J. G. N. writes: "Which is the best way to dry the walls of a new dwelling-house?"

There is nothing that will dry the walls of a new house so quickly as a good current of air allowed free play through it, especially during the present season of the year. In order to dry a house in the shortest possible time it should be allowed to remain uninhabited; and the drying process may be hastened if a good coke fire is made up in a "devil" or "brazier" placed in the centre of each room each evening at sunset after the windows and outer doors have been closed. Internal doors should not be closed, and registers of stoves or other ventilators should be left open. Fire by night and air by day should quickly dispel damp, provided the brickwork has not been thoroughly soaked by winter rains, in which case it may be a twelve-month before the walls are fit to be papered; but, as need scarcely be said, ample precautions must be taken to prevent the fire communicating itself to the woodwork of the house. A watchman, who would keep the fires going, would be desirable. H. C.

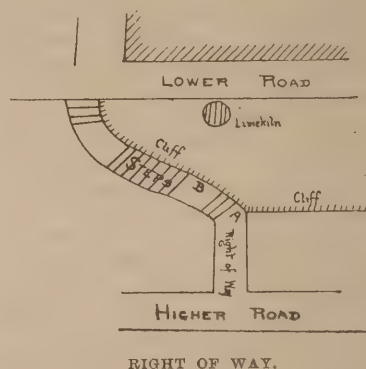
Advisability of Obtaining a London Experience.

SHEFFIELD.—STUDENT writes: "Do you recommend provincial students to go up to London as junior assistants after the completion of their articles for the London experience which is so much spoken of, and for the sake of attending the R.A. schools? Would they not be likely to have lost their connection or clientèle on their return to their native town, and to find setting up for themselves a failure? Would a student R.I.B.A. as assistant in a London office, and attending the R.A. schools, still have time to prepare for the final R.I.B.A. examination?"

The advisability of spending a year or so as assistant in a good London office, after completing articles in the country, is unquestionable, but the office should be one in which really good work, and plenty of it, is being done. It need not, however, be a well-known office. If any salary is given, it would probably be small, especially if the very necessary stipulation be made that no overtime is worked. Four evenings per week should be the most to be devoted to study, else the health is likely to suffer, and these would be better employed at the Architectural Association, the School of Arts and Crafts, or under some well-known tutor, than at the R.A. During the summer months, instruction can only be obtained in a few subjects, such as land surveying and outdoor sketching, but the Saturday afternoon visits to works in progress organised by the Architectural Association are always worth attending, and evenings could be devoted to the R.I.B.A. Testimonies of Study. G. A. T. M.

Right of Way.

PADSTOW.—COUNCILLOR writes: "As shown by the accompanying sketch, a public right of



way exists between the Higher and Lower Roads. This right of way is a footpath, and not of sufficient width for a cart. As will be seen, there is a limekiln and yard adjoining the Lower Road, and the owner of this has the right of bringing limestone down the right of way from the Higher Road. The stone is generally brought down in wheelbarrows and thrown over at the point A. The limekiln and yard are nearly level with the Lower Road, but several steps lead up to the point A, and this point is about 20ft. above the limeyard. Originally there was a fence from A to B (of course, for the protection of the public), but, in consequence of the material for the limekiln being brought to this point and thrown down into the yard, the base of the cliff has been undermined and a portion of it, with the fence, has fallen away; so that anyone might walk over the edge of the cliff and be injured. Whose duty is it to restore the fence—the landlord or the tenant? Also, is it the duty of the Urban District Council to see that it is done, or must the Council themselves erect the fence?"

Our correspondent does not explain who is meant by "landlord" and who is meant by "tenant," or what they are landlord and tenant of. The occupier of the limekiln has chosen for his own advantage to use a part of the way for a purpose for which it was not intended, and one which, as the event proves, was inconsistent with the preservation of the way in that condition which the safety and convenience of the public, to whom it was dedicated, required. He has by his conduct been guilty of nuisance, for which he is liable to be indicted, and in respect of which an action will lie against him at the suit of any person who may be injured by the defective and unsafe condition to which he has reduced the way. He is bound to restore the way to its former condition, replacing the soil which he has caused to subside, and the fence which he has caused to fall down. It is the duty of the urban authority to see that he does this forthwith, and, if he fails, to do it themselves. H. P. B.

Book on Thatching, Fencing, &c.

WORCESTER PARK, SURREY.—W. C. writes: "I should be glad to have particulars of a book dealing with thatching, fencing, hedging, and ordinary agricultural buildings."

"Modern Farm Buildings," by A. Dudley Clarke, F.S.I. (price 6s. net, post free); and "Estate Fences: their Choice, Construction, and Cost," by Arthur Vernon, F.S.I. (price 12s., post free). Either of these is obtainable from Mr. B. T. Batsford, 94, High Holborn, W.C.

New Streets.

HENHAM.—W. M. B. writes: "I regret I did not make my last enquiry clear enough (see page 97 of issue for March 14th). I have plans before our Council for a terrace of houses on one side of a highway. I know I can build seven or eight houses without altering the character of the road. My first question was, 'Does continuity in building on one side only constitute a new street?' or would it require some house built opposite on some part of the roadway? (2) The Clerk of this Council has stated that a lane cannot be made into a new street unless it complies with by-law 8, which requires the entrance to be the full width. I understand the Clerk to say Justice Wills' decision (see previous reply), which exactly conforms with my case, has been overruled, and he (the Clerk) advised his Council that I must widen out to where the lane commences, which would be the entrance to the new street. (3) The Tynemouth Rural authority, in by-law 8, have made it read: 'Every person who shall construct a new street shall provide at both ends of such street an entrance of a width equal to the width of such street, and open from the ground upwards, provided that where such street is less than 100ft. in length, such entrance need only be provided at one end thereof.' In view of the strong decision on one entrance, would this by-law be considered good and reasonable? I feel strongly tempted to disregard it, for in some cases it is very expensive and difficult to carry out."

(1) If buildings are erected on one side of a lane, the erection of a building on the other will make it a "new street." (*Attorney General v. Rufford* (1899) 1 Ch. D. 537). Our correspondent's proposed new houses would, therefore, convert the existing lane into a new street, and he must conform with any valid by-law relating to new streets made by the local authority. (2) Our correspondent must comply with the by-law as to the entrance, notwithstanding that the land required for the purpose of making it the necessary width does not belong to him. (*Hendon Local Board v. Pounce* (1899) 42 Ch. D. 602.) He cannot, therefore, erect houses abutting on the land until an adequate entrance has been provided. (3) It has never, as far as we are aware, been decided whether such a by-law is or is not unreasonable. In the case last quoted it was argued that a by-law requiring the entrance at one end to be of the same width as the road was unreasonable; it was held to be *intra vires* and reasonable. But the grounds of that decision hardly seem to apply to a by-law requiring the entrance to be of that width at both ends. In delivering judgment Mr. Justice North said, at page 609:—"In my opinion there is nothing unreasonable in it. It would be absurd to say that the Board were right in insisting on the road being 50ft. wide if they are not to gain the advantage that a road of that width would give. The object is, for sanitary reasons, to admit light and air, to allow the wind to sweep freely along the road. A road of that width is much more healthy than a narrow road, and, of course, the benefits of a road of that width will be only partially secured if it is closed in at each end, or at any rate at one end, by an entrance so narrow that a free draught of air through it would be impeded." One effect of such a by-law obviously would be to prevent a new street being laid out which would be a *cul de sac*."

A Monument of Garibaldi has been erected at Dijon, in Burgundy.

Views and Reviews.**MITCHELL'S BUILDING CONSTRUCTION.**

The fact that the present is the fourth edition of this book suggests that there is a constant demand for it and that it fulfils the purpose for which it was compiled. That purpose is to act as an elementary text-book for students of building instruction qualifying for examinations. Chapter I. opens with instructions to beginners in the right use of instruments and materials, with most of which we are in agreement. We do not like, however, the use of chisel points, nor the method laid down for straining paper. This should be done in such a way as to allow the sheet to be easily removed from the board, without the necessity of cutting and the subsequent washing off of the margin that remains, which soon ruins the board and is a rough, clumsy way of going to work. If a paste or mouth glue is used, and a margin of not more than a quarter of an inch, a thin knife blade can be inserted under the edges of the paper, which will bring it up intact and leave hardly a mark on the board. The list of conventional colours laid down for use is purely arbitrary, and must result in a most inharmonious and crude effect. While, of course, some recognised system must be pursued, at any rate in a school, it would be a good thing to encourage students, within certain limits, to mix harmonious colours, and it might have been pointed out that in every-day practice no such hard and fast rules obtain and that many of these colours are never or rarely used.

After this introductory chapter, the author proceeds to point out the most modern and approved methods of construction in brickwork, masonry, iron, wood, &c. Everything is most carefully drawn out, with figured dimensions and scantlings, and the book seems most complete.

While we have nothing but approval for this work which, within its limits, is good as far as it goes; yet what we feel about such books as this is that they do not force the student to think for himself, which, as we have often insisted, is the end and aim of education. As an example of what we mean take, say, the first chapter on brickwork. There it is laid down as a law that the bottom course of footings to a brick wall should be twice the width of the wall. Of course, this is the usual custom, even a regulation of the Building Act, but it is not an infallible law. The footings to a wall should be in relation to various varying circumstances, to the amount of weight a wall has to carry, to the nature of the foundation on which they are placed, etc. A wall may start from its footings with a width of 18in., it may be a retaining wall but few feet in height and carrying no weight at all, or it may go to a considerable height and carry several floors for heavy goods, and be subject to much vibration and wind pressure, &c. Why should the footings be the same in both cases? Under the same heading we are also told that the concrete under footings usually from 2ft. to 7ft. in depth, and 12in. wider than the base of footings. These sort of statements, true enough as far as they go, need qualifying, if the student is to grasp the principle of the thing. He ought to be told that concrete varies in width according to the nature of the soil and the load which it carries; that it is taken to whatever depth is necessary to find a firm foundation for it. It has been the present writer's experience to make it from 1ft. to 18ft. in depth, and from 1ft. to 6ft. wider than the width of footings. We are distinctly of opinion that this method is not the right way to begin the elementary study of construction. We think that the reasoning powers of the student should be appealed to from the very first; that he should be told the reason why footings or concrete are used at all; what the object is in spreading them out and making as many bricks as possible headers; why concrete needs to be wider than the lowest course of footings; in fact, the reason for everything. The few broad guiding principles

should be laid down and explained, and the student should be encouraged to apply them, in his own way, to every problem that comes to hand. If this were done, there would be no harm in giving the particular method which is most customary in ordinary circumstances; it would then take its proper position simply as a piece of useful knowledge; but, stated like this, with no qualifying explanation, and no appeal to the principle or reason, it assumes too much importance, and the student is apt to treat it with an exaggerated respect, as if it were a moral law and not merely a convention.

We do not wish to be understood as condemning this book. As we have already said, we approve it as far as it goes. It is evidently compiled to serve a certain purpose, and it is not fair to quarrel with altogether because it does not serve some other purpose. Our quarrel is with the system, for the service of which this book is prepared, which we think is calculated to turn out any number of rule-of-thumb constructors. We look upon construction as an art, and while so many hundreds of students are taught in this fashion in our technical schools and other institutions, we think it is no wonder that daring and original constructors are so few.

A. R. J.

"Building Construction and Drawing." (First stage. Fourth edition). By Charles F. Mitchell. London: B. T. Batsford, 94, High Holborn.

Masters and Men.

The Montrose Masons have been granted an increase in wages from 7d. to 7½d. per hour.

The Harrogate Joiners have struck for a ½d. increase on their present wage of 8½d. per hour.

The Bridlington Joiners have struck for an increase in wages from 7½d. to 8½d. per hour, with a reduction of hours.

The Blackpool Joiners have been granted an increase of ½d. per hour on their previous wages of 10d. The masters also agree to provide for the men's tools being locked up.

A Strike of Plumbers employed at the New Isolation Hospital being erected at Leicester has occurred, the men contending that work they should have had is being carried out by engineers.

The Cheshire Building Trade.—The joiners in the Cheshire building trade have received an advance of ½d. per hour, making 8d. The bricksetters have requested 1d. advance in May on their present wage of 8½d. per hour.

The Proposed Labour Conciliation Board in the Building Trade.—The suggestions for the formation of a Board of Conciliation for the Building Trades have, so far, proved inoperative. The matter has been under consideration by a special conference of representatives of the several trade unions in these trades held at Nottingham, and after discussion they passed the following resolution: "That this meeting of representatives of the house building trades are sorry that the National Association of Master Builders have not seen their way clear to help the trades to bring about the formation of a National Board of Conciliation. As responsible representatives of the workmen we have advocated the formation of this Board to promote industrial peace, and sincerely regret that the National Association of Master Builders, by the conditions they seek to impose and by their inaction, have declined to effectively support the movement; but if at any time the Association desire to re-open the matter we shall be pleased to co-operate with them."

Kelby College, Tavistock, has had a new wing added to it at a cost of about £10,000.

The Association of Municipal Corporations held its annual meeting and dinner on Saturday last.

The Birmingham Royal Society of Artists opened their thirty-fifth spring exhibition on Monday last.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"A man needs knowledge—not only as a means of livelihood, but as a means of life."—
G. J. GOSCHEN.

Our Inset Sheets.

THE designs by Mr. William Emerson, F.R.I.B.A., are dealt with in our "Men who Build" article on page 143 of the present issue. The assessor in the Clacton-on-Sea competition for the proposed winter gardens at West Cliff was Mr. J. Oldrid Scott, F.R.I.B.A., who placed the designs by "Go Forward" (Messrs. Brown and Burgess, of Ipswich) first, those by "Ad Rem" (Mr. T. H. Baker, architect, of Colchester and Clacton-on-Sea) second, and those by "Rational" third. The cubic contents of the building shown in the first premiated design is about 428,080ft., exclusive of two detached structures to the east and west of the main building. They consist of rather elaborate staircases down the cliff, the one having a suite of shops and the other baths for ladies and gentlemen. The plan shows a fine range of promenades and winter gardens, occupying the centre, with a symmetrical block on each side, one being a concert hall 74ft. by 42ft. and the other containing a double billiard room 48ft. by 20ft., refreshment and club room 42ft. by 28ft., with store and apparatus room on the ground floor and a reading room and dining room above, respectively 48ft. by 20ft. and 42ft. by 28ft., with kitchen accommodation. The central block on the ground floor consists of a large entrance hall with the principal staircase, with a large apartment on each side called entrance lobbies to the concert room and club room, but forming with the entrance hall a very fine promenade 102ft. long. A central cupola is suggested, and would have a good effect architecturally. There are four entrances.—The second premiated design is reported by Mr. J. Oldrid Scott to be equal in architectural merit to the first design. The central concert hall he describes as excellent, but criticises the sufficiency of the lighting of the baths, and also the cost of the building, which, undoubtedly, would be larger than that of the first premiated design. The great advantages of this (the second) design are the extensive promenades and winter gardens overlooking the sea; these are not equalled or approached in any of the other designs. The construction of the back walls is very strong, all the walls being of deep segmental shape, with the cross walls acting as buttresses. If this design were somewhat reduced in size, and the baths converted into a restaurant or an annex to a palm-house, many who have carefully studied the drawings consider it would be the best, and Mr. Scott's report bears out this opinion. Mr. Scott makes the following estimate for the erection of the buildings:—"Go Forward," £17,850; "Ad Rem," £23,550; "Rational," £19,200.

The Royal Academy.

It is expected that the Academy collection will this year be a good one. Professor Aitchison, Professor Herkomer, Mr. Briton Riviere, Mr. Seymour Lucas, Mr. Brock, Mr. Peter Graham, Mr. Abbey, Mr. Gow, and Mr. Gregory will, with Sir Edward Poynter, sit in judgment on the works sent up; and the hanging will be done by Mr. Abbey, Mr. Gregory, Mr. Graham, Mr. Gow and Mr. Brock, with one other Academician not yet selected. The council is reasonably representative, though it is certainly weak in landscape painters, and as a result of its deliberations the exhibition should be somewhat wider in scope than it has been of late; and it may be expected to show some sympathy with the efforts of the younger men.

The Sirdar's Palace.

THE building of the Sirdar's Palace at Khartoum is now being rapidly completed, and, by a great piece of luck, will have furniture of a most sumptuous character. It will be remembered that when the German Emperor and Empress paid their historic visit to the

East, they were expected to include Egypt in their tour. The Khedive accordingly gave orders to certain firms in London and Paris for the supply of furniture on a lavish and magnificent scale for the apartments which their Imperial Majesties would have occupied in the Khedivial Palace. The consignments were duly delivered, but when a change in the plans was made, and the Royal party came not, the beautiful and costly furniture became superfluous, and it has now been handed over to the Sirdar for the adornment of his palace in the Soudan.

German Art.

PROFESSOR HERKOMER has addressed a letter to the German papers denying the rumour circulated in French journals that all German works of art have been excluded from an Exhibition of International Art in London. He states that no such exhibition is to be held in London this year, and that he has received a letter from Sir Edward Poynter in which he says that the Royal Academy "would never think of entertaining such a childish and despicable intention, least of all towards a nation with which, as I am positively convinced, we are on the best of terms." Professor Herkomer also says: "The whole matter may probably be explained thus: That an attempt has been made by a certain irresponsible portion of the French Press to sow discord between England and Germany. This attempt has, of course, failed. These two nations are closely connected by blood, temperament and aims. They were pioneers, side by side, in the advancement of civilisation and culture; and in the future they must remain the chief forces in this direction. May no newspaper agitation, inspired by self-interest, try to sow discord, thus causing the fact to be forgotten that the English nation, and especially the artistic portion thereof, has always entertained, and will ever entertain, feelings of the warmest friendship and highest esteem towards Germany."

A Prize Distribution.

WHEN distributing the prizes to the successful students at the Sheffield School of Art on Friday last the Lord Mayor (Mr. Samuel Roberts) said that they did not want design in the abstract, but in the concrete, like the city mace, which was made by the agency of the school. Professor Ruskin had said that "all art worthy of the name was the energy, neither of the human body alone, nor of the human soul alone, but of both united, one embodying the other, good craftsmanship and work of the fingers joined with good emotion." There they had it in a nutshell—they must have craftsmanship. There was no doubt that Birmingham was a great competitor with Sheffield in many of the decorative trades. He did not think that at present Sheffield could spend £9,000 a year as Birmingham did; at the same time it was well that they should remember what was being done elsewhere. He would like to put the question: What is a School of Art? He defined it as a school of good taste. What was good taste? His answer would be: It is to imitate the purest forms of Nature and the products of Nature. It had been well said by an old Latin writer that "All art is the imitation of Nature," and let them depend upon it that the closer they kept to Nature the purer their art would be. They were all influenced by their surroundings, and they wanted to train the rising generation to have a more refined taste. If they did that, they more or less influenced character. Refinement of taste was the refinement of character.

Cardiff's New By-laws.

WITH regard to the new street and building by-laws which Cardiff has now obtained after a tussle of twenty years with the Local Government Board, the "South Wales Daily News" says:—A comparison between the old by-laws and those that have now come into force is instructive. In bulk alone there is a great difference, for in 1859 thirty-four by-laws were deemed sufficient for street and building regulations; in the new series there are 114 by-laws. The principal feature

of the new by-laws is the greater stringency observed all through, the closer attention to detail, and the setting beyond all doubt that which was previously obscure. Every road laid out must be at least 40ft. wide, and in street more than 300yds. long the width must be 50ft. The footings of every wall in a new building must now rest on solid ground, or upon a sufficient thickness of good concrete, or upon solid and sufficient substructure. In the case of a building to be used wholly or in part as a dwelling-house, if the site is not at least 2ft. above the ordnance datum (practically the sea level), the space between the walls of the building must be filled with suitable material. Upon this filling, as upon the ground surface of every domestic building, there must be placed a layer of concrete or other specific covering 6in. thick. This does not apply where the site, if cleared, lays bare a surface of solid rock, but as there is little solid rock at Cardiff it will have to be done almost invariably. One more important provision is the requiring a proper damp-course in all walls—a building beneath the level of the lower timbers and 6in. above the ground. Further clauses deal with provision of open spaces at the rear of buildings to ensure a free circulation of air, and other clauses again vest in the authorities more extensive jurisdiction as regards the thickness of walls, the character of the work put in the building, and so on. Increased powers, and in many instances new powers, are given the Corporation in regard to fireproof stairways, etc., in public buildings paving yards of dwelling-houses, house drains and other sanitary matters.

The Value of old Work.

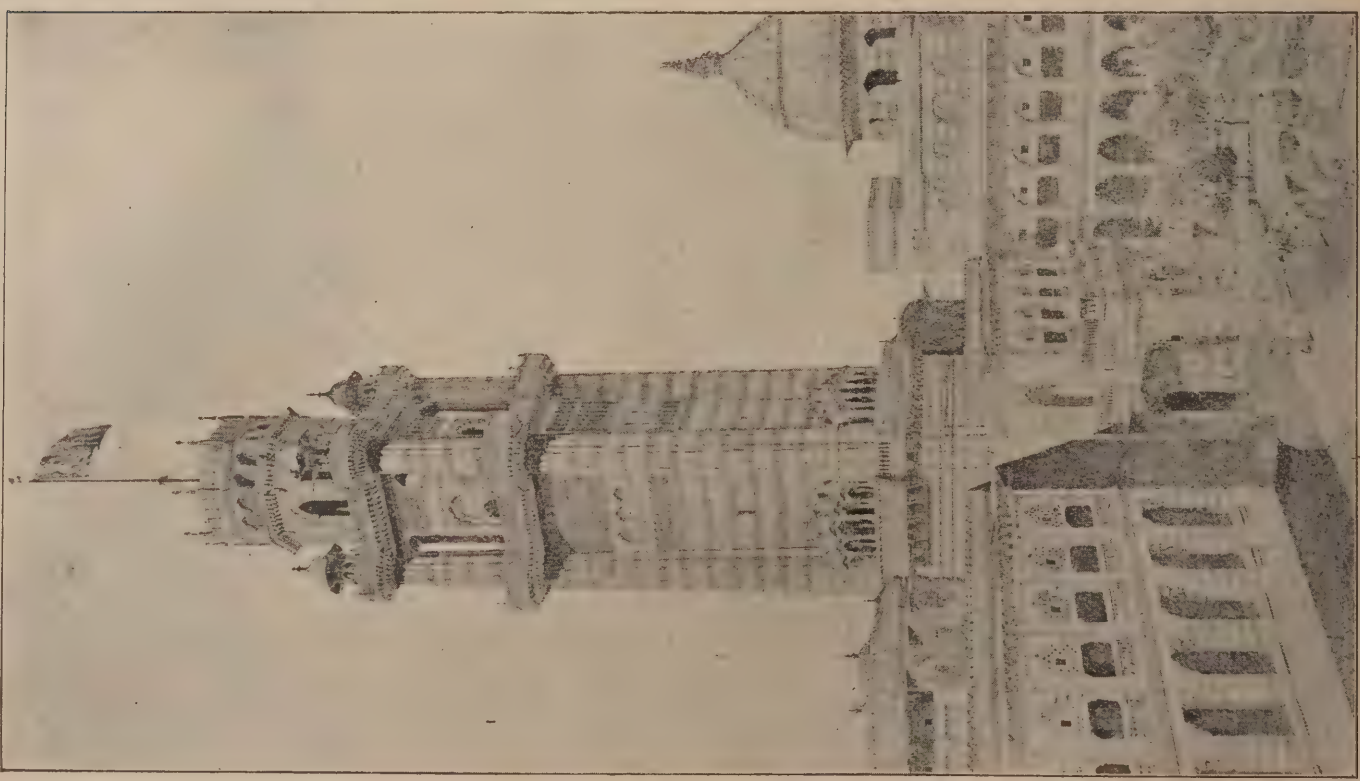
MR. ANDREW MUIR moved at last week's meeting of the Edinburgh Architectural Society, "That this meeting is of opinion that in the education of architects office work can best be supplemented by the preparation of measured drawings of old work." Mr. P. Nobbs moved an amendment, "That if architectural student could best supplement his office work by dividing his time between working at students' design competitions and the careful use of the architectural sketch book." Mr. Muir said he considered that the practice of merely making sketches and jottings when studying old work was most objectionable and useless. The method gave no idea of proportion. The standard reference books on architecture would be worthless if the authors had merely sketched and not carefully measured the work. Copying was quite legitimate. The careful drawing required for measurement helped draughtsmanship. Mr. Nobbs, in opposing the motion, said that the usual routine of office work taught construction, planning and modern requirements. Proportion could only be studied outside of hours. In the office the student had as much practice in drawing as was necessary. The aims and spirit of the old masters could not be gathered by mechanically measuring old work. The various measured drawings produced, even our best draughtsmen often gave a total different character to the same piece of work. The books of reference were simple catalogues of mouldings placed one after the other, with sometimes no key as to what height or position they occupied in the building. Moreover, the men who compiled the books were seldom prominent architects, as a result of all their study they were unable to design. Mr. Wm. Davidson considered that the student gained by merely sketching a confused recollection of the old work, which was no practical use. A large amount of old work could be gone through in a short time by the sketch book method, but the knowledge gained would be forgotten in as short a time as that in which it was acquired. Mr. Davidson also thought that architects should give the draughtsmen more time to visit the buildings and see their designs when carried out. Mr. Balfour Paul supported Mr. Nobbs, stating that by measuring old work the student learned draughtsmanship but gained no knowledge of architecture. There was art in the old work itself but not in the repetition of it. The meeting decided in favour of Mr. Muir's view.

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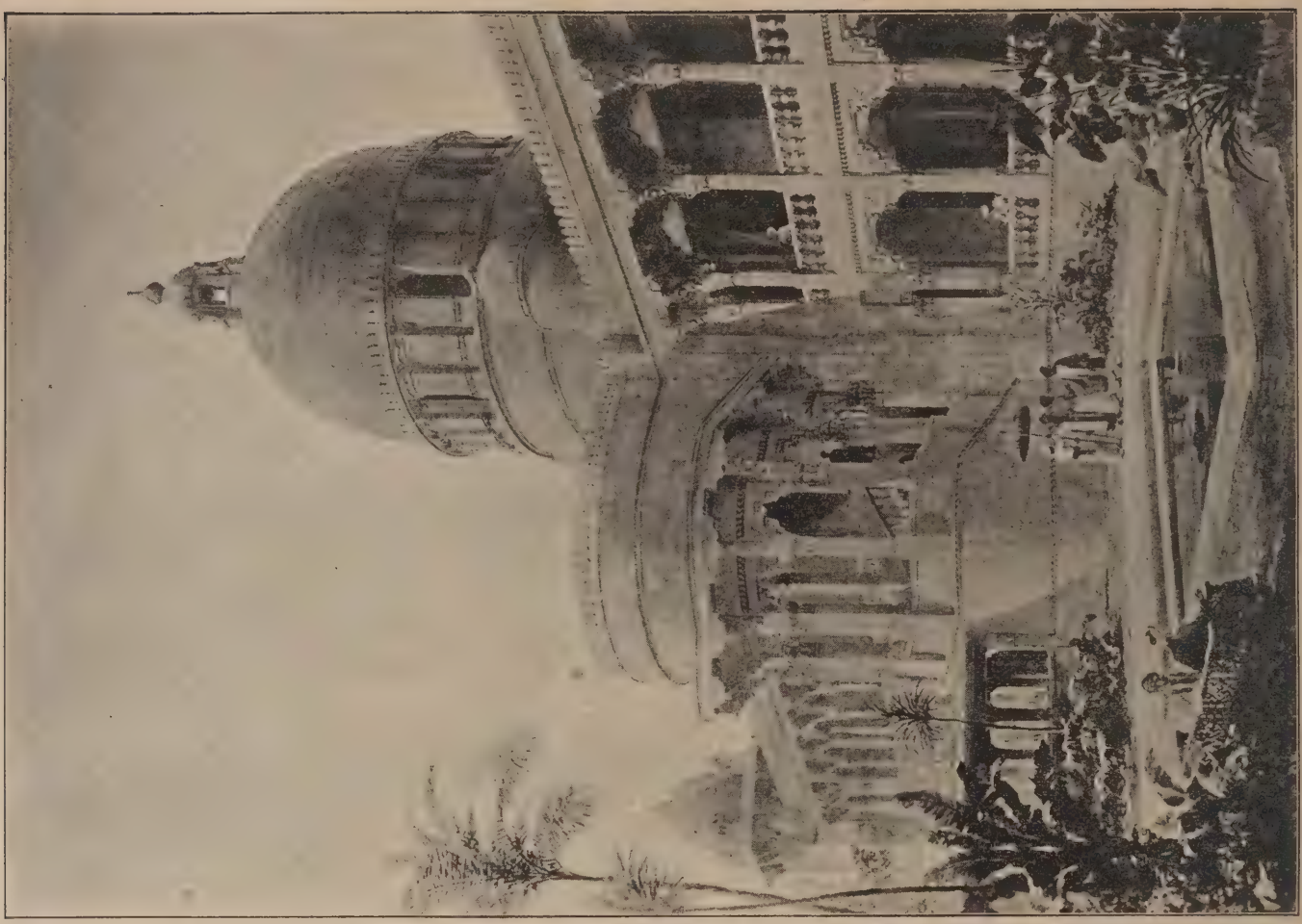
THE CENTRAL BLOCK OF THE NEW INFIRMARY AT HENDON. GILES, GOUGH AND TROLLOPE, ARCHITECTS.

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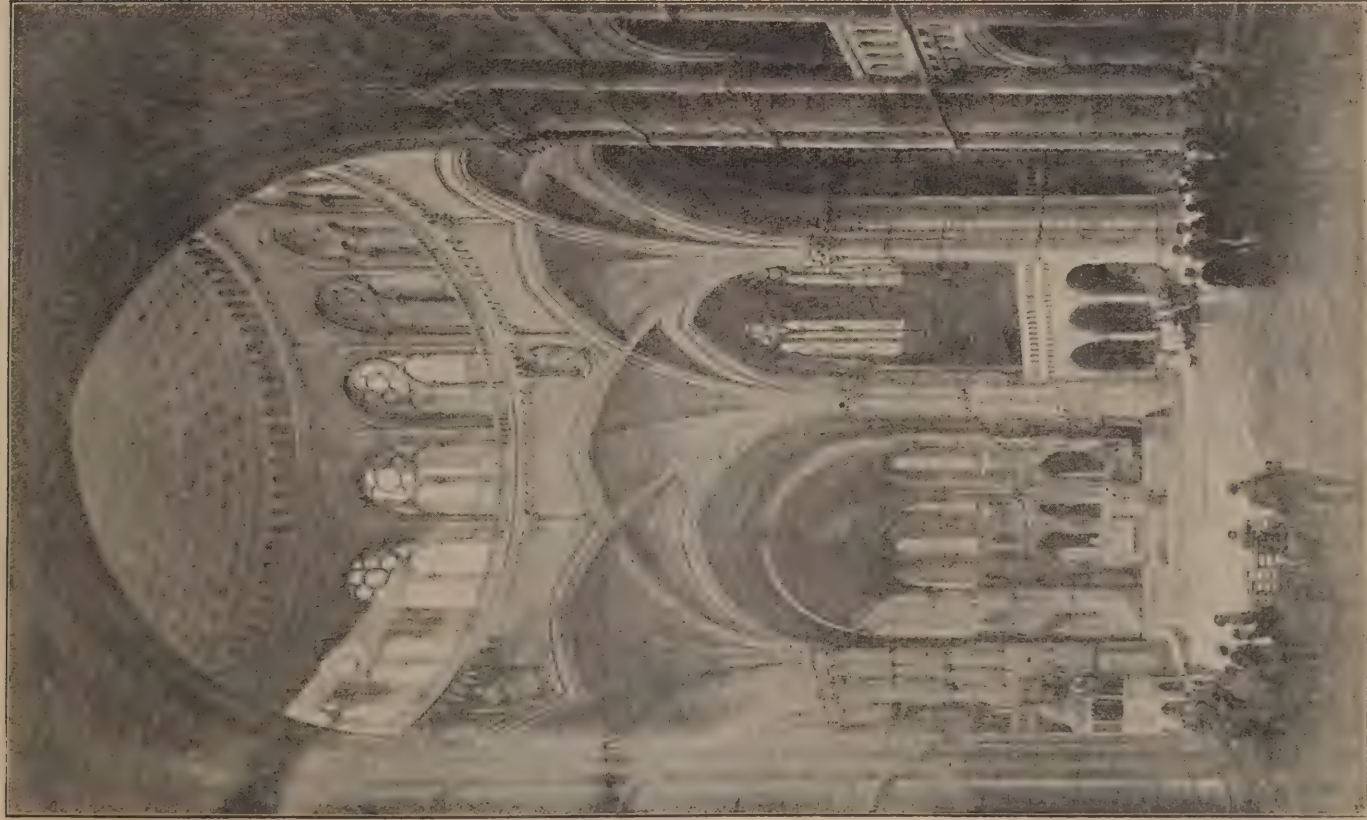


PALACE FOR HIS HIGHNESS THE LATE MAHARAJAH OF BHAUNAGAR.

WILLIAM EMERSON P. R. A. ARCHITECT

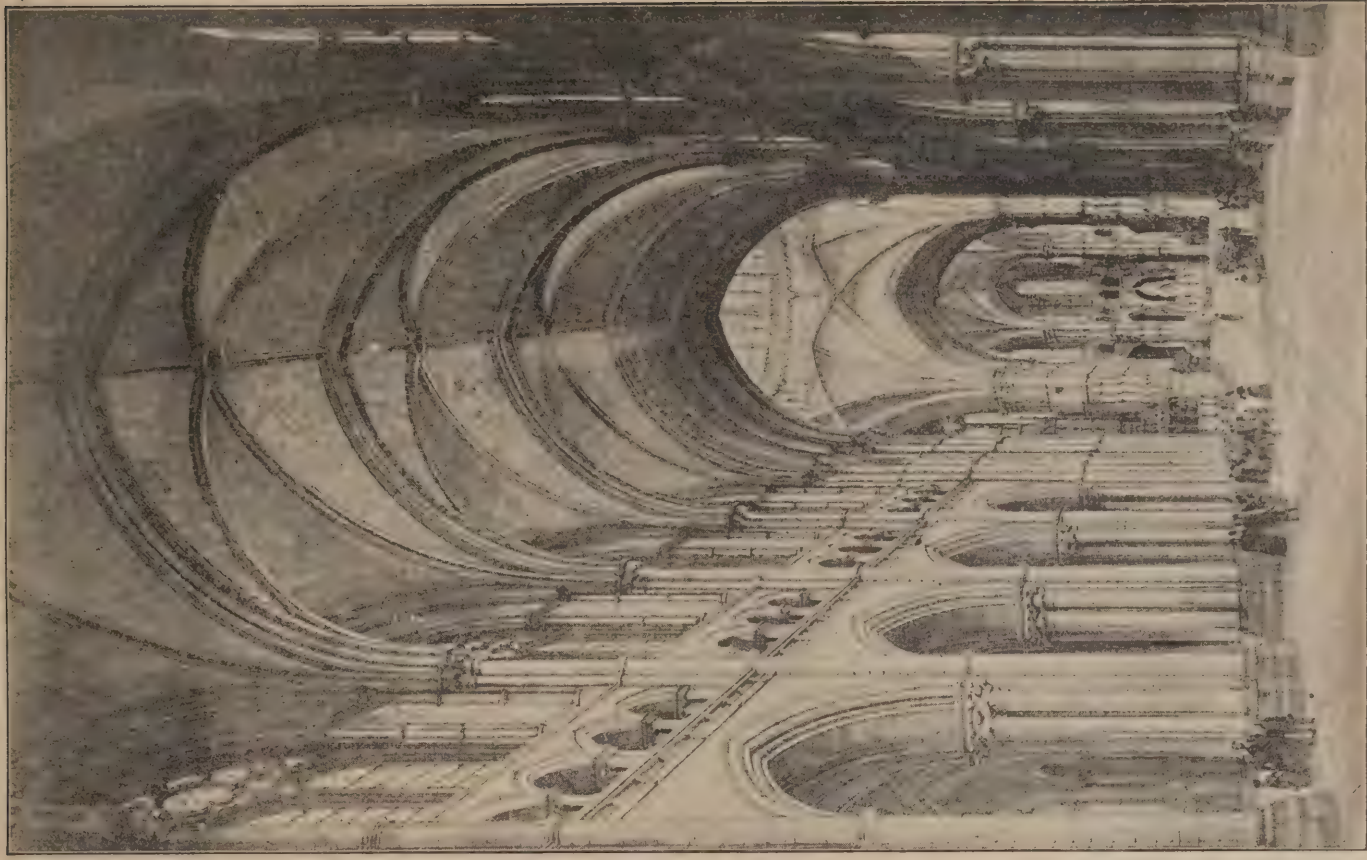


BHAUNAGAR HOSPITAL.



THE DOME AND CHOIR.

DESIGN FOR LIVERPOOL CATHEDRAL.



LOOKING EAST.

WILLIAM EMERSON, P.R.I.B.A., ARCHT. ECT.

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FIRST PREMIATED DESIGN. BROWN AND BURGESS, ARCHITECTS.



SECOND PREMIATED DESIGN. T. H. BAKER, ARCHITECT.

COMPETITIVE DESIGNS FOR THE PROPOSED WINTER GARDENS AT WEST CLIFF, CLACTON-ON-SEA.

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Keystones.

The Aberdeen Society of Architects recently held its annual dinner, when the president, Mr. Arthur Clyne, occupied the chair.

The Official Opening of the Paris Exhibition has now been definitely fixed for April 14th.

A General Trades Exhibition at Brixton Hall has been opened, and will remain open until April 7th.

A new Fire Station at Bradford is proposed to be erected in Nelson Street at a cost of more than £9,200.

The Grand Theatre, Islington, which was recently gutted by fire, is to be rebuilt. No important change is proposed.

A New Organ at All Hallows Church, Kendal, has been erected at a cost of £65 by Messrs. Wilkinson and Son, of Kendal.

St. Matthew's Church, Nottingham, has been redecorated by Messrs. Gascoigne and Sons, of Nottingham, at a cost of about £100.

Manchester Ruskin Society.—It has been decided to revive the lapsed Ruskin Society which bore the title of "The Society of the Rose."

"Architectural Review" Competition.—The closing day for this competition (for a villa on the Riviera) has been extended from May 31st to June 30th next.

A New Board School at Seacombe has been built by Mr. Edmund Gabbutt, of Liverpool, from designs by Messrs. T. Mellard Reade and Son, architects, of Liverpool.

A New Chancel Screen at St. Peter's Church, Morley, has been erected. It was designed by Mr. Harrison Morton, A.R.I.B.A., and executed by Messrs. Harry Hems and Sons, of Exeter.

An Addition to the Victoria Embankment.—A block of offices has been erected for the Metropolitan Asylums Board between the Temple and Blackfriars Bridge. The frontage is about 90ft.

The Hanley Town Council has decided to apply to the Local Government Board for sanction to borrow £9,500 required for the provision at Sandyfield of a refuse destructor, and approaches.

An Old Church in Need of Restoration.—The church at Llanddew, near Brecon, one of the oldest in Wales, needs to have its nave restored. This work will cost about £400, of which £350 has been collected.

Architects and By-Laws.—A deputation of Hull architects, consisting of Mr. F. S. Brodrick, Mr. B. S. Jacobs and Mr. J. Bilson, waited on the Hull Corporation Water and Gas Company last week to submit certain objections to the new city by-laws. They urged that 12lbs. instead of 15lbs. per yard should be the required weight of 1in. waterpipes, and that the maximum flush for water closets should be increased from two to three gallons. The chairman (Alderman Massey) promised the deputation that their views would be carefully considered, but reminded them that the by-laws had received the sanction of the Local Government Board and that all the water used in the city had to be repumped as sewage.

Institute W. Schimmelpfeng.—The report of this Institute for the past year contains various items that are of general interest to commercial men, and some instructive instances are given of "evils in mercantile reporting which are the cause of so many losses daily to the business community." The Institute's progress can be readily gauged from the fact that the staff now exceeds 900, whilst the annual expenditure has increased to close upon £150,000. In regard to reporting on firms in the United Kingdom, some interesting remarks are made on the incorrectness of asking mercantile agencies to fix a specific limit of credit; also on the introduction of the American system of "personal statements," and the improvements in reporting on limited companies which will result from the proposed changes in the Companies' Law.

The Late Mr. Charles Henry Purday, A.R.I.B.A., whose death occurred on March 23rd, was in his seventieth year.

Glasgow Exhibition, 1901.—All applications for space must be made not later than June 1st next to the general manager, Mr. H. A. Hedley.

Bournbrook Technical Institute, Selly Oak, was opened last week. The building cost £2,500, the lighting and heating installations about £350, and the land £700.

The Death of Mr. Edward J. Lowther, F.R.I.B.A., a member of the firm of Messrs. Gordon, Lowther, and Gunton, occurred on March 23rd at Withrington, Sutton, Surrey.

Artistic Copyright.—Lord Monkswell's Artistic Copyright Bill, which we dealt with last week, was read a second time on Thursday last and referred to a select committee.

New Lancashire Churches.—A new church and rectory is to be built in the Ladybarn district of Fallowfield, near Manchester, and a site has been given by the Earl of Derby for St. Alban's Rectory, Cheefwood.

A New Theatre at Walsall, called "Her Majesty's," has been built at the top of Park Street from designs by Messrs. Owen and Ward, of Birmingham. Seating accommodation is provided for about 2,000 persons.

Art Exhibition at St. Helens.—The Corporation of St. Helens have decided to hold an art exhibition in the Public Museum, Victoria Park, from May 3rd next until August 11th. The exhibition is to comprise drawings and paintings, and a section will be devoted to a display of examples of decorative arts and crafts. The receiving days are fixed for April 5th to 7th.

Royal Scottish Society of Painters in Water-Colours.—This Society, which is the only body of artists in Scotland devoted to the encouragement of water-colour painting, has this year taken a new departure by acquiring a permanent home in Glasgow. The new galleries are at 153, Sauchiehall Street and comprise two handsome rooms that will hold from 300 to 400 pictures.

New Baptist Schools at Old Basford, Nottingham, have been erected at a cost of about £3,720 by Mr. W. J. Hutchinson from designs by Mr. W. V. Betts. The new building consists of a central hall, 63ft. 6in. by 47ft., with a gallery on two sides and at one end, capable of seating 1,000 persons. The hall is surrounded by seventeen classrooms, providing sitting accommodation for 500 scholars. The old schools have been retained and will be connected with the new building by two passages, one on each floor. The whole block is heated with hot water on the low-pressure system.

Workmen's Trains.—In a Bill promoted by the London, Brighton, and South Coast Railway Company, before a Select Committee of the House of Lords on March 21st the London County Council asked for the insertion of the following clause: "The company shall at all times, before 8 a.m., run a sufficient number of trains in both directions to and from all the stations of the company within twenty miles of the terminal station in London for the conveyance of working men and women." After brief deliberation in private by the Committee, Lord Elgin (chairman) announced that they were not prepared to accept the clause of the County Council.

Newcastle Society of Antiquaries.—At the meeting of this society held on Wednesday last Mr. Cadwallader J. Bates referred to the doubt in which they were left as to the actual position of Prætorium from York, and discussed the theories that were held as to its site. The first theory was that Prætorium was at Filey or Bridlington. The prevalent theory was that it was at Brough on the Humber. The sensible theory was that it was at or near Whitby. He expressed the hope that the Society of the East Riding of Yorkshire and others would, by the excavations which they had begun, lead to a successful conclusion.

Under Discussion.

Ancient Buildings and Natural Beauty.

At a meeting of the Liverpool Ruskin Society held last week Mr. W. T. Haydon lectured on "The National Trust and the Preservation of National Monuments." There were, he said, numberless old ruins scattered over the earth which, instead of being preserved and cared for, were gradually decaying, owing to the effects of the elements in some cases, in others to the hand of the wilful destroyer. The restorer was also sometimes to be dreaded. It was not until the middle of the present century that the various archaeological societies, together with the Camden and afterwards the Ecclesiological Society, sought to remedy the state into which ecclesiastical buildings had fallen. But their work of restoration was undertaken with inadequate knowledge, the result being that they succeeded during 1840-1872 in utterly defacing 7,144 cathedrals and parish churches, at a cost of £25,000,000. Where alterations were necessary, they should appear to be what they were in reality—modern alterations, and not a slavish imitation of other parts of the same building. One of the most potent factors in directing interest into the right channel was the publication, in 1849, of Ruskin's "Seven Lamps of Architecture." In 1877 William Morris assisted in the formation of "The Society for the Protection of Ancient Buildings." That society had done much good work in the restoration of ancient buildings, and to its influence was due the first Act of Parliament dealing with such matters. This Act, which did not go far enough, was followed by another in 1892. Two years later was formed the association known as "The National Trust for Places of Interest and Natural Beauty." It had been active in opposing schemes and proposals likely to be injurious to such places, many of which it had taken in hand. He hoped the members of that Society would be induced to assist the Trust as far as their power allowed.

Irish Sculpture.

At the recent monthly meeting of the Belfast Art Society Mr. S. Shannon Millin, barrister-at-law, lectured on "Irish Sculpture." In all that remained of ancient Irish art there was evidence of an excellence of workmanship, the result of a refined taste and patient perseverance. Long before the Christian era the Irish displayed great skill in the working of precious metals, while in the Book of Kells they had "the most elaborately executed monument of early Christian art in existence." Art, which had flourished from a time long anterior to Christ, ceased about 1460 A.D., and for a period of three centuries it seemed that the spirit of the artistic genius had vanished from the country. But there was yet in store a brighter era for Ireland, when the native talents were once more to be aroused from their state of lethargy to the production of works of art which, for originality of thought and variety of execution, had become the subject of universal admiration. After referring to Smyth, Kirk, and other eminent artists, Mr. Millin said that Ireland had produced three great sculptors during the nineteenth century, whose names were enshrouded among the illustrious in art. M'Dowell, Hogan, and Foley raised themselves to the loftiest eminence by their untiring industry and intense mental application. Hogan said, "Labour is the only price of solid fame; whatever a man's force of genius may be, there is no easy way of becoming a great artist." After describing the principal works, the lecturer proceeded to mention how Cork, Dublin, and Belfast had recognised the genius of their worthy sons. Cork had always patronised art, and when Hogan first visited his native land, after his departure to Rome, Cork gave him a public reception and awarded him a gold medal as a recognition of his genius. After his death, every work that could be easily obtained was deposited in the Crawford School of Art, where the youthful students might with advantage emulate his

example, and thus uphold the artistic traditions of which they had reason to be proud. Dublin patronised Foley by giving him numerous commissions, and the streets of his native city were rich with his choicest works. Belfast regarded with apparent apathy the fact that M'Dowell belonged to her by birth. The one statue for which he received a commission to be erected in his native city was dragged from its position to make way for another by a different artist, until it had at length found a place in the Free Library.

Engineering Notes.

For Electric Lighting in Dublin, £254,000 are proposed to be spent.

For Electric Light Extensions at Newcastle, £10,000 are proposed to be spent.

Mr. Rogers Field, the eminent sanitary engineer, died recently at his residence at Hampstead.

The Death is Announced of M. Samson Jordan, the distinguished French engineer and metallurgist.

Bradford Street Lighting.—It has been decided to provide incandescent gas burners to all the ordinary street lamps of Bradford.

Liverpool Electric Tramways.—A scheme which has for its objects the taking over by a private concern of the Corporation electric tramway system has been formulated and laid before the Tramways Committee.

The Extensions to the Nuneaton Cottage Hospital are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Bristol Association of Engineers held its annual general meeting on March 29th. After the transaction of business, Mr. A. P. I. Cotterell, A.M.I.C.E., read a paper on "The Engineering Aspect of Sewage Purification."

Electric Lighting at Rotherham.—On March 20th a Local Government Board enquiry was held into the application of the Rotherham Corporation for sanction to borrow £27,969 for electric lighting on the three-wire system.

Wesleyan Schools, Weston, have been fitted with the latest improved "small tube" hot-water heating apparatus by Messrs. John King, Limited, engineers, Liverpool, who employed their well-known special economical coil heater.

Harrogate Borough Engineership.—The position of borough engineer under the Harrogate Corporation, rendered vacant by the resignation of Mr. S. Stead (late of Bradford), has been offered to Mr. F. Bagshaw, assistant surveyor.

New Waterworks at Todmorden are to be constructed by Mr. Benjamin Lumb, contractor, Todmorden. The new reservoir will be 84ft. deep, with a storage capacity of 120,000,000 gallons. The work is to be completed in four years and a half.

Bristol Improvement Schemes.—The Bristol Corporation propose to spend £145,150 for electric lighting extension, £5,215 for street improvement, and £10,850 for the extension of the museum in Queen's Road and the erection of an art gallery. A Local Government Board enquiry has been held.

Proposed New Gasholder for Llandudno.—A Local Government Board enquiry was held last week into the application of the Llandudno Urban District Council for sanction to borrow £12,104 for the provision of an additional gasholder and gas manager's house at the gasworks.

The late Mr. F. W. Stevens, C.I.E., the celebrated civil engineer who recently died at his residence in Bombay, designed many of the most important public buildings in that city, and was a magistrate for Bombay, a member of the Society of Arts, an Associate Member of the Institute of Civil Engineers, and a Fellow of the Royal Institute of British Architects.

NEW INFIRMARY, HENDON.

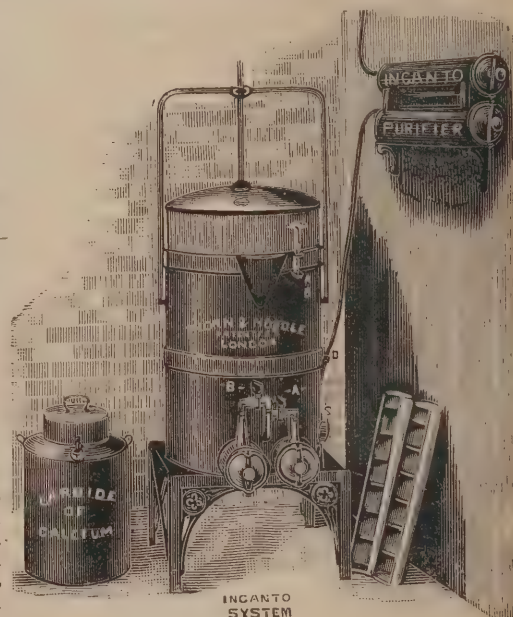
ON Thursday afternoon last the new infirmary which has been erected at Hendon for the Central London Sick Asylum District was opened by Thomas Prescott, Esq., M.R.C.S., L.R.C.P. (London), chairman of the Board of Managers. The guests were received at the Nurses' Home, and from there started in procession (headed by the band of the Strand Union Schools) for the central building, in the hall of which a memorial tablet was unveiled and the infirmary formally opened. (We give an illustration of this central building on one of our inset sheets this week.) After an excellent luncheon, the visitors inspected the new buildings. The toasts at the luncheon were as follows:—"The Queen" (by the chairman, Mr. Prescott), "The New Asylum" (by the chairman, responded to by Dr. Hopkins, medical superintendent), "The Chairman of the Board" (by Mr. W. J. Fraser), "The Boards of Guardians in the District" (by Mr. F. H. Bingham), "The Vice-chairman of the Board and the Managers" (by Mr. R. Hovenden, responded to by Mr. F. H. Bingham and Mr. Forbes-Robertson), "The Architects and Builders" (by Mr. A. Deed), and "The Visitors" (by the chairman). The Central London Sick Asylum District embraces the Strand Union, the Westminster Union, and the parishes of St. Giles and St. George, Bloomsbury, and was formed in 1868 for the purpose of providing an asylum in which proper accommodation, nursing, and attention should be provided for the sick poor chargeable to those unions and parishes. It was found that the required enlargement of the Cleveland Street Asylum would entail an expenditure of £200,000 for land alone, which was impracticable; so, after visiting many sites, the one at Hendon, comprising 27½ acres, was purchased with the approval of the Local Government Board. This site is elevated and salubrious, and is situated about a mile to the north-west of Hendon Station and a short distance east of the Edgware Road. Designs were invited from six London architects, and those of Messrs. Giles, Gough and Trollope were accepted. The approach from the Edgware Road to the infirmary is by a new road and bridge over the Silk Stream, and from the porter's lodge the drive leads to the main entrance on the south, while a branch drive on the east leads to the stores entrance, the laundry, the engine and boiler room, and the mortuary on the north. To the right and left of the main block are the medical superintendent's house and the nurses' home. The administrative block contains board room and clerks' office on the west, and patients' receiving room and offices for the chaplain, medical officers and dispensers on the east. Behind this block, and separated from it by a corridor giving access to the different ward pavilions, is the kitchen, with mess rooms for nurses and servants adjoining; while on the east and west are store departments. To the rear of this again, and connected by a covered way, is the laundry, the engine and boiler house, the carpenter's shop, and the firewood stores. Still farther north is the mortuary, to the east of which is the steward's house. On the east and west sides of the administrative block, which occupies the centre of the site, is a ward pavilion two storeys high, and in a line with these are smaller wards one storey high and a specially-planned operating room. On each floor of the larger pavilion ward accommodation is provided for twenty-eight patients, and for two more in a small ward attached—that is, each pavilion provides sixty beds, or 240 beds altogether. The one-storey wards provide thirty-four more beds—a total of 274. Should additional accommodation be necessary, space is provided for erecting two more pavilions, which would bring up the total to 400 beds. The buildings are erected of stock bricks with red brick facings, relieved by Suffolk brick bands and strings and Portland cement dressings. The roofs are covered with green slates. The main corridors are lined to dado height with glazed bricks; mosaic pavement is used for the floors, and granolithic for the stairs and landings;

the wards are plastered with Keen's cement dado; and all the joiner's work is of pitch pine, with floors of the same material wax polished. In the construction of the buildings more than five million bricks, 3,000 tons of mortar, 7,000 tons of concrete, and between four and five miles of pipes have been used, while about 25,000 tons of soil were excavated for foundations and basements. Heating is by hot water on the low-pressure system. The site cost £12,428, and the buildings £115,000, making the total cost £127,428. The following were the contractors:—Heating, kitchen and laundry apparatus, Messrs. J. and F. May, engineers, Whetstone Park and Holborn; electric lighting (three-wire system), Messrs. Hampton and Sons, Limited, Pall Mall, S.W.; Messrs. Lucas and Pyke acting as consulting engineers; lifts, Messrs. Clark, Bunnett and Co., Limited; window blinds, Fullers Manufacturing Co., Limited, London Bridge; beds, Messrs. Cartwright and Sons, Lambeth; furnishings, Messrs. Hampton and Sons. The main contractors were Messrs. H. Willcock and Co., of Wolverhampton.

Trade and Craft.

Lighting by Acetylene Gas.

The fact is being realised that the artificial lighting of rural and isolated places has entered upon a new era. One has only to drive, after dark, through the well-lighted streets of, say, St. Michael's Village, near Tenterden, Kent, or Hillesley, near Wotton-under-Edge, Gloucester, to appreciate at its proper value the new gas—acetylene. Architects and builders must sooner or later—and better sooner than latter—give this subject the attention it deserves. When it becomes widely known that for an outlay for plant not exceeding twenty guineas gas can be supplied for a whole house of twenty rooms, or for a church holding 500 people, the demand for this light, in lieu of oil lamps, will be general. Nor should it be forgotten that the illumina-



"INCANTO" ACETYLENE GAS APPARATUS.

ting power of this gas as compared with coal gas is, without the aid of a mantle, as fifteen to one. No surprise need be expressed that in the early stages acetylene has had to fight its way (just like coal gas and electric light before it) against imaginary conceptions of danger, induced chiefly, as in the former cases, through accidents arising from inexperience, rashness, or crass stupidity. It has, however, been the duty of those engaged in the industry to produce such apparatus that even stupidity and negligence become harmless, and such is the result claimed for the "Incanto" system (illustrated on this page)

of Messrs Thorn and Hoddle, of Westminster, who have supplied the plant for the villages referred to, and for churches, schools, and mansions throughout the country. It is probable that before very long it will be difficult to find a country house where the old method of lighting by oil has not been abolished.

Builders' Notes.

The death is announced of Mr. Morris Morris, a well-known Liverpool builder.

For laying faulty drains in a house in Oulton Street, S.W., a builder named W. Bell was fined £15 and costs on Thursday last.

For Additions to the Coventry City Hospital the tender of Mr. R. W. Hughes, of Birmingham, amounting to £9,372 3s. 8d., has been accepted.

Water-closet Question in Hull.—The Hull Corporation's proposal to compel owners of 17,000 houses in the city to forthwith substitute water-closets for ash-closets is causing a good deal of local excitement—even irritation.

Cartwright Memorial Hall, Bradford.—The work of erecting the Cartwright Memorial Hall in Bradford will now be proceeded with. Contracts were let last week for £51,488. Including architect's commission, &c., the total cost will be £55,000. The excess over the £40,000 will be borne equally by Lord Masham and the Bradford Corporation.

New Thames Tunnel.—A Select Committee of the House of Lords sat on Thursday last to consider the Bill promoted by the London County Council for the construction of a tunnel under the Thames at Rotherhithe. This tunnel would be two miles from the Tower Bridge and would cost £2,200,000. After hearing several gentlemen give evidence the Committee adjourned.

The Norwich Master Builders held their annual dinner on Wednesday last, the chair being occupied by Mr. G. G. Hawes, the president, who said that the Association had been established for three years. He would like to see a good arbitration clause in all contracts, for he did not think one man should have full control of a job. The builders felt that they should be united, not for aggression or for the oppression of the men, but for defence only. Moreover, by means of the Association petty jealousies were removed, for they met and consulted together as friends. During the last year the Association had been allowed to formulate a book of day work prices, which would establish a uniform rate for the whole city.

Metropolitan Asylums Board.—At last week's meeting of this Board it was decided to accept, subject to the approval of the Local Government Board, the tender of Messrs. Leslie and Co., Kensington Square, W., of £222,459, for the erection of the Joyce Green Hospital. This hospital is designed to accommodate 940 patients in twenty-two pavilions of forty beds each, with isolation accommodation for sixty patients. The work now proposed to be carried out provides for the erection of ten of these pavilions and of isolation accommodation for thirty-six patients, together with the erection of the whole of the administrative accommodation and of a small ambulance station. It also provides for the construction of the foundations of the remaining twelve pavilions and of the remaining isolation blocks. The tender of Mr. J. Green (Stockport) of £714 7s. 8d. for the supply of cupboards and other fittings to complete the equipment of the Grove Hospital was accepted.

London County Council.—At last week's meeting of the Council it was decided that the General Purposes Committee should convene a meeting of the representatives of the

City Corporation and the vestries and district boards for the purpose of considering several matters relating to streets and street traffic. The following matters are included:—The best method of removing house refuse, the best kind of portable receptacle for use by householders, and the best contrived vehicle for the conveyance of house refuse through the streets so as to avoid nuisance. The best method of cleansing and sprinkling the roads. The best method of indicating the names of thoroughfares, not only at the ends, but at the intersections of streets. To suggest better regulations for the further suppression of street cries, railway whistles, and other objectionable and unnecessary noises. To suggest better police regulations for the protection of the public while building operations contiguous to foot pavements are being carried on.—After considerable discussion, it was decided to contribute £11,750 towards the cost of widening West Hill, Wandsworth, to 54ft., providing the District Board agreed not to oppose the Council's scheme for the construction of a light railway or tramway from Clapham to Putney.—An estimate of £14,000 was passed for the reconstruction of the swing bridge over the London Dock cut at Old Gravel Lane.—The Council formally agreed to purchase a short length of tramway between St. George's Circus and Waterloo Road at a cost of £6,000. This will give the Council the ownership of the whole of the South London Tramway Company's system.

More Fire Tests.—The British Fire Prevention Committee sends us Nos. 38 and 40 of their publications. The former deals with a fire test with a floor made by the "Gypsin" Brick Co., Ltd., of London and Paris. The superficial area was 35ft. (10ft. by 3ft. 6in.), a month was allowed for construction and drying, and the weight distributed over the whole surface was 168lbs per square foot. The effect of the test was as follows:—In twenty-seven minutes small flakes dropped off the soffit in places, and the upper surface was quite cool to the touch. In thirty-four minutes further small flakes dropped from the soffit and a longitudinal crack, about 5ft. long, appeared. In fifty-nine minutes, when the gas was shut off, the soffit appeared red-hot, and vapour was observed to be issuing through cracks in the upper surface, and from the stack of bricks forming the load. After the test, and after the load had been removed, cracks surrounding the floor were observed, as well as the longitudinal crack already mentioned. The cracks were fairly open in places to the extent of about $\frac{1}{2}$ in., and they went obliquely through the floor and appeared as hair cracks of the soffit. The floor towards one end had sunk in the centre about $\frac{1}{4}$ in. Several transverse cracks were also observed and the material of which the floor was composed crumbled away at the touch when broken for examination. Publication No. 40 deals with a fire test with two framed doors, one of 2in. Austrian oak, with 2in. solid panels, and the other of 2in. American walnut, also with 2in. solid panels. This was the result:—In fifteen minutes flame appeared at intervals over the top rail, west side, of the walnut door. In thirty-three minutes flame appeared through the top of the east top panel (between rail and panel) of the oak door. In thirty-six minutes flame appeared between top west panel and top rail of walnut door. In forty-two minutes flame appeared through the joint between the top muntin and the top east panel of the walnut door. In forty-five minutes the lower west panel of the oak door fell out. In fifty-one minutes the upper panels and muntin and top rail of the oak door fell out. In fifty-five minutes the remainder of this door collapsed. In fifty-eight minutes the walnut door collapsed. On Wednesday afternoon last the Committee tested a floor of wood joists, with a concrete filling and a plaster ceiling on expanded metal lathing, the concrete protecting the joists from below. Another test was with two wood doors of special make. These tests had particular bearing on questions dealt with in the Building Act but subject to much controversy as far as technical opinion is concerned. The next testing day for tests under this series is Wednesday, April 11th.

Surveying and Sanitary Notes.

Beach Improvement at Yarmouth.—The Corporation of Yarmouth propose to extend the Beach Promenade at a cost of £3,000, and to spend £2,800 on wood-paving.

Cookridge Street, Leeds.—A special meeting of the Leeds Improvements Committee was held on March 29th, when it was decided to recommend the City Council to proceed with a scheme for widening Cookridge Street.

Institute of Sanitary Engineers.—At an examination in practical sanitary science held on March 23rd and 24th, C. B. Burnett (Camberley, Surrey) and J. Haworth (Ramsbottom) passed, qualifying for "Membership"; and E. Lumley (London), for "Associateship."

Bacterial Treatment of Sewage.—The Rivers Committee of the Manchester City Council have prepared copies of correspondence with regard to the bacterial treatment of sewage in Massachusetts. In one of the letters, dated March 3rd, Mr. L. P. Kinnicutt, director of the chemical department of the Worcester (Massachusetts) Polytechnic Institute, says:—"In America, or in Massachusetts, sewage is successfully treated bacterially by the intermittent filtration method, and at the rate of 50,000 to 90,000 gallons per acre per day; but we have had no experience with the English method of bacterial treatment, namely, contact beds, as all the towns so far called upon to treat their sewage have had sufficient sandy soil to use intermittent filtration beds, and the cost of this kind of land is so little that beds of this character can be constructed at a much less price than the contact beds."

Leeds Sewage.—The Leeds Sewerage Committee met on Thursday to consider the question of a new sewage disposal scheme for the city. For more than two years they have been carrying out at Knostrop a series of exhaustive and varied experiments in the biological treatment of sewage, but they now recommend the purchase of a large site at Gateforth, consisting of 1,882 acres, situated in the lower valley of the Aire, about five miles east of Selby and fourteen miles from the present works at Knostrop. The levels are such that the sewage could be flowed to the site by gravitation, whereas on any site nearer to Leeds the sewage would have to be lifted by pumping. The purchase price is £85,000. Biological treatment would probably be adopted. An interim report bearing on the earlier experiments was issued in 1898, and a full report on the latter experiments is likely to be issued in a few months.

The John Millard Memorial Chapel, Bedminster, Bristol, was opened on March 28th. The building is of brick, with Bath stone dressings, and is situated in Garnet Street. Mr. G. H. Oatley was the architect, and Mr. A. Dowling the builder.

Extension of Christ Church, Gloucester.—The new chancel of Christ Church, Gloucester, was consecrated on Thursday last. The church has been considerably enlarged and internally improved, and a new west front, representing the Lombardie style, has replaced the old one, the total cost of the alterations being about £2,500.

Swansea Board of Guardians and its Architect.—At a meeting of the Swansea Board of Guardians on Thursday the position of the Board with respect to the architect (Mr. W. H. Wills) who prepared plans for the extension of the workhouse, since abandoned, was again brought up. It was eventually decided that terms agreed on between Mr. Wills and a sub-committee be accepted, which means that Mr. Wills is retained as the Board's architect and that he be paid for the work he has done in connection with the old plans on terms agreed to.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
April 6	Halifax—Shed .....	.....	M. Hall, 29, Northgate, Halifax.
" 6	Belfast—Offices	Kirker, Greer, and Co. Limited	S. Stevenson, 83, Royal Avenue, Belfast.
" 6	Leeds—Heating House	Corporation	City Engineer, Municipal Buildings, Leeds.
" 6	Portsmouth—Additions .....	.....	G. C. Vernon-Inkpen, Whittington Chambers, King's-road, Southsea.
" 6	Soothill, Nether, Yorks.—Houses .....	.....	F. W. Ridgway, Architect, &c., Bond-street, Dewsbury.
" 7	Bedale—Sheep Pens .....	.....	Robert Frest, Printer, Northallerton.
" 7	Caerwent, near Chepstow—Church Restoration	Rev. W. A. Downing	J. W. Rodger, 14, High-street, Cardiff.
" 7	Carlisle—Walls	Rural District Council	J. W. Kirsopp, 30, Currock-terrace, Carlisle.
" 7	Edinburgh—Re-building .....	.....	E. Wilson, 3, Queen-street, Edinburgh.
" 7	Hastings—Chimney Shaft	Corporation	F. H. Palmer, Engineer, Town Hall, Hastings.
" 7	Kirby-in-Cleveland—Repairing .....	.....	E. Lofthouse and Sons, 62, Albert-road, Middlesborough.
" 7	Kirby-in-Furness—Classroom .....	.....	W. Newby, Architect, Beckside.
" 7	Stanwix, near Carlisle—Villas .....	.....	James Beatty, Stanwix, near Carlisle.
" 7	Treharris, Wales—Converting .....	.....	A. O. Evans, Architect, Pontypridd.
" 7	Belfast—Church	Mr. John Littlejohn	Young and Mackenzie, Scottish Provident-bldgs., Belfast.
" 9	Bexley, Kent—Farm Buildings	Presbyterians	Clerk, Asylums Committee, 6, Waterloo-place, S.W.
" 9	Moss Side, near Lytham, Lancs.—Hospital	London County Council	Heywood and Harrison, Post Office Chambers, Accrington.
" 9	Maidstone—Electric Station	Joint Hospital Committee	T. F. Bunting, Fairmeadow, Maidstone.
" 9	Belfast—Extension of Shed	Urban District Council	G. F. L. Giles, Harbour Engineer, Belfast.
" 9	Blaina, Mon.—School .....	.....	R. L. Roberts, Victoria-chambers, Abercarn, Mon.
" 9	Goodwich, Fishguard—Hotel and Villas	School Board	Jenkinson and White, 1, Prince's-street, Westminster, S.W.
" 9	Aberdare—Chapel	Pembrokehire Estate Co. Ltd.	T. Roderick, Ashbrook House, Aberdare.
" 9	Chipping Norton—Infirmary Accommodation	Welsh Independents	A. C. Bawlinson, Clerk, Chipping Norton.
" 10	Neath, Wales—School	Guardians	J. C. Rees, Architect, Church Place, Neath.
" 10	London, W.—Home	School Board	J. W. Chapman, 18, Sutherland-avenue, Harrow-road, W.
" 10	Barnes—Station	Paddington Guardians	W. Fairley, Council Offices, High-street, Mortlake.
" 10	Liverpool—Sanatorium	Urban District Council	Willink and Thicknesse, 14, Castle-street, Liverpool.
" 10	West Ham—Houses	Consumption Hospital	J. G. Morley, Town Hall, West Ham, E.
" 11	Fulham—Convenience	Town Council	C. Botterill, Town Hall, Walham Green, S.W.
" 11	Grimsby—Offices	Vestry	H. C. Scapling, Architect, Court Chambers, Grimsby.
" 12	Moraghan—Chapel	School Board	Hague and M'Namara, 50, Dawson-street, Dublin.
" 12	Pudsey—Extension .....	.....	H. Hodgson, Old Bank Chambers, Bradford.
" 13	Dewsbury—Stables	Mechanics Institute	Holtom and Fox, Corporation-street, Dewsbury.
" 14	Dartford—Premises	Pioneers Industrial Society Limited ..	Co-operative Society, 13, Spital-street, Dartford.
" 14	Stafford—Cottages	Co-operative Society, Ltd.	W. Blackshaw, Borough Hall, Stafford.
ENGINEERING—			
April 6	Durham—Bacteria Beds	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
" 6	Rathfriland, Ireland—Waterworks .....	.....	B. Manning, Clerk, Aughrim, Ireland.
" 7	Southampton—Motor Transformer	Harbour Board	A. H. Skelton, Harbour Offices, Town Quay, Southampton.
" 7	Rugby—Scarifier	Urban District Council	D. G. Macdonald, Surveyor, Rugby.
" 7	Prescot, Lancs.—Roof	Gas Co.	J. E. Hall, Gas Offices, Moss-street, Prescot.
" 9	Salford—Ash Conveyor	Corporation	Lacey, Chirehugh, and Sillar, 78, King-street, Manchester.
" 9	Maldon—Pumping Plant	Rural District Council	H. G. Keywood, Engineer, Maldon.
" 9	Wimbledon—Electric Lamps	Urban District Council	R. H. Butterworth, Council Offices, Wimbledon.
" 9	Alnwick—Tank	Rural District Council	H. W. Walton, Clerk, Alnwick.
" 9	Sophia, Bulgaria—Engines	Government	The Manager, Commercial Department, Foreign Office, S.W.
" 9	Halifax—Reservoirs	Corporation	G. H. Hill and Sons, 3, Victoria-street, Westminster, S.W.
" 10	Faringdon, Bucks.—Water Supply	Rural District Council	G. Winship, Engineer, Abingdon.
" 10	Iminster—Gasholder	Gaslight, Coal and Coke Co., Ltd.	The Manager, Gaslight, Coal and Coke Co., Iminster.
" 11	Foleshill, near Coventry—Boring	Rural District Council	Beesley, Son, and Nichols, 11, Victoria-street, Westminster, S.W.
" 14	Coleraine, Ireland—Reservoir	Urban District Council	W. J. Given, Town Surveyor, Coleraine.
" 15	Corunna—Electrical Machinery	Electric Co-operative Society	Señor Dr. M. Baifa, Calle de Zafateria, No. 5, Corunna.
" 17	Bury, Lancs.—Floors	Sewage Committee	A. W. Bradley, Engineer, Corporation Offices, Bury.
IRON AND STEEL—			
April 7	Prescot, Lancs.—Roofs	Gas Company	J. E. Hall, Gas Offices, Prescot.
" 9	Dewsbury—Railings .....	.....	C. J. Ferguson, 42, Clareville-grove, S. Kensington, S.W.
" 14	Coleraine, Ireland—Pipes	Urban District Council	W. J. Given, Town Hall, Coleraine.
PAINTING—			
April 6	Salford—Whitening	Union	The Steward, The Infirmary, Hope, near Eccles.
" 6	Tewkesbury—Painting .....	.....	The Surveyor, Council Offices, Tewkesbury.
" 12	Leeds—Painting	Corporation	Engineer, Municipal-buildings, Leeds.
ROADS—			
April 7	Kiveton Park, near Sheffield—Slag	Rural District Council	G. W. Clarkson, Surveyor, Anston, Sheffield.
" 7	Pocklington, Yorks.—Stone and Slag	Rural District Council	T. Robson, Clerk, Pocklington.
" 7	Tunbridge Wells—Road Works .....	.....	E. J. Carter, 3, The Pantiles, Tunbridge Wells.
" 8	Cheadle—Materials	Urban District Council	E. Sykes, Council Offices, Cheadle.
" 9	Moss Side, Lancs.—Street Works	Corporation	H. B. Longley, Council Offices, Moss Side.
" 9	New Shoreham, Sussex—Flats	Rural District Council	E. Cripps, Council Offices, New Shoreham.
" 9	Uttoxeter, Staffs.—Materials	Rural District Council	J. Preston, Surveyor, Woodlands, Uttoxeter.
" 10	Batley—Levelling	Town Council	O. J. Kirby, Surveyor, Market-place, Batley.
" 10	Durham—Materials	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
" 10	E'y, Cambs.—Materials	Rural District Council	A. D. Ennals, Surveyor, Lynn-road, Ely.
" 10	Handsworth, Yorks.—Works	Urban District Council	J. Hardcastle, Council Offices, Woodhouse.
" 11	Fulham—Making-up	Vestry	C. Botte ill, Surveyor, Town Hall, Walham Green.
" 11	Hammersmith—Wood Paving	Vestry	Surveyor, Town Hall, Hammersmith, W.
" 11	Stockbridge, Westmoreland—Widening .....	.....	T. R. Atkinson, 124, Graham-street, Penrith.
" 12	Kintyre, Scotland—Road Maintenance .....	.....	J. Mollison, Road Surveyor, Kintyre.
" 14	Wolverhampton—Setts	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
SANITARY—			
April 6	Coxhoe, Durham—Sewerage Works	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
" 7	Halifax—Sewers .....	.....	E. Horsfall and Sons, 22A, Commercial-street, Halifax.
" 7	Chirk, Wales—Sewerage Works	Rural District Council	Bremner, Smith, and Bremner, Engineers, Oswestry.
" 7	Darton, Barnsley—Scavenging	Urban District Council	J. Gibson, Clerk, Regent-street South, Barnsley.
" 7	Bingley, Yorks.—Sewers	Urban District Council	R. Armistead, 8, Charles-street, Bradford.
" 7	Chesterfield—Sewage Outfall Works	Rural District Council	H. Walker, Albion-chambers, King-street, Nottingham.
" 7	Kilrenny, Scotland—Drainage System	Commissioners	Jameson and Guthrie, Town Clerks, Anstruther.
" 9	London, N.—Sewer	Hornsey Urban District Council	Engineer, Council Offices, Southwood-lane, Highgate, N.
" 10	Reddington—Sewerage Works	Urban District Council	Cuthbert Brown, Bedlington.
" 10	Wealdstone, Middlesex—Sewerage Works	Urban District Council	The Engineer, 16, Great George-street, Westminster, S.W.
" 11	Twickenham—Sewers	Urban District Council	F. W. Pierce, Surveyor, Town Hall, Twickenham.
TIMBER—			
April 17	Dundalk—Sleepers Blocks	Great Northern Railway Co. (Ireland) ..	T. Morrison, Am'ens-street Station, G.W.R., Dublin.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
April 11	West Hartlepool—Hospital	£100, £50	J. W. Brown, Engineer, Municipal-bldgs., West Hartlepool.
" 20	Buckie, Scotland—Bridge .....	.....	J. A. Budge, Burgh Surveyor, Buckie, Scotland.
" 20	Pontefract—Adapting .....	.....	The Clerk, Union Offices, Pontefract.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight—Buildings	£50, £50	W. H. Wooldridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock Clerk, Broad-street, Bury.
" 30	Baviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	" Architectural Review."

New Patents.

These patents are open to opposition until May 7th.

1899.—Window Locking Devices.—4,389. R. ADAMS, London, S.E. Attached to the window is a rack which passes through a fixed box containing a pinion, a cam wheel, and a pawl. By means of a key or pin the pawl can be pulled out of contact with the pinion, and the window operated as desired, being afterwards automatically locked by the pawl falling into a depression in the cam wheel and engaging with the pinion.

Sewage Filtration.—4,907. M. J. F. THIRIAULT, Paris. The sewage is passed on to a bed of peat or turf by simple or multiple filtration, and when this has become saturated it is dried and sold for agricultural purposes as concentrated organic manure.

Stained Glass.—6,194. GATESHEAD STAINED GLASS COMPANY, LIMITED, of Gateshead, and J. E. SNEE. A pattern or figure is first ground, cut, or pressed in the surface of the glass and, after polishing or frosting, the pattern is coloured or tinted; the colour is then burnt in.

Surveying Instruments.—7,864. W. F. STANLEY, London, W.C. In combination with the instrument there is a train of wheels which actuate a series of counter dials and so indicate the horizontal or vertical angle through which the telescope has passed. Another part of the invention consists in the use of a diaphragm fitted with compensating points or lines to give direct base reading, allowing for difference of hypotenuse and base when inclination readings are taken, actuated by rack work or other gear in connection with the horizontal axis of the telescope.

Brick-Making Appliances.—8,722. F. JOHNSON, Leeds. Instead of being circular in cross section, the mouth-piece is of polygon form. This prevents the clay revolving with the pug shaft and improves the driving power, so increasing the output and removing undue torsional strain on the pug shaft.

Non-Conducting and Fireproofing Materials.—9,784. A. LANTZKE and A. JUENGER; both of Brooklyn, U.S.A. The material consists of three layers—outer layers of flexible pure (or nearly pure) asbestos, and an inner layer of fibrous material saturated with an incombustible hardening solution to give rigidity to the sheet, which is corrugated.

Portable Elevators for Building Materials.—14,169. J. CANDLISH and C. GODDARD; both of Lytham. Briefly, this apparatus is like a ladder with an endless band mounted between it, carrying buckets or brackets and running over rollers at intervals. There is a large roller at the top and bottom, and the elevator can be driven by hand or mechanical power.

Edge-Pan Runners.—20,074. A. SABINE and T. SABINE; both of Swadlincote, Derbyshire. The outer rim of the runner is built up in sections so that the parts most subject to hard wear can be easily replaced.

1900.—Heat Radiators.—1,492. G. C. DYMOND, London (C. Clarke, Northampton, U.S.A.). A foot warmer consisting of a hollow metallic chamber divided into two compartments is attached to the radiator and can be moved laterally as desired.

The following specifications were published on Saturday last, and are open to opposition until May 14th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—4,983, BROOKES (*Gardim*), apparatus employed in checking and recording the attendance of workmen. 5,211, MILLER, electric incandescent lamps. 5,228, CONN, manufacture or treatment of paper used for ornamental printing, wall decorations, and for other purposes. 5,344, CARR, planks or scaffold boards for the use of house decorators, builders, &c. 5,460, WISE (*Thowles*), incandescent bodies for electric incandescent lamps. 5,466, ELLINGTON, tables, cabinets, desks, and similar articles. 5,512, RODNEY, locks. 5,539, PAR-

KER, mechanism for controlling and aiding the closing of doors, flaps, and windows. 5,735, PRESTON and RALSTON, ventilation of sewers. 5,790, JORDAN, stencil plates and system of printing from them. 6,054, BRDITSCHIEVSKY - APOSTOLOFF, electric lamps. 6,525, WANDERPEPEN and VAN BERCKELAER, apparatus for the production or generation of gas of high illuminating power. 7,588, BAKER and BAKER, smoke-consuming fire bridge for furnaces. 8,005, MCINTYRE and SANITARY VENTILATING SYNDICATE, LTD., air propeller and cistern for ventilation of water-closets and other apartments. 8,013, POWELL and HANMER, acetylene lamps. 8,137, LAKE (*Marcus*), glass lights for windows, gratings, &c. 8,301, HOWELL, HUMPAGE and JACQUES, hoists, winding gear, &c. 8,426, OATES, earthenware or sanitary mangers for horses and cattle. 8,450, GRANT, fresh-air inlet sewer, manhole, and lamp-hole covers and frames. 8,889, BARCLAOUGH and HEATON, machinery and mixing varnishes and similar liquids by mechanical means. 9,035, PESTEL, acetylene gas apparatus. 9,126, SNUGG, means for regulating gas pressure in incandescent gas lighting. 9,295, MILNE and CHESHIRE, inlet and shower or spray fitting for baths, lavatories, &c. 9,625, ROBINSON, manufacture of glazed or fireclay bricks, tiles, &c. 9,652, HATMAKER (*Just*), paint. 9,946, HIRST, method and means for paving. 10,039, WOODMANSEY and BRINS OXYGEN CO., LTD., apparatus for detecting gas leakage. 10,599, ADAMS, NEALE and SIMPSON, brick machines. 11,400, HOGG, apparatus for trimming the sides of roads. 12,894, LEE, locks and latches for doors. 16,650, PETERSEN, conduits suitable for electric mains. 19,813, WILMOT, wrought metal radiator.

1900.—BECK, clamps for fret-saw and similar work. 477, MOFFAT and DOBBINS, light-projecting glasses for windows. 756, CROIZAT, apparatus for lighting and extinguishing series of street and other gas lamps. 2,249, ROBINSON, tenoning machines. 2,337, LE MAT, acetylene gas apparatus. 2,672, NIELSEN, manufacture of media for incandescent lighting.



THE above photograph represents the "Furnisher" stand at the Furnishing Trades' Exhibition, which opened, at the Agricultural Hall, on March 26th, and closes to-morrow, April 5th. The "Furnisher" is a monthly journal devoted to all branches of the furnishing trade, and has already attained the leading place among its contemporaries. The articles are written by experts of the highest authority, and the illustrations are produced in a form never before attempted by a trade journal.

New Companies.

The Clyde Pottery Company, Limited.

This company was registered with a capital of £20,000 in £1 shares to acquire and carry on the existing business of earthenware manufacturers. Registered office: Pottery Street, Greenock.

John Hutchinson and Company, Ltd.

This company was registered on March 22nd with a capital of £1,000 in £1 shares to acquire the business carried on by A. H. Hutchinson as John Hutchinson and Co., and to carry on the business of brick, tile, and terra-cotta makers, &c. Registered office: Price-street, West Bromwich, Staffordshire.

Halward, Cole and Thompson, Limited.

This company was registered on March 23rd with a capital of £5,000 in £1 shares to acquire the business now carried on by T. W. Halward, T. A. Cole and T. Thompson as Halward, Cole and Thompson at Selly Oak, Worcester; and as builders, contractors, &c. The first directors (to number not less than three nor more than six) are T. W. Halward, T. A. Cole, and T. Thompson.

Bangor Range Slate and Minerals Company, Limited.

This company was registered on March 19th with a capital of £6,000 in £1 shares to acquire a certain mining property at Llanwnda, Carnarvon, known as Carregfawr Cae Sgubor Gelfchedd and Tyddn Carregfawr, or Treflamucha, and to carry on the business of miners, metallurgists, &c. Registered offices: 34, Leadenhall Street, E.C.

Hemingways, Limited.

This company was registered on March 10th with a capital of £85,000 in £1 shares to acquire the business proposed to be carried on at Haverton Hill Works, Stockton-on-Tees, by Messrs. Hemingway, Hemingway and Forbes, and to carry on the business of manufacturers of iron, steel, and bridge work, roof work and

girder manufacturers, etc. The number of directors is to be not less than three nor more than seven.

Ralph Martindale and Company, Limited.

This company was registered on March 21st with a capital of £35,000 in £1 shares to acquire the business of R. Martindale and Co., Ltd., and to carry on the business of edge-tool manufacturers, builders, carpenters, engineers, etc. The first directors (to number not less than three nor more than seven) are R. S. Sadler, T. R. Martindale, and B. Arthars.

Elder's Navigation Collieries Limited.

This company was registered March 5th with a capital of £50,000 in £10 shares to build coke ovens, as producers of gas, and suppliers of coke for the purposes of light, heat or power, brick and tile makers, &c. The first directors (of whom there shall be not less than two nor more than five) are A. L. Jones and W. J. Davey.

Kelham Brick Company, Limited.

This company was registered on March 22nd with a capital of £5,000 in £10 shares to acquire certain land at Kelham, Nottingham, and to carry on the business of brick, tile, pipe and earthenware manufacturers, &c. The first directors (to number not less than three nor more than seven) are A. C. Sutton, E. F. B. Fell, Colonel E. J. Fell and Rev. C. N. Sutton. Registered office: The Brick Works, Kelham, Notts.

Hands, Limited.

This company was registered on March 8th with a capital of £50,000 in £1 shares to acquire the business carried on at Garlick Hill, Hatchet Court, and Snow Hill, London, and elsewhere, under the style of A. C. Hands; at Hatton Garden, E.C., as W. T. Burbey and Co., and at Birmingham as H. Davis; and to develop the business and as art metal workers, machinists, &c. The first directors (of whom there shall be not less than three nor more than six) are A. C. Hands, W. T. Burbey, H. Davis, G. Hands, B. H. Jenkinson and one to be appointed by the Law Guarantee and Trust Society.

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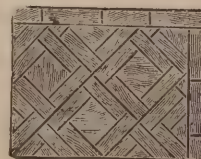
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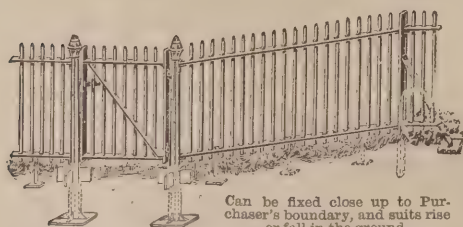
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APRIL 11, 1900.
No. CCLXX.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

The Sale of the Borghese Gallery.

No lover of art visiting Rome should fail to inspect the Villa Borghese, made so famous by poets and

prose writers as a place almost paradisaic and divine, whose trees and fountains and gardens inspired Goethe, whilst writing Tasso and Iphigenia; and no one who has never visited the Villa Borghese can have the least idea of the princely pomp of the ancient families of Rome. This imposing villa is situated at Pincio, between the Porta del Popolo and the Porta Pinciana, the grounds on which it stands being about four miles in circumference. It was built by order of Cardinal Scipione Borghese, the nephew of Paolo V. (1605-1621), the designs being furnished by Giovanni Vasanzio. Towards the end of the same century, the building was enlarged by Prince Marcantonio Borghese, under the direction of the architect, Antonio Asprucci. Later on, D. Camillo—a relative of Napoleon Bonaparte and afterwards Marcantonio the Second—added to and beautified this residence, and now we have before us an ensemble which, for richness and beauty, has no equal.

But it is not alone the wonderful architecture of the villa, the beauty of its courtyards, of its gardens, of its neo-classic chapels, its statues and the sculptured ornament which one sees on every side; it is not for these alone that the Villa Borghese is renowned; they form only a small part of its artistic treasures. But it is the picture gallery which is its greatest treasure, and it would indeed be difficult to conceive how any one family could possibly have amassed such a collection of pictures which may be seen to-day in the first storey of the villa. These pictures once occupied twelve rooms on the ground floor of the Borghese Palace in the city of Rome, but they were transferred to their present abode some time back on account of the dampness of the palace.* To describe, in detail, even briefly, the pictures of the Borghese Gallery would be far beyond the scope of the present article; indeed, it would require a volume to do justice to them. For, besides 700 paintings, there are some very fine pieces of sculpture, among which are the celebrated group of Apollo and Daphne by Bernini, and the renowned statue of Venus by Canova. The collecting of these pictures was begun in the first decades of the seventeenth century by Cardinal Scipione Borghese. It may have been for the love of art, or it may have been from the Spanish characteristic love of pomp, perhaps both, but whatever the motive might have been, the collection of pictures in the Villa Borghese is one of the most famous in the world; famous alike for its size and for its splendour.

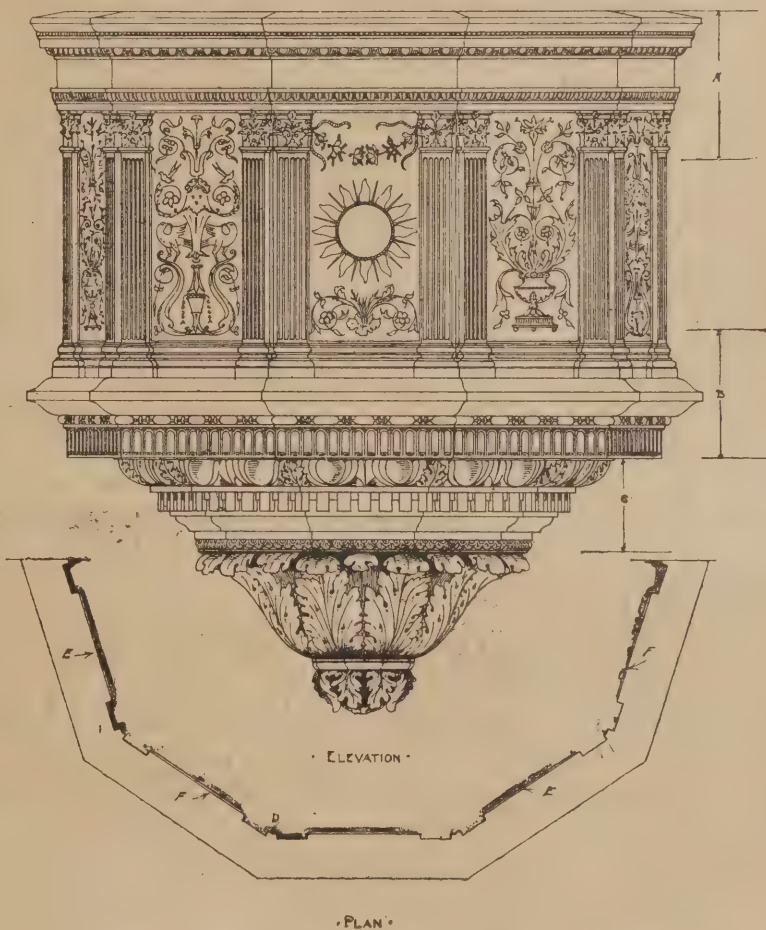
Within very recent years the Russian Government offered 25,000,000 francs (£1,000,000) for the complete collection. The names of a few of the masters will suffice

to raise enthusiasm and excite curiosity: Lorenzo di Credi, Raphael, Titian, Sodoma, Domenichino, Garofolo, Ortalano, Solaro, Pierin del Vaga, Francia, Parmigianino, Andrea del Sarto, Dosso Dossi, Palma il Vecchio, and many others.

To-day public attention is fixed upon the impending acquisition of this collection by the Italian Government. The papers necessary for the purchase were recently drawn up and laid before the House of Representatives by the Ministers of Public Instruction and Finance. The sum proposed is a very much lower figure than that offered by the Russian Government, namely, 3,700,000 francs (£148,000), a difference of £852,000! Apart, however, from the question of local preference, an estimation of the value of a work of art can, at best, be only approximate, and the price of a statue or of a painting is influenced by so many causes that even experts rarely agree. Now, with regard to the Borghese

Minister of Public Instruction the following explicit declaration:—"We will forego the sum of £148,000 if the Government will leave us in absolute and free possession—with right of exportation—of one picture of our artistic collection, namely, "Sacred and Profane Love," by Titian.

It would, however, be indecorous for the Italian Parliament to accept gratuitously the Borghese Gallery, and leaving, too, one of its finest jewels to take to itself wings and fly to distant shores; and still more indecorous would it be for a State to accept presents when the acceptance implicates almost an offence to its dignity. The diversity of opinion among the experts with regard to the Government's offer is extraordinary; yet more extraordinary is the fact that one picture alone should be valued at a higher figure than that offered for the whole collection. Besides the pictures already named there are in this gallery



PULPIT, CHURCH OF SANTA MARIA MADDALENA, FLORENCE.

Gallery, the sum offered by the Italian Government is far below any of the estimates upon the value of the collection. Let us take, for example, a few of the best pictures. There is the celebrated "Danae," by Correggio. This picture has been estimated at £40,000. Then there is "The Descent from the Cross," by Raphael, which is also valued at £40,000; but Titian's "Sacred and Profane Love" is valued by some at £80,000 and by others at from £100,000 to £150,000. (It was recently stated that Prince Borghese had been offered £200,000 for this picture.) Judging from this, the sum proposed by the Italian Government for the whole gallery is more than absorbed by three pictures alone, or by one picture if we attribute to the painting of Titian the value of £150,000. Concerning this latter estimate, the following incident in the negotiations will lend colour to the fact that it is not very wide of the mark. Prince Borghese recently dispatched to the

"The Descent from the Cross," by Garofolo; "The Hunting of Diana," by Domenichino; an "Ecce Homo," by Solaro; a half-figure of the Saviour, by Marco d'Oggiono; "The Descent from the Cross," by Ortalano; a fine "Crucifixion," by Van Dyck; and "The Descent from the Cross," by the same.

The gallery also contains works by Teniers, by Brouwer, and by Potter, whom I mention in order to indicate the great variety of works which the gallery possesses. This fact confirms the absolute and indisputable importance of the Borghese Gallery; and however things may shape themselves in relation to its sale, it is, and will remain, upon Italian soil; for it is impossible to believe that Italy—a land whose greatest glory is art—will ever lose such an opportunity of possessing a collection of the first order, of the most important private picture gallery in the world, and—if we except the masterpieces of the Vatican—the first gallery in Rome.

ALFREDO MELANI.

* The Borghese Palace is one of the finest and richest buildings in Rome. It was commenced in 1590 by Cardinal Dezza, the designs being furnished by Martino Longhi, the elder. It was finished during the time of Paolo V. (1605-1621).

Why Not Embank the Surrey Side?

THE greatest improvement effected in modern London is unquestionably the Thames Embankment. Looking across from it to the Surrey shore of the river the eye rests upon a confused, smoky, manufacturing suburb, a growing forest of ugly chimneys, some hideous advertisements, relieved here and there indeed by a few honest attempts at commercial architecture at the waterside, and the excellent outline of the Shot Tower. Why not embank this side and thus worthily complete the scheme of the old Metropolitan Board of Works? The cost of carrying out the Victoria Embankment was not excessive; a beginning has already been made on the south side by embanking a section from Westminster Bridge to Vauxhall, and an opportunity would be given of putting an end to the floods in Southwark which are now caused by every exceptional rise of the Thames. Beginning at London Bridge, the fine church of St. Saviour's, Southwark, would be visible from the new roadway and the river; it would be restored in fact to its original condition, as it is believed that a garden descended from it to the water. But a roadway alone would hardly meet the views of those who wish to see London made worthy of its rank and importance. A long succession of gardens well planted, with here and there a group of statuary, should be laid out, and the width of this strip of greenery should be ample; the system recently commenced of building up to the very verge of all available land, instead of the old "squares" and "crescents," and the disappearance of gardens from the building plans of new suburbs, make fresh air and trees more valuable than ever; and what has been done with one bank of the river could be done with the other. In all probability the design of a simple retaining wall would be adopted, as on the Middlesex shore; it is to be hoped, however, that a little more originality and care may be exercised, when the time comes, in the detail, in landing places, and in such architectural ornament as may be permissible. The full value of the existing embankment has never been obtained by Londoners because of the absence of shops, cafés, kiosks, and places of reasonable refreshment, beside the gardens; the embanking of the south side should not be marred by a similar mistake. The neighbourhood is a poor one, and if the new gardens were treated attractively immense numbers of the working classes could obtain a glimpse of the great stream and its buildings, and breathe an air in the summer evenings which at high tide is often impregnated with the sea; no mere "recreation ground" could compare with it for a moment. It would terminate at Westminster Bridge; here the pavilions of St. Thomas's Hospital would be a worthy pendant to St. Saviour's at its commencement; the whole work would add enormously to the amenity and grandeur of London; it would be hard to match the total effect of both banks thus treated, by any urban view in the world. And it may be fairly said that the proposal is in accordance with metropolitan tradition. For centuries the Thames was bordered with gardens attached to the houses of the great families, whilst the river was the favourite highway; it was bright with sails and gay with barges rowed by "watermen" and retainers in picturesque dresses. Even so recently as the last century, Canaletto declared that London and Venice were the two most picturesque cities in Europe. Having restored the banks, an improved service of steamers would alone be required to make a journey on the Thames one of the wonders of the world.

J. C. P.

On Reflection.

Preservations and Demolitions.

THE discussion at last week's meeting of the London County Council with reference to No. 17, Fleet Street has caused both pleasure and fear to those who wish to see the historical relics of London preserved—pleasure because it was decided not to pull down the bogus "palace," fear because this was only agreed to by a majority of one. This shows that there is a strong "modern" body in the Council, and at a future date these may sweep away the old when it happens to be of less interest or importance than the Fleet Street building. Mr. Robinson gave expression to a feeling far too prevalent when he said: "If the proposal is carried out it will involve a wanton and wicked waste of public money." The right view was that expressed by Mr. Burns, who said that a Council unsusceptible to the dictates of art could not be sympathetic to the sufferings of the poor. One thing is very certain—the average member of a town council or a vestry board has very little sympathy indeed with art, and is so doggedly prejudiced against it that he will make no attempt to put his opinions to the test. It has already been pointed out that we ought to treasure the bits of old London that still remain with us, but whenever there is an opportunity of doing so a great hue and cry is raised about waste of public money. The case would be different if these old buildings had not such stirring historic traditions attached to them and were of less architectural merit; yet there is a party who would pull them all down as so much rubbish and replace them with some of the prosaic and commonplace buildings which are usually erected to-day at the expense of the public authority. It is only just by a scrape that No. 17, Fleet Street is to be preserved; but one must be thankful for small mercies, and a patron of the old might in this case remark that a miss is as good as a mile.

Architects as Furniture Designers.

WE referred last week to the Furniture Trades Exhibition, and pointed out the evidence it affords of the low level to which the cabinet-making trade seems to have fallen in these days. But there is one consideration that seems to be specially worthy of the attention of architects. How seldom do public or private clients consider the question of furnishing in relation to the building; they are too often content to purchase a number of incongruous pieces from a manufacturer who turns them out by the hundred, repeating the same design again and again with mechanical exactitude, but without reference to special requirements. It is perhaps essential to cheap production that hundreds of pieces of furniture should be made to the same pattern and placed in houses where they may or may not harmonise with the architectural character of the room and with the rest of the furniture. But in catering for moderately well-to-do clients it is a pity that our makers do not generally recognise the fact that the money spent on a number of expensive pieces of furniture, which, though individually beautiful, give a sense of incongruity when regarded as a whole, would suffice, if wisely directed, to furnish a room possessing distinct artistic individuality, the various parts co-ordinating with the whole and with each other, and producing a *tout ensemble* that would reflect credit on the taste of the designer and the owner.

It is a good rule that the architect who designs a building should design also its furniture, and, though considerations of expense may make this sometimes impossible, it would be well for architects in their own interests and for the sake of the artistic completeness of their work to impress upon their clients the close inter-relation between architecture, decoration and furnishing, and to qualify themselves for carrying out all three. A building in which the architect's work extends only to the completion of the structure, and which has then been delivered up to the decorator and the furnisher, who perhaps work independently of each other and of the architect, is infinitely less likely to be an artistic success than if one mind controlled the whole.

Leasehold Enfranchisement.

AN interesting discussion took place in the House of Commons on Wednesday last on the "Tenants in Towns Improvement (Ireland) Bill." The main object of this Bill is to remove certain disabilities from which Irish town tenants suffer, as they cannot afford to pay the high rents that obtain in England and Scotland. Mr. Smith-Barry (Huntingdon) said that the Town Holdings Committee of 1886 reported in favour of the leasehold system, as it encouraged more than the freehold system the building of houses, and by that means the working classes were able to obtain a great selection of dwellings at low rents; while dealing with Ireland the report stated that there were no special circumstances which warranted the separate treatment of that country. This statement Mr. Seale-Hayne (Ashburton) considered incorrect, for while the Town Holdings Committee reported against the enfranchisement of leaseholds as a general scheme, they certainly recommended the enfranchisement of leaseholds in certain limited areas. Probably few people realise how essentially English an institution is the long building lease. Mr. Seale-Hayne made the curious statement that he believed there were no countries in Europe except England and Turkey where such a thing as a long building lease was known. The effect of this upon our national architecture is a matter well worth considering. We did not shine, said Mr. Seale-Hayne, in the artistic merits of our buildings—on the contrary, many of our English towns compared most unfavourably with Continental towns. The reason was obvious. People would not spend money except on freehold. They spent as little as possible on leasehold. The palaces of Genoa and Northern Italy were not built on building leases, and the system of building leases had never permitted the erection of fine artistic buildings. Even in London the few artistic buildings we had were built by noblemen on their own estates. This restriction on building enterprise affected the working classes, because if there were facilities for expending money and the man who expended it had some hope of its coming into the pocket either of himself or his descendants instead of going to some rich landlord, as was the case now, there would be more work for the working-classes and for the better class of labour. Sir E. Durning-Lawrence (Truro) interrupted with: "All the clubs in Pall Mall are built on leasehold"; but Mr. Seale-Hayne said he was referring to private houses. If the clubs in Pall Mall were not built on leasehold, instead of being mere copies of other buildings they would be far finer than they were. Eventually the second reading of the Bill was rejected by a majority of eighty-eight, so that whatever merits the Bill really has it will not yet be possible to test them.

SOME NOTES ON SPANISH
IRONWORK.—I.

By F. HAMILTON JACKSON.

IT is a commonplace of criticism that just as individuals have special aptitudes for some one form of mental activity, or special dexterity in one craft or another, so certain nations have shown a bias towards certain pursuits or an impulsion in one direction of art craftsmanship. And just as in the case of the individual, at one time of his life he may be engrossed in one pursuit, the interest of which pales with years, while other occupations take the foremost place, so one finds that as the ages pass, that which was most interesting to the nation is thrust aside by other attractions, till it almost appears as if the genius of the people had changed entirely. And yet, again, as some favoured individuals have such well furnished minds and varied capabilities that success in many fields is within their grasp—if they have in addition that persistence in pursuit which lies at the root of most of the greatest successes—so there have been nations so richly dowered that they have produced much with ease what other nationalities attain painfully, if at all, and only by great labour; and their productions have covered wide fields of activity, while less fortunate nations have only succeeded with difficulty in one or two directions. The period of the Italian Renaissance may be cited as an example, when in Italy all forms of art production were pursued by craftsmen with such great success that their works have remained until the present day as standards of attainment by which to measure the efforts of lesser men; a height of achievement which marks the depth to which the national spirit fell during the next two hundred years.

Another of the nations of the Mediterranean littoral has shown itself most richly dowered in the past also, and has indeed produced one great painter who stands very near the summit of appreciation in the opinion of those whose knowledge and cultivation enable them to judge—Velasquez (for it is of Spain that I speak) was probably the greatest painter whom the world has seen—the man who could play with the difficulties of his craft and force hand and brush to express his intention with more success than any other. In qualities of design and pictorial colour he may be surpassed by the great Italians, but no portraits are finer than his, and this implies mental qualities and perceptions of the highest order. But the Spaniards were supreme in painting only in the seventeenth century. Their earlier work of the kind lagged behind that of the Italians, and after Velasquez and Murillo the school sank again into obscurity. It is in other arts of decoration that their greatest successes were obtained—in architecture, in architectural sculpture (often coloured with a gorgeous effect), and ironwork.

There were at least two sorts of design being carried on side by side—the Romanesque developing into the Gothic of the northern provinces, and that form of it which was greatly affected by the Moorish work of those toward the south—though, indeed, the Moorish influence is strong nearly all through Spain. The former is austere and severe in its lines and generally sparing in its use of ornament in the earlier period—but the Moorish liking for gorgeousness of decoration and involved pattern gradually leavened the whole art work of Spain, just as the language changed, becoming full of Arabic words—and although in the later Renaissance styles the fullness of ornamentation became overloaded and disgusting; in the later Gothic, and, above all, in the early Renaissance design, founded upon that of the silversmith, and therefore called "Plateresque," the richness and grace is most charming, and certain of the masterpieces of these periods may challenge comparison with the very finest work of any other nation without fear.

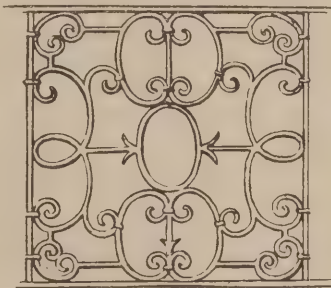
Such works as the monument to Don Juan and Isabel of Portugal in La Cartuja near Burgos—the Capilla del Condestable in the

Cathedral—and the Retablo in the church of San Nicolas in that city, stand quite by themselves, complete and beautiful, crowded with exquisitely-wrought detail, without the loss of breadth, and full of fancy and fine feeling. And then the splendid *rejas*, the iron screens parting the choir and high altar from the space between, of which one sees so many in the Spanish cathedrals—30ft. or 40ft. high, and worked with the same mastery over iron which Velasquez showed over paint—are quite unlike anything to be seen elsewhere, and equal if they do not surpass even the finest German ironwork.

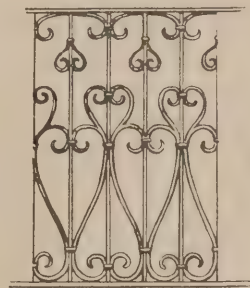
The Spaniards appear to have had a special aptitude for work in iron, and the tradition of good work lasted longer there than in most countries, for I saw a fanlight of very fair design in Madrid with the date 1845 worked into it, a time at which in England taste on the subject was perfectly dead. It is not wonderful that it should be so, for the purple iron ores of Bilbao are very rich; and at a very early period the Catalonians invented a furnace for smelting them which is still in use in remote parts of Europe, and named the "Catalan" furnace. Moreover the country has been continually in a state of warfare from times prior to the Roman conquest, which would stimulate the manu-

facture of arms and armour. It is a curious fact that the fine armour of the Renaissance period was not made in Spain, but imported from Germany—although the celebrated Toledo blades showed that the Spanish weaponsmiths were not surpassed by those of any other nation. And many of the earlier screens in the churches show definite signs of foreign influence, some of the thirteenth century near Madrid resembling so much those produced in the south of France at that time as to suggest that they were imported, whilst there are others showing Flemish influence plainly. But the names of the smiths who produced the finest Renaissance screens are known, and they are Spanish. Another curious fact is that with the expulsion of the Moors in 1609 a blight seems to have settled upon Spanish decorative art, especially upon sumptuous ironwork. The erection of the great *rejas* absolutely ceased after that date, though we know that the workmen were not Moors but Spaniards, as I have said above.

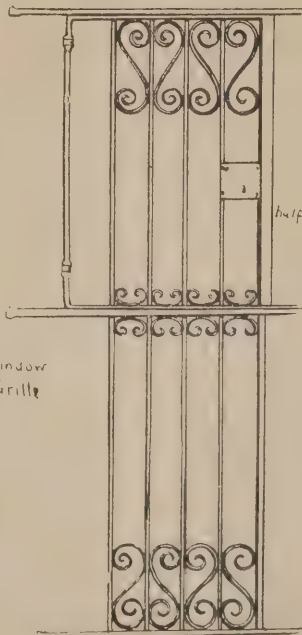
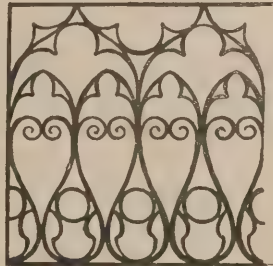
On entering Spain the unfamiliar aspect of the houses is one of the first things to strike the traveller. They generally have huge over-sailing roofs, supported on two or even more ranges of rafters with moulded and ornamented ends from which gargoyles of a curious pattern project still farther. These gargoyles



Fuenterrablia



Barcelona

Window
Grille

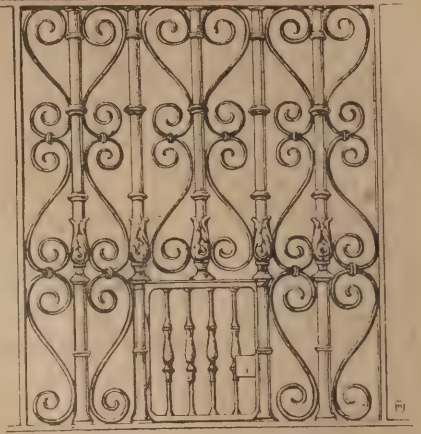
BALCONY PANELS

are made of tin or sheet iron and have bell-shaped mouths, behind which is an ornamentation formed of loops of the same metal soldered all round the pipe. This simple decoration gives them a sort of floral look when viewed from the front, and a pleasing complexity of line when seen in perspective. Below the roofs are rows of balconies—scarcely a window being without this ornamental appendage, which the Spaniards find most useful when engaged in one of their favourite occupations—that of leaning on their elbows and gazing up and down the street.

In some of the towns they are enclosed within glass cases which form outside windows, and when there are many of these in sight at the same time they give a most strange and unsubstantial look to the buildings. Valladolid, for instance, as seen from the station looks like a collection of temporary houses run up for summer holiday occupation.

The balconies proper are of all sorts of plans and shapes, but the most usual form is the oblong, with the railings made either in panels of wrought or cast iron, or with perpendicular bars ornamented with twistings and additions

of traceried forms, or with wrought spindling balusters, the angle bars being no stouter than the others, but often distinguished by knobs and spindle-like ornaments projecting above the rail. At Burgos I observed some curious balconies of curved plan and slight projection, the bars of which had one half turn in the middle; this produced a very queer effect. The variety gained by alterations in the grouping of square, angle, and twisted bars with occasional additions of scroll-work is enormous. The drawings will give some idea of it. And the means employed are always simple. Look, for instance, at the shaped balcony from Zaragoza (see inset sheet). The component parts of the design are simple and easily put together, but how graceful the effect! The Segovian balcony on the same sheet is often varied by interposing several plain bars between the quatrefoils, with perhaps better effect, and the one from Tarragona shows the supports with which balconies in Spain are generally strengthened, and by the use of which the smiths knew how to add decorative effect to comparatively plain work. The spindled baluster balcony from Burgos

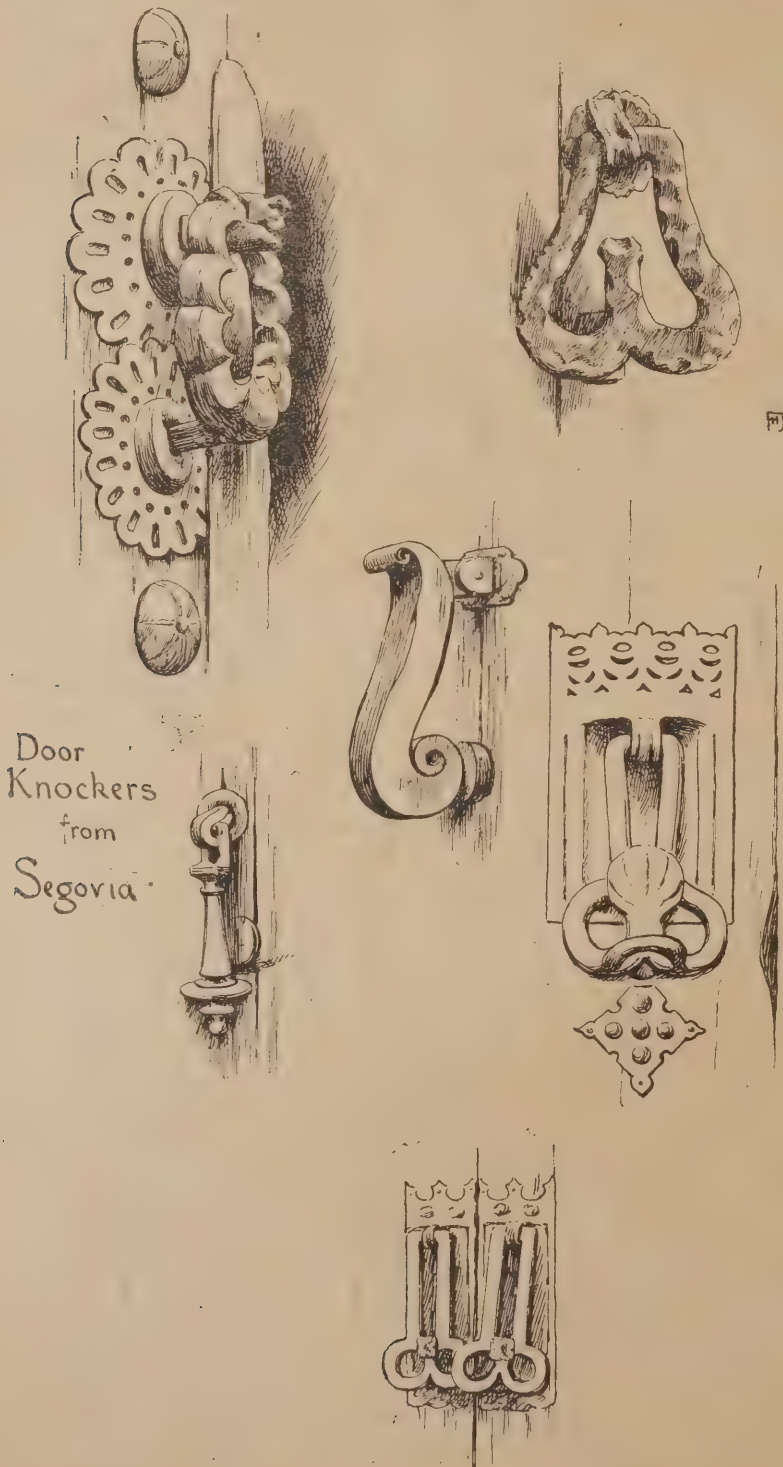


SMALL GRILLE AT LAS HUELGAS, BURGOS.

is an example of peculiarly Spanish work. Whether they were turned after being roughly hammered to shape, or struck while hot into a mould, which would require several heatings to complete each baluster, I do not know; it was one of the secrets of the ironworkers, but the Spanish smiths appear to have had complete mastery over the metal, shaping it as easily as if it were lead, and these spindled balusters are to be seen in Spain by the thousand, while outside of that country they are rare. I shall have more to say about the working of iron when speaking of the *rejas*. On the previous page are shown several traceried panels of various dates from Fuenterrabía, and several from Barcelona, most of which again show how a good decorative effect may be gained from the repetition of very simple forms. One of the Barcelona patterns is still in use, and was used for the rail on one floor of my hotel, but apparently without intelligent choice, for the next floor had an abominable design in cast-iron.

As one walks along the streets of many of these old towns, fine knockers of hammered iron catch the eye, attached to old weather-beaten doors with little paint upon the wood, and studded with great ornamented nail heads, or with plates of iron, cut into shapes and bossed up picturesquely, fastened with many nails to the wood to strengthen the doors. At Burgos these are generally plain, diamond-shaped pieces, but at Segovia, Fuenterrabía, Toledo, Zaragoza, Tarragona, and Barcelona they are often elaborately cut and worked, pierced sometimes without bossing, as well as bossed and pierced. The great nails are most frequently seen at Toledo and Segovia; some are shown in the drawings of knockers from the latter town.

At both of these places the Moorish influence was very strong upon architecture and architectural decoration, in which, of course, the ironwork shared, as may be seen from the examples given. It is quite possible that some of these are the work of Moorish craftsmen, who were extremely dexterous in metal working. They show the combination of forged work and thin metal pierced and bossed, so characteristic of Spanish ironwork, and all stages of finish, from the work which depends for its effect entirely on somewhat rough hammering, with an occasional file or punch mark, to that which has highly finished small mouldings and subsequent chasing, like the lion knocker and door fastenings from S. Gil, Burgos. This door fastening, by the way, is a typical one, of which one may see numerous examples all over the north of Spain; the latch fastens the small door in the larger one, which the long bolt secures. It is a rare thing to find a knocker which hangs straight, and the fastening or plate is generally crooked, even if the knocker be without a twist; the later and more elaborate Renaissance work sins as much as the earlier in this respect. There is a very fine knocker of the more elaborate sort at the hospital at Barcelona, and Tarragona Cathedral has four on its west door of what Mr. Starkie Gardiner calls "the age of the locksmith"; the knocker itself being wrought,





PORTION OF CRESTING OUTSIDE DOOR OF NORTH TRANSEPT, CATHEDRAL, TOLEDO.
DRAWN BY F. HAMILTON JACKSON, R.B.A.

but the mounting being mainly made of pierced plates of elaborate design, superposed in retreat on a coloured ground. They are very fine pieces of work, but I rather wish to avoid what may be called "Museum" specimens, which can never be of general use. The hinges of this door at Tarragona are worked in the same way. Hinges rarely call for notice in the Spanish churches. They are generally mere straps of metal with, perhaps, trefoil heads and similar trefoils projecting along the edges, as at San Pablo, Zaragoza.

After the doors come the windows, which are generally fitted with grilles in all good houses, at least on the lower floors. The older grilles are generally simple in form, frequently consisting but of bars crossing and interlacing at right angles with, perhaps, projecting rivets at certain of the crossings. Later grilles consist either of upright bars terminating in floriated ends, with (very often) an architectural cresting cut out of thin metal and riveted on to hide the crossbar, like the one from the cloisters, Tarragona (see inset sheet); or the bars may be split and worked into ornamental forms, as in the one from Segovia, in the same way as the balcony rails frequently are. The projecting curved "knee grilles" are quite late in date, and those that I saw were mostly poor in design. The one drawn at Tarragona was one of the best. It was made of riband iron riveted at each crossing place.

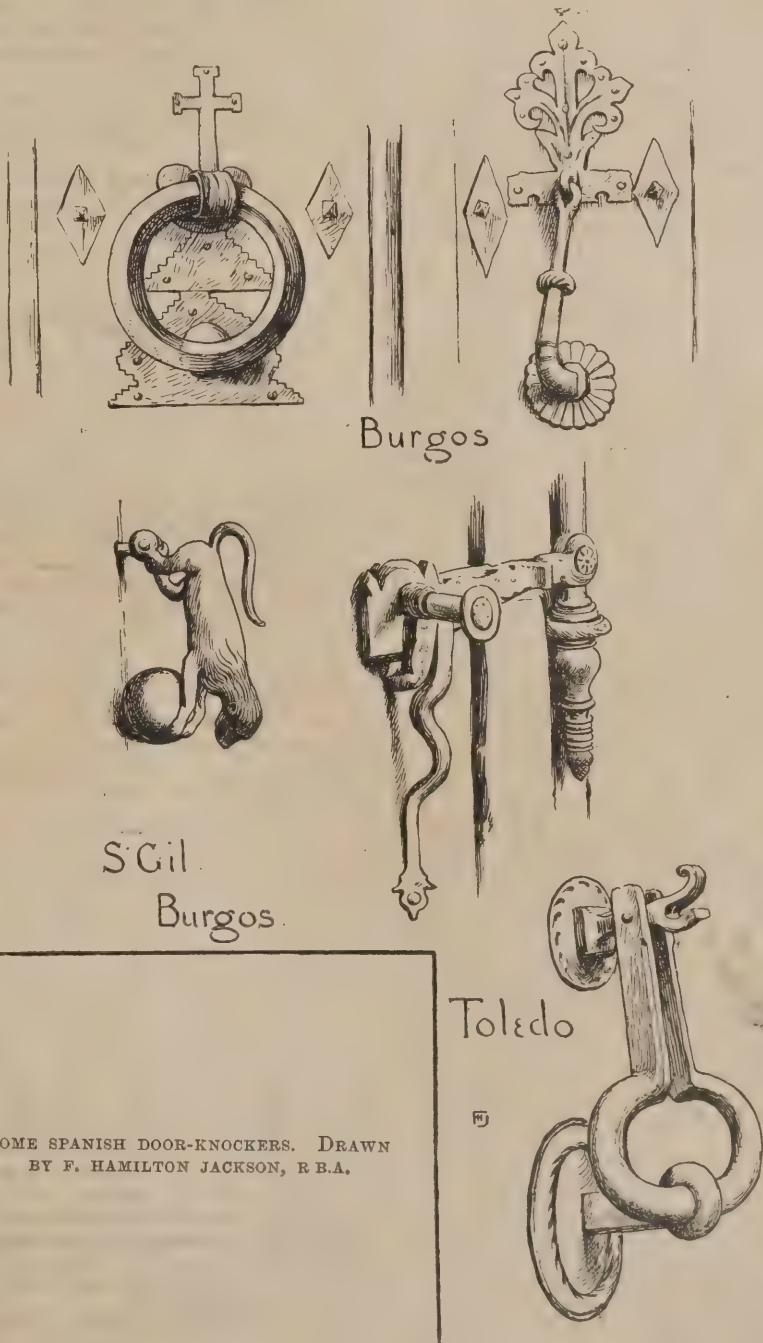
The grille from Barcelona, composed of several panels, was made in the same way—one would scarcely think that such light work would be very much protection. The little circular grille from Toledo struck me as being very graceful in composition, the small bit of pierced work in the centre coming in very happily. Close to this was a very fine railing, through which one went to the door of the north transept of the cathedral. (A drawing of a portion of the cresting is given above.) The bars are octagonal, and are shaped and moulded so as to suggest caps and bases; there are two ranges of them, and they stand upon a sort of base, the two ranges being divided by a band of metal cut into patterns, somewhat like the one at the top for part of its length, and bearing an inscription, also pierced, on the other part, being, of course, without the little turrets; these ornamental bands hide the crossbars. The cresting is put on with a refreshing disregard of regularity and of the position of the ornamental details below. This grille resembles the internal *rejas* somewhat in the arrangement of the construction and ornamentation, though much less lofty and elaborate than they frequently are. At Burgos, in the cloister, are some interesting early grilles erected in front of tombs to protect them. I give drawings of portions of two which are quite simple in their component parts, but very effective when they are put together. Here, again, one sees an absolute disregard for points to which a modern designer would be

sure to attend. The flowers in the band of ornament are not of the same size, nor are they spaced with regularity, and the prickets above

are welded to the crossbar behind without regard to the grille bars below. In the second, in which one set of bars threads through the other set, the panels of ornament appear to be arranged almost by chance, as if the smith had a few left over and sorted them out as best he could to fill the space. The running pattern is much the same in each, but one panel has it put upside down for variety. It is cut out of thin metal, bossed and then chased, being backed up with colour. The central shield bears a large fleur-de-lis, the side shields are alike. The architectural forms are well considered and appear to have been struck into a mould without subsequent filing, though the larger pieces are put together cold. The little grille from Las Huelgas (shown on the previous page) is of later date, and is painted and gilded; it also is put together cold, except for the rings which attach the scrolls to each other and to the uprights; it is a small example of the screen with ornamented balusters which, when large, is so imposing.

(To be concluded.)

A new Baptist Chapel at Huddersfield has been built from designs by Councillor Berry at a cost of £2,760. The building is situated at Scapegoat Hill and is 61ft. long and 39ft. wide. Accommodation is provided for 600 worshippers.



SOME SPANISH DOOR-KNOCKERS. DRAWN
BY F. HAMILTON JACKSON, R.B.A.

ARCHITECTURAL ASSOCIATION.

Study and Planning of Collegiate Buildings.

By BASIL CHAMPNEYS, M.A.

A MEETING of the Architectural Association took place last Friday evening at No. 9, Conduit Street, W., Mr. G. H. Fellowes Pryne, the president, in the chair. The minutes of the previous meeting having been read and confirmed, Mr. J. A. Bond was elected a member of the Association, and then it was announced that Mr. A. Atkinson and J. P. Clark had been reinstated members. On the motion of Mr. R. S. Balfour, hon. secretary, a vote of thanks was accorded to Messrs. A. Waterhouse and Son for the visit of members to their new buildings for the Prudential Assurance Company on Holborn. The president then announced the following House List for the ensuing session:—As president, Mr. W. H. Seth-Smith; as vice-presidents, Messrs. W. A. Pite and R. Elsey Smith; the Committee, ten of which are to be elected, Messrs. L. Ambler, A. Bolton, W. A. Forsyth, M. Garbutt, H. T. Hare, A. H. Hart, A. W. Hennings, F. G. F. Hooper, W. B. Hopkins, G. A. Lansdown, P. J. Marvin, H. P. G. Maule, A. B. Mitchell, G. H. Fellowes Pryne, W. H. Raffles, E. A. Rickards, H. A. Satchell, E. Howley Sim, A. B. Thomas and R. H. Weymouth; as hon. treasurer, Mr. Hampden W. Pratt; as hon. librarian, Mr. A. S. Flower; as hon. secs., Messrs. G. B. Carvill and R. S. Balfour; as hon. solicitor, Mr. W. H. Jamieson; as hon. assistant librarians, Messrs. A. A. Carter and F. J. Osborne Smith; as hon. auditors, Messrs. W. E. Davis and E. Greenop; as secretary and registrar, Mr. W. G. Driver.

Mr. Basil Champneys then read his paper on "Hints on the Study and Planning of Collegiate Buildings," as follows:—In dealing with the subject of collegiate architecture, I do not propose to discuss at any considerable length its archaeological aspect, but rather to dwell on the practical questions which are likely to present themselves to those who have to deal with collegiate buildings of the present day. It is, however, desirable to say so much with regard to the past as may serve to make clear the ideal which the builders of old set before them, and to show that changes of custom have served to modify the original standards and to present the problems of the present day under somewhat different conditions from those of an earlier age.

Every one knows that at the time when the college buildings at the old universities were erected the students entered on their university career at a much earlier age than is customary at present; also that the standard of expense was generally very much lower than it is in our own day. The same tendency which has influenced so many of our great public schools is apparent in the development of Oxford and Cambridge.

Starting as institutions for the education of all classes, and especially for the lower middle class, they have in a considerable degree become annexed by the more wealthy; and a public school or university education is now considered to be the privilege of the more wealthy, whereas formerly they were designed for the training of all who had sufficient ambition or enterprise, and offered every facility to those who were prepared to face poverty and hardship in the pursuit of mental training.

Another tendency which is apparent in the evolution of university buildings, but altogether dissociated from the conditions above mentioned, is that of centralisation. In mediæval times large and important colleges were the exception, and small halls, each intended for the housing of a few students each, were the rule. Some of the largest foundations both at Oxford and Cambridge have been formed by the absorption of a number of these smaller abodes, which usually have disappeared in the process. Our Oxford College, Worcester, is, generally speaking, a conglomerate of these

smaller establishments, as its present conformation clearly shows.

While the change in the age of the students revolutionised the arrangement of rooms, the increased size and scope of the colleges afforded occasion for larger and more comprehensive schemes of planning, and made effective grouping of the buildings possible.

With regard to the former of these changes, the mediæval arrangement was as follows. A set of college rooms consisted of one fair-sized room, with two or more rooms—usually two—opening from it. The larger room was used as a dormitory, in which a few students and a Master of Arts slept, the master being placed there to keep order, while the smaller rooms were used as studies in the daytime. So long as the students were mere boys, this arrangement was reasonable—not dissimilar to that at some of our public schools, where a "prefect," or "monitor," keeps order in a dormitory of younger boys. As the age of students increased, and as the class from which the students were drawn was simultaneously raised, this arrangement naturally gave way to the more modern one. The large room became the living or "keeping" room for a single student, and one of the smaller rooms or studies was the bedroom, another being used as a "scout's hole," as at Oxford, or "gyp-room," as at Cambridge—a sort of pantry, larder, and coal-cellar in one. In many colleges the division of the rooms remains in its original state, the only change made being their re-assignment according to the new method. In other cases some structural modifications have been made, and, as it very frequently happened that only the outer walls and the cross-walls which carried chimney-stacks were of masonry, the rest of the structure being mere partitions, such adaptations were easily made without any radical change.

The great increase in the size of colleges opened the way to the development of collegiate planning on an extensive scale, and suggested the type which nearly all existing colleges to some extent illustrate—the grouping of the buildings into one, two or more quadrangles of rather low buildings. In the original colleges there are never more than two floors and an attic, from among which the special and more important features are the chapel, the hall and the library.

The lodging of the president, warden, principal, master, or whatever he may happen to be called, was usually included in the general grouping and are seldom distinctive features in the older college buildings. In the present day the head of the college usually requires a more sumptuous abode, which must become an important item in contemporary college building; while the fact that many of the tutors and fellows are now married will also serve to complicate the future of collegiate grouping.

Besides the hall, chapel, and library, it was usual to mark the main entrance of the college, often, too, the side entrances, or entrances to a further quadrangle, by towers—a reminiscence, no doubt, of defensive architecture, in which all approaches had to be specially guarded.

For the students' rooms, the general arrangement is most invariable. A staircase entered from the quadrangle led to rooms on either side; and, as there were three floors, opened out six sets. This arrangement is usually adhered to in contemporary schemes, as I think with good reason. The alternative plan adopted by Mr. Butterfield at Keble College is to make the main block of rooms sufficiently wide to accommodate two sets of rooms in depth, with a central corridor from which the rooms open. I do not think, however, that this arrangement is likely to find general favour. It is not favourable to effective grouping, as the blocks of rooms are apt to look bulky and clumsy; and as regards economy, I made on one occasion the most careful comparative estimate of the two methods and found that the older gave an equal amount of accommodation at considerably less cost. In this case, *stare super antiquis viis* seems to be the best policy on practical no less than on æsthetic grounds.

In the few cases in which a departure from

the ancient type has been attempted the result appears to me to be most unsatisfactory, and completely destructive of collegiate character. At Keble College the architect's intention evidently was to keep the ordinary buildings entirely subordinate to the chapel, and as the chapel is very unusually large and lofty, this idea is not altogether obscured; but it would have been far more completely and satisfactorily developed had the ordinary rooms been planned upon the old-established system. The result seems to be no less subversive of collegiate effect if the ordinary buildings are of four instead of three storeys. The "new buildings" at New College, erected by Sir Gilbert Scott about 1876, seem to me to fail for this and for other reasons. At King's College, a new group of buildings has in recent years been built by Mr. Bodley. Here again a fourth storey was insisted on by the college, and, needless to say, everything that was possible has been done to give them, in spite of this condition, a collegiate character. The fact that this endeavour, even in Mr. Bodley's hands, has not proved altogether successful, appears to me to be the best possible confirmation of my opinion that a fourth storey is necessarily unsuitable to such architecture; while the scheme, that of a three-sided quadrangle with the fourth side open to the line remains and may long remain incomplete in consequence of this unnecessary development of height. The scheme might have been completed for about the same cost as the present truncated instalment.

In both these instances the extra storey had been, I believe, forced upon the architect, and the motive for this dictation was no doubt in a large measure a desire for economy secured by piling up buildings to an unusual height. I have tested the comparative cost of buildings of two, three, or more storeys with the following result:—A building of two storeys is definitely more costly for the same accommodation than one of three; but four or more storeys are not more economical than three. Of course, where ground is limited in extent, or of very high value, a new factor is introduced; but in the case of college buildings this is rarely the case, and there is seldom any valid excuse for departing from the old type.

In fact, the old system of college planning, in my opinion, still holds its own, and needs but few modifications to bring it up to date. A few practical requirements, consequent on the change of custom, have to be met. For example, when a set of rooms was composed of a large dormitory and two smaller studies, it was rather advantageous than otherwise that the smaller rooms should be approached through the larger. This was conducive to quiet in the studies and caused no inconvenience. Now, it is essential that both bedroom and cupboard, or "scout's hole" or "gyp-room," should be independently accessible, though there is some advantage in having a door between the sitting-room and bedroom, as it allows the bedroom, to some extent, to benefit by the sitting-room fire. Again, there is no need for the "scout's hole" or "gyp-room" to be as large as one of the old studies; it need be little more than a mere cupboard, and one of the most modern ideas is to provide for a group of rooms a kind of general "scout's hole," or pantry, with a sink and gas stove.

These are the principal points in which a modern set of rooms differ from the ancient type, which on the whole has vindicated its claim to be applied to modern schemes as the best and most economical arrangement.

Before passing to other phases of collegiate architecture, it may be worth while to consider what was the most highly developed idea of a mediæval college, and of this no better example could be selected than New College at Oxford, which in its ancient form showed a complete design carried out at one time. In order to realise Wykeham's idea it is necessary to remove in imagination certain later additions which have obstructed the original intention; the chief of these is the addition of a storey to the main quadrangle. This raises the buildings to the same level as the gateway tower which originally surmounted them, and also decreases the predominance of the chapel. William of Wykeham was a great Churchman

and his intention was to make the chapel the great feature of his main quadrangle; its great height and scale still preserve its relative importance, though its superiority to the residential portion of the quadrangle is greatly hampered by the added storey. The dining-hall is built in continuation of the chapel, and originally the two were under a continuous roof. Sir G. Scott in his restoration raised the pitch of the chapel roof, divorcing it from the line of the original parapet, with which it now makes an exceedingly awkward angle. The floor of the dining-hall is raised several feet above the ground level, so that the internal height of the hall, though lofty, is much less than that of the chapel. The approach to the hall is by a staircase opening from the main quadrangle under a tower rising considerably above the hall and chapel. In the tower are a series of chambers the purpose of which is not very obvious, but which have the advantage of being in all respects as Wykeham left them.

Opposite the main entrance to the college was the library, the conformation of which can still be traced, though it, too, has been modified by the addition of a storey and the modernisation of the windows. An archway passing beneath the library gives access to the garden quadrangle, which originally consisted of two short projections—one of which still retains its ancient timber roof, and was probably designed for its present purpose, that of a common-room for the Fellows.

To the west of the chapel, a position no doubt dictated by the conformation of the site, are the cloisters enclosing a garth, intended no doubt for abarical ground, and adjoining these at the north-east angle is the very simple but effective bell-tower, the great severity of which is no doubt due to its position as an outwork of the city wall.

The great predominance of the chapel over the adjoining buildings and the presence of the cloister and the tower are somewhat exceptional features in college architecture, and serve to emphasise the ecclesiastical intention of the founder. The same idea is manifest in a college of modern foundation, Keble, which, as a memorial to a well-known Churchman, was founded with a somewhat similar view. Other colleges which bear the impress of a specially ecclesiastical ideal are Christchurch and Magdalen at Oxford, and King's at Cambridge. In the more ordinary type of college the chapel, hall and, in many cases, the library are salient features in the grouping, but their relative importance varies very considerably.

So far I have spoken of the ordinary type of college buildings as developed in the Middle Ages and adhered to in the sixteenth and seventeenth centuries. Modern civilisation has, however, given birth to new phases of collegiate life which involve certain modifications of the original character of the building, though the collegiate standard must still retain much of its influence.

The first and most important of these is the establishment of colleges for women both at Oxford and Cambridge. It is clear that the life in these must necessarily be of a more domestic character than in colleges for men; and if the style of architecture follows the requirement the result will be something which may be called a "domestic college." Access to the several students' rooms can no longer be from staircases entered direct from the open air; the approaches must be properly enclosed and the passages warmed. In Newnham College, the deviation from the original type is greater because the system of the college is that of subdivision into halls, each of which is, on the whole, complete in itself; the only features used equally by the entire college being the great hall and the library. Moreover, the scheme, as it now stands, has been developed piecemeal; has started from small beginnings and grown up step by step, each instalment of the group of buildings having been supposed, at the time of its erection, to be the last until the pressure of applicants suggested a further extension.

Another building which also deviates from the original type on account of a change of purpose is Mansfield College, which

contains all the features of a college without residence for students. Mansfield College is intended to be a centre of life for students of a particular religious denomination living in the colleges of the University, but assembling at Mansfield for services, lectures and for social converse. The only residents are the principal and a few tutors. Mansfield College, therefore, consists of a chapel, a hall, a common-room, with the requisite offices, bursar's and tutors' rooms, and a few bedrooms and several lecture rooms, a large library and a principal's residence. This scheme suggests a somewhat different system of grouping from that usual in colleges of the ordinary type, though at the same time it was for many reasons desirable that the group of buildings should as far as possible reflect the character of Oxford collegiate buildings.

BRICKWORK.*

By W. J. READ.

ONE of the chief factors in the strength of brick walling is the bonding. In London the bottom course of footings must be twice the width of the wall measured at its base. This has caused a method of one course offsets to be used until the normal width is reached. In this case the bricks should always be laid headers to face, and where a half-brick occurs in the thickness of the wall it should be kept as near the centre of the wall as possible. Each offset must be equal to one-quarter brick on each side of the wall, thus diminishing the wall by one-half brick each course. In districts under no limitation, double course footings are frequently used when the under course of each double course is stretcher to face. Where it is possible, the interior or filling-in of all walls is invariably worked header to face. There is one rule of bonding that governs all good work, that of the unbroken transverse joint; and by its use only are perpendicular straight joints avoided.

Generally speaking, only two systems of bond are used, others being variations or modifications, *i.e.*, English bond and Flemish. English bond undoubtedly gives the best results for strength; the chief merit of Flemish bond is its appearance.

In English bond bricks are laid header and stretcher in alternate courses, and difficulties are encountered by inequalities of the bricks. Two headers plus one mortar joint should equal a stretcher, but they do not always do so; hence a difficulty in maintaining a uniformity of appearance and also sectional bond. Flemish bond overcomes this, as the headers and stretchers alternate in the same course, which avoids the previously-mentioned difficulty. But Flemish bond does not produce so much strength internally, and the practice has been general for many years to face the external part of a wall with Flemish bond, the remainder being English. This is to be deprecated, as the result is to produce a wall with a half-brick face tied in with headers only here and there, while some perpendicular straight joints are unavoidable.

Brickwork as a backing to ashlar stone walls presents difficulties. If built in lime mortar, the inequality of settlement in the mortar joints puts an unequal strain on the wall, and if in cement mortar the ashlar work is often stained and discoloured.

Undoubtedly it is best to use cement mortar as backing to ashlar masonry, and if the back of the stonework is rendered or roughly pargeted with lime mortar the cement does not stain through.

With brickwork facings much difference obtains in degree and character. Malm, red, sand-moulded or pressed, and gauged bricks are used with stone dressings, such as quoins, windows, &c, and a point to which I would call attention is the difference in the size of the mortar joint of the brick and the putty joint of the stone. In working stone quoins allowance should be made for a mortar

bed to bond stones where they are bedded on brickwork, and the heights of the jambs might be so considered. It may be remarked that the bricklayer can keep down under his gauge to allow for this, but his joints should be regular.

In gauged brickwork stone should be so arranged and bedded as to relieve the soft rubber bricks of undue weight, as these will crush with little strain.

It sometimes happens that in arches stone and brick are combined, either as composite arches or with keystone only. This, in segmental or semi-circular arches, is a simple matter, but it must not be forgotten that the arch-cutter of bricks needs to get as large a brick on the extrados as possible, and that his courses must be regular and uniform in radiation. This he ensures by traversing his cutting template on his setting-out board. In arches of irregular curve and of the four-centred variety the brickwork needs regular radiation, both for economy of work and appearance.

With elliptical arches this is difficult, but it is invariably overcome by striking an approximate ellipse from centres. When the ellipse is struck by trammel the radiations of the courses may be struck from centres; if not, the arch is traversed by a method of trial and error until the result is what is termed a scheme. Other arches in brickwork when the radiation of bed joints is not normal to the curve are termed schemes. The camber or straight arch is also obtained in this manner. Segmental arches moulded have often presented difficulties in order to obtain intersection of the moulding with the jambs. This has been a subject of dispute for years, but it should be borne in mind that the brick cutter has to work in a box, and he is limited by that.

The best results are obtained by a mitre of the moulding, and by working the skewback from the back line of the moulding. No other method is possible with glazed bricks. Bull-nose and chamfer are affected alike by this rule.

In many parts of the country, especially in exposed situations and by the seaside, walls of houses are built with a cavity, which is ventilated and renders a house perfectly dry, warm in winter, and cool in summer. The advantages and comfort of hollow walls are too great to be disregarded. The usual method is to build an external half-brick wall with a 2in. cavity outside the house wall, forming a tie with wall ties of galvanised iron or vitrified brick.

Just a word with regard to measurement and weight of brickwork. All work in London and the vicinity is measured by the rod of 272 feet super. of brick-and-a-half wall, and all work is reduced to that. One other method is by the cubic yard; there are about 11½ cubic yards in a rod.

The weight of brickwork is considered approximately 1 cubic foot = 112lbs. or 1 cwt., or about 15½ tons to the rod; the quantity of bricks of course varies with their size, but 4,000 to 4,250 is about correct, according as bricks run large or small. For mortar, 3yds. to 1 rod, *i.e.* 3yds. sand, 1yd. lime. For facings which are measured by the foot super., if in Flemish bond, seven bricks are allowed to the foot. If in English bond, eight to the foot. With glazed bricks in Flemish bond the quantity of headers and stretchers should be equal, but in English bond the proportions are 5½ headers and 2½ stretchers to each foot.

Restoration of St. George's Church, Leeds.—The restoration fund in connection with this church now amounts to £4,809 8s. 6d. The foundation-stone of the apse is to be laid shortly after Easter, and it is expected that the church will be closed after Whitsuntide in order that the restoration may be completed. The large picture by Mr. Cope, R.A., which was recently removed from the east end, was cleaned and repaired in 1885, under the advice of Mr. Arthur Cope, son of the artist, and himself a painter of repute. It is now to undergo similar treatment, and when the church is ready for its reception will be replaced at the east end.

* A paper read before the College of Masons on February 27th, 1900.

"BUILDERS' JOURNAL" SHILLING FUND.

LAST week we had an exceptionally long list of contributions to acknowledge; this week's list is proportionately small. We hope this does not mean that our readers' generosity has nearly reached its limit. The fund will remain open for a few weeks longer, and we hope there are still many who will decide before it is too late to take some share in the patriotic and useful work of ministering to the needs of the constantly increasing number of our disabled and invalided soldiers. A correspondent in sending his contribution, writes:—"There is one little thing I have noticed, and it seemed great unto me. After one has explained the scheme and asked for a contribution the gentleman clothed in fine raiment and who fares sumptuously every day will refuse you a 'tanner,' while the man clad in corduroy, who lives from hand to mouth, is generous enough to give something." We are sorry to have had to call attention to this fact before, and we hope our architect readers will prove that, to them at least, this does not apply. Up to the present builders and workmen have come forward almost exclusively. Our offer of a copy of the current issue of "Specification," the invaluable reference book for all connected with the building trades, sold at 5s. net, is still open to anyone who collects twenty shillings for our fund.

The following subscriptions have been received since the publication of our last list:—

	Shillings.
Previously acknowledged...	2,533½
Per T. F. G., Blemheim Terrace, St. John's Wood, N.W.:—	
L. S.	10
G. D.	2
E. S.	2
E. R.	1
T. F. G.	5— 20
Per John William Harrison, Ashley Street, Rock Ferry, Cheshire (Third Contribution):—	
R. Jenkins	2½
J. Tiernan	5
A. Thompson	1
W. Sumner	1
P. Hitchenman	1
J. Ward	1
T. Salt	1
M. Murray	1
C. McHugh	1
P. Sumner	1
J. Atkinson	1
R. Harrison	1
T. Burns	1
R. W. Johnson	1
W. Debney	1
R. H. Rinder	1
W. E. Ravenhill	1
J. R. Mewton	1
W. Byrne	1— 23
Total ...	2,576½

The Executive of the Building Trades Gift to the Nation again have much pleasure in announcing that there was a material increase in the list of contributions in kind during the past month, whilst over £1,300 was brought together in money, including no less than £400 in the form of sixpences and shillings generously collected by the workmen. A considerable amount of material is, however, still required, particularly in respect to timber, joinery, and facing bricks, whilst £5,000 is still required in money. In order to assist in bringing together this £5,000, Mr. J. Randall, as President to the Builders' Institute, when completing his term of office last week, offered £50 if forty-nine similar amounts are subscribed, either as individual sums, or in the form of a combination of smaller items, as, for instance, two mutual subscriptions of £25, or five of £10. Mr. H. H. Bartlett (Perry and Co.) kindly opened this special list by promising two donations of £50, whilst Mr. Howard J.

Colls and Messrs. Holland and Hannen have each given £50 towards this special object. It is further announced that among the interesting gifts in kind during the current week was a large iron church, 50ft. long, presented by Messrs. Dixon and Co., of London and Liverpool. The following additional subscriptions in money are announced:—

	£	s.	d.
Mr. H. H. Bartlett (Perry and Co.) ...	100	0	0
Mr. Howard J. Colls ...	50	0	0
Workmen of Messrs. Kirk and Randall ...	33	15	7
The Workmen of Messrs. G. Trollope and Sons (Building Department) ...	27	19	0
Messrs. "Wilders and Cary" Cement Works	21	0	0
The Worshipful Company of Joiners, per Mr. T. F. Rider ...	21	0	0
Messrs. Dennett and Ingle ...	21	0	0
Mr. C. B. N. Snewin ...	15	5	0
Messrs. L. Le Personne and Co. ...	10	10	0
Messrs. Barclay, Perkins, and Co. ...	10	10	0
The Imperial Portland Cement Co. ...	10	10	0
Mr. J. Hayward (Brixton), late Hayward Bros. (Southwark) ...	10	10	0
Workmen of Messrs. Lindsay, Neal and Co. ...	9	15	0
Workmen of Messrs. Gillow and Co. ...	8	17	0
The Workmen of Mr. W. Downes (Walworth)	7	14	5
Workmen of Messrs. J. Lidstone and Son ...	7	10	0
Workmen of Messrs. George Trollope and Sons (Decoration, Upholstery and Cabinet Department) ...	5	13	3
Messrs. Turnbull and Son ...	5	5	0
Messrs. J. R. Jeffries and Son ...	5	5	0
Messrs. T. H. Adamson and Sons, Chiswick	5	5	0
Workmen of Messrs. Gregory and Co. ...	5	5	0
Birkenhead and Wirral Building Trades Employers' Association (Birkenhead) ...	5	5	0
Brosely Tileries Co., Ltd. ...	5	5	0
Mr. L. Summerfield ...	5	5	0
Messrs. G. and J. Earle, Ltd. (Hull) ...	5	5	0
Mr. E. J. Saunders (Croydon) ...	5	5	0
Workmen of Mr. George Jennings ...	5	0	0
Mr. James Annan ...	5	0	0
Workmen of Messrs. T. H. Adamson & Sons	4	8	3
Workmen of Mr. Charles Cox ...	4	0	0
Workmen of Messrs. Turnbull and Son ...	3	14	6
Workmen of Messrs. G. B. Kent and Sons ...	3	12	4
Workmen of the Army and Navy Auxiliary Supply Co. (Works Department) ...	3	9	6
Workmen of Messrs. J. B. Johnson and Co. (Liverpool) ...	3	4	11
Messrs. G. Gude and Son (Hackney) ...	3	3	0
Workmen of Mr. Chas. W. Matthews ...	3	0	9
Workmen of Messrs. T. Rider and Son ...	3	0	6
Mr. Nelson Wise and Workmen (Kingsland)	2	14	0
Mr. H. S. Lee (Clapham Junction) ...	2	13	0
"Friends" of Mr. G. Elsey (Reigate) ...	2	5	0
Employees of Messrs. Perkins and Co. ...	2	5	0
Messrs. G. and A. Smith and Workmen	2	2	0
Mr. Robert Fox ...	2	2	0
Trinidad Lake Asphalt Paving Co. ...	2	2	0
Messrs. Meakin and Co. ...	2	2	0
Mr. W. Harbrow ...	2	2	0
Mr. John L. Ford ...	2	2	0
Workmen of Mr. Wm. Hammond ...	2	2	0
Mr. George Neal ...	2	0	0
Workmen of Mr. W. Lawrence ...	2	0	0
Mr. R. Bamforth and Workmen (Leeds) ...	1	11	6
Mr. Arthur Verity and Workmen ...	1	10	0
Mr. Robert Wood and Workmen ...	1	10	0
Workmen of Messrs. Humphreys, Third Donation ...	1	5	9
Workmen of Messrs. G. Elsey and Sons	1	4	0
Workmen of Messrs. J. Brown, Son and Blomfield ...	1	2	8
Workmen of Messrs. Hollis Brothers and Co. (Hull branch) ...	1	1	6
Mr. James Sossick (Chelsea) ...	1	1	0
Mr. W. Cauty and Workmen (Stoke Newington) ...	1	1	0
Mr. J. R. Jackson and Workmen ...	1	1	0
Messrs. H. Bates and Son ...	1	1	0
A Friend of Mr. Rider ...	1	1	0
Mr. B. Starling ...	1	1	0
Messrs. H. Freund and Co. ...	1	1	0
Messrs. John Avery Downey and Co. ...	1	1	0
Mr T. Sampson ...	1	1	0
Workmen of Mr. J. Macintosh ...	1	0	0
Workmen of Mr. George Neal ...	1	0	0
Mr. R. J. Thorby ...	0	16	6
Workmen of Mr. John L. Ford ...	0	16	0
Workmen of Messrs. Sissons, Brothers and Co., Ltd. ...	0	15	6
The Workmen of Mr. J. Sanders ...	0	14	0
Workmen of Mr. J. Bullock (Barnet) ...	0	10	0
Workmen of Messrs. G. How and Sons ...	0	9	0
Workmen of Messrs. W. J. Whalley (Blackburn) ...	0	4	0

A new Post-Office for Huyton, Liverpool, has been erected in Derby Road. The contractors were Messrs. J. and A. Taylor, of Prescott.

A new Workhouse at Wolverhampton is being built at a cost of nearly £200,000. The foundation stone was laid on Thursday last.

The Organ in St. John's Church, Ranmoor, Sheffield, is being renovated and enlarged by Messrs. Brindley and Foster, of Sheffield.

"Valuation of Houses (Repairs and Empties)."—In the account given in "F. S. I.'s" letter under this title on page 147 of last week's issue, the item "Property tax, £2 15s." should have been omitted.

CENTRAL LONDON RAILWAY.

THE new line of railway between Shepherd's Bush and the Bank known as the Central London Electric Railway will be opened in June, says the "Standard." It is practically completed, but a large amount of structural work has still to be done at the various stations. Already a number of trains have been run from time to time, to test the roadway and the engines and carriages. Of course, the metropolis is not the only large centre of population which has adopted the underground system. There is a service of tramcars beneath the surface in Boston; Glasgow has a subterranean tramway service; and in Buda-Pesth the electric cars pass along Andrássy Avenue beneath the roadway. The new line begins at Shepherd's Bush, and the stations are Holland Park, Notting Hill Gate, Queen's Road, Bayswater, Westbourne Grove, the Marble Arch, Davis Street (for Bond Street), Oxford Circus, Tottenham Court Road, British Museum, Chancery Lane, the General Post-Office, and the Bank; but the Eastern terminus, when the line is fully completed, will be at Liverpool Street. In time, also, there will be a connection with the line now in course of construction from Baker Street to Waterloo. The Central London Railway is seven miles long, and in some places goes to a depth of 100ft. There are two tunnels of 11ft. 6in. diameter for up and down trains. The system of construction is that invented by the late Mr. Greathead, and has been frequently described. The various engines have been furnished by the British Thomson-Houston Company, Limited, who have also contracted for the distributing system and the locomotives. It is proposed to have a two-and-a-half minutes service, and the train will consist of seven carriages, which will accommodate 336 passengers. The weight of a train will be 105 tons, exclusive of locomotive. There is only to be one class of car, and that on the American pattern. Between each pair of adjacent stations the line will dip—that is, the stations are nearer the surface than the general part of the railway. The advantage is two-fold; it will reduce the height of the lift shafts, and it will also place the stations so that the incoming trains will have their speed naturally checked, while the starting will be on a down grade. The electricity is conveyed by a third rail, the return current passing through the ordinary rails. The journey over the whole of the new line will take twenty-five minutes, while from Oxford Circus to the Bank the time will be ten minutes. It has been found from observation that the average time of an omnibus from Shepherd's Bush to the Bank is an hour and a quarter.

A new Organ at Trinity Free Church, Pudsey, has been built by Messrs. Abbott and Smith, of Leeds, at a cost of about £1,100.

A new Lancashire Town.—Vickerstown is the result of Messrs. Vickers, Sons and Maxim's energy. This firm has bought several hundreds of acres of land on Walney Island, a large portion of which they are laying out in house property for their workmen, it being contemplated to build from 1,000 to 1,500 houses at once. Contracts have already been let for a large number of these, and new brick-making works have been built, which are now producing between 20,000 and 30,000 bricks per day. Several detached and semi-detached villas are also to be built. A large square—Vickers' Square—has already been planted, 14½ acres of land are to be used as a recreation ground and six acres for gardens and allotments. In connection with the development of Walney Island, a scheme is in the minds of Messrs. Vickers to bring into existence a new watering-place, Walney-on-the-Sea, but the first step they are taking is to find houses for their workmen. There is at present a demand for no less than 2,000 workmen's houses in Barrow, and there is a scarcity of workmen at the large industrial concerns because of the inadequacy of house accommodation in Barrow.

THE PAVING OF CARRIAGE-WAYS.—I.

BY A SURVEYOR.

THE cart-track roads of a century ago disappeared with the advent of the dozen of carriage-way constructors, Macadam and Telford, and the amplification and advancement of the principles established and practised by these progenitors of the modern road-maker, and by Metcalf before them, has led to the evolution of a new science—the science of carriage-way paving. The history of road-making has been fully recounted at different times, and it is not now intended to trace the various stages that have resulted in the present existing systems of road-making, but to confine the limits of these articles to detailing the chief methods of paving carriage-ways now in vogue.

Macadamizing.

The paving of a carriage-way can be accomplished, somewhat primitively it is true, yet simply, by placing on a newly-cut road a layer of ballast from 4in. to 6in. in thickness rolled in with gravel for binding purposes. But it is needless to say that a road so constructed is unsuitable for a district subjected to heavy vehicular traffic. In such a locality, therefore, it becomes imperative that a material harder in substance and of greater resisting power should be sought. One possessing these properties is found in broken granite, and a thoroughfare formed with this is termed in a general manner a macadamized road, after, it is hardly

slipperiness, and homogeneousness in texture stand forth prominently as essential. A material that conforms to these requirements fairly well is Guernsey granite, but when a steep gradient has to be paved, Aberdeen or a similar granite should be used, as it offers a firmer foothold. Aberdeen is rather softer than Guernsey granite, and naturally wears away quicker, but it has the great advantage that it can be taken up and redressed at a very small cost. Of other varieties of granite, all more or less suitable for the paving of carriage-ways, mention may be made of the recently introduced Jersey "Ronez" and the non-slippery "Royal," the former of which is especially useful for wheelers, while the latter is distinguished by the amount of wear it will stand; the fairly coarse Leicestershire stones from Markfield and Mountsorrel; the Norwegian and Newry varieties, which commend themselves on account of their non-slipping properties, the last-named being a desirable granite for steep gradients; and, amongst

of several methods in use for laying these setts is to place them close together upon an inch of "feeding" material composed of six volumes of shingle to one of Portland cement, which is spread on the concrete foundation in a dry state. A mixture of three volumes of sand with one of blue lias lime is next swept into the joints with plenty of water, and the pitching is then rammed with a wooden rammer perfectly solid to the finished level and contour of the carriage-way. After the whole has been allowed to set, a coating or dressing of shingle should be spread on the surface of the road preparatory to allowing vehicles to pass over it. This shingle becomes broken and the pieces penetrate between the joints of the setts, keeping them firm and compact.

There are several modifications of this process, as, for instance, in many metropolitan districts the "feeding" material before mentioned is replaced by fine sand, upon which the setts are closely laid together. Fine shingle or granite chippings are swept into the joints, the sett being rammed to the finished road contour. The pitching is then grouted with a mixture composed of pitch and Stockholm tar, in the proportion of 3 cwt. of pitch to 5 gallons of tar. These ingredients are heated together and poured in a boiling state between the setts. Time is given for the grout to set, and finally the surface of the road is dressed with shingle as before. It is interesting to note that the approaches to the Blackwall Tunnel are paved in this way.

Paving with Wood.

Of course, as it is scarcely necessary to point out, roads constructed on the principles already described present considerable friction to vehicles, and it is on account of the comparative smallness of the friction, combined with considerations of quietness, cleanliness, comfort, and appearance, that wood has found so much favour as a material in road construction. The many specimens of wood that have been used experimentally in the Metropolis and elsewhere include deal, jarrah, karri, stringey bark, blackbutt, red mahogany, and blue gum from Western Australia, engwood from Burma, whitewood and gumwood from South Carolina, and Mora wood from Demerara; so that there has been plenty of variety in ascertaining which was the best kind for street-paving purposes. But no matter which is selected as the most suitable wood, all the soft varieties, before ready for laying, have to undergo a preliminary preserving process. The preservation of the timber used in road-making is of vital importance, and one of the best means of accomplishing this is by what is known as creosoting. The object of creosoting wood is the prevention of the decomposition that arises as the result of (1) the fermentation of the albumenoids contained in the sap, by coagulating them;

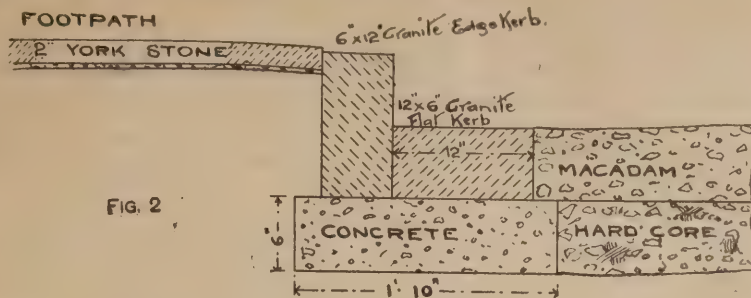


FIG. 2

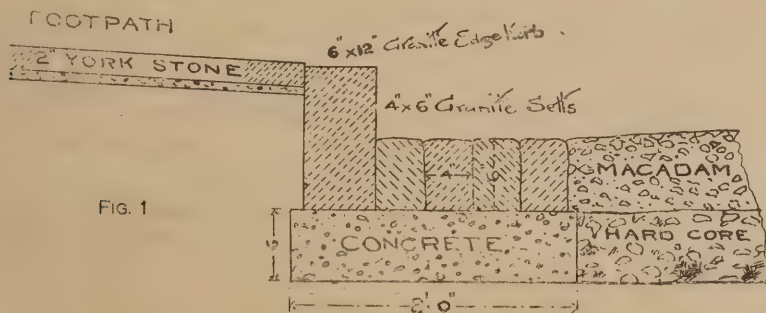


FIG. 1

necessary to state, J. L. Macadam, formerly Road Surveyor to Bristol and one of the first engineers in this country to devote his fine abilities to the study of carriage-way construction. With regard to the macadamizing of roads, the roadway should first be covered with 6in. of hard core, laid to a transverse fall of about 1 in 30, and well punned in. This should be succeeded by a from 4in. to 6in. layer of broken granite spread in an even manner over the carriage-way, well rolled in, again using gravel as a binding material, and liberally watering as the work proceeds. In the rolling of the granite care must be exercised in order that the channels formed on each side of the carriage-way, for the purpose of facilitating the running away of the surface water, are laid at even gradients to fall and discharge towards gulleys. These gradients should not be less than 1 in 150, that is, if composed of macadam, but it is necessary to emphasize the fact that in the case of a macadamized road it is better to have the channels with granite setts or kerbs when a flatter gradient may be used. The foregoing remarks are illustrated by Figs. 1 and 2, which also will show that when granite setts are used in the construction of the channels from three to five courses should be laid longitudinally with the road upon 6in. of concrete; but if kerb is used it should be laid flat upon a similar foundation.

Granite Paving.

A carriage-way constructed in the manner briefly outlined above will answer all purposes for a road which is called upon to carry ordinary traffic, but for one over which heavier traffic has to pass something even more resisting and lasting must be requisitioned. In considering the qualities necessary to a pavement intended for such work, evenness in wearing, absence of

many other kinds, stones from Cornwall, Lancashire, Derbyshire, Ireland, &c.

In paving a carriage-way with granite, some preliminary processes have first to be conducted. For instance, it is obviously necessary that the earth in the carriage-way should first be well rammed, and in the event of there being any soft places, consequent on trenches having been dug for the laying of water mains or sewers, the ground should be removed and replaced by ballast or hard core well rammed in. This being done, a layer of concrete 6in. thick and composed of Portland cement and Thames ballast, in the proportion of six of the former to one of the latter, should be placed on the surface of the ground and laid to the required gradients, the transverse fall being 1 in 30. Fig. 3 illustrates the method of paving a road with granite setts.

With regard to the granite setts in the carriage-ways, these are, as a rule, 3in. wide by 6in. or 7in. deep and from 7in. to 9in. long, laid transversely across the road, while those in the channels, which generally measure 4in. or 5in. wide by 6in. or 7in. deep and 7in. to 9in. in length, are laid longitudinally. One

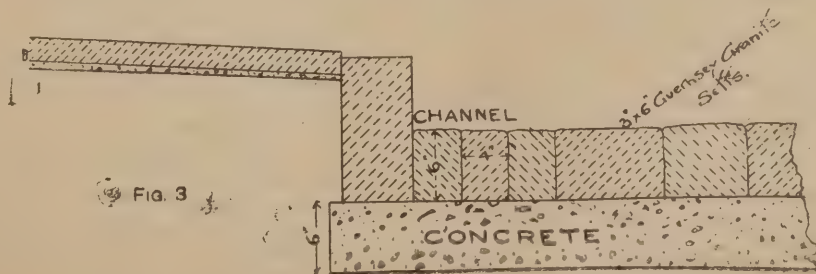


FIG. 3

(2) the attacks of insects, worms, fungi, &c., by destroying them; and (3) the admission of water into the cells, by replacing it. In its broad principles the process of creosoting consists of first extracting the air and moisture from the tubes of the timber, and then at a pressure of from 50lbs. to 120lbs. per square inch forcing in creosote, a dark-coloured tar distillation product of an oily consistency. This oil, which has considerable antiseptic properties, should be free from bone or mineral oils, ammoniacal water, and a very large proportion of naphthaline, although the latter, when present in moderate quantities, is a desirable constituent, owing to its highly antiseptic qualities. In Bethell's process, which was recently followed through at the works of the Improved Wood Paving Co. Limited, East Greenwich, about 18,000 blocks are placed in an iron cylinder fitted with hemispherical ends, which can be opened during the operations of charging and discharging. A pipe provided with a stop valve connects the cylinder with the adjacent tanks containing the creosote, and the cylinder is also in communication with an air and a pressure pump, the latter obtaining its supply of creosote from the tank and discharging into the creosote cylinder. The timber being in the cylinder and the hemispherical ends closed, the air pump, on being started, withdraws the air from the cylinder and the pores of the wood. After the lapse of an hour the valve in the pipe connecting the bottom of the cylinder and the creosote tank, which has been closed during the exhaustion, is opened, and the atmospheric pressure forces the creosote (which has been maintained at a temperature varying from 80deg. F. to 120deg. F. by suitable means) into the cylinder. When it is full more creosote is pumped in under a pressure of 50lbs. to 120lbs. per square inch. The quantity to be thus introduced, which can be measured by a suitable gauge, is determined by the product of the cubical contents of the charge of timber in feet and the specified quantity of creosote per cubic foot. On stopping the pump the excess of creosote in the cylinder is allowed to pass away into the tank by means of a pressure cock. When the pressure in the cylinder has been diminished, the remaining unabsorbed creosote is drained off through the main valve, after which the charge can be taken out, the amount absorbed verified by weighing a convenient number of blocks, say 100, and the whole carted to the scene of the new roadway. Another process for wood preservation is Boulton's, which in principle differs from Bethell's in that the temperature to which the oils are raised is higher, namely, from 212deg. F., the boiling point of water, to 220deg. F., by which all the water in the timber is expelled in the form of steam. In Blythe's, a third process, "the oils are supplied in a gaseous or finely divided state, and subsequently as a liquid." Then there is also a process of creosoting in an open tank, and several methods the principle of which consists of impregnating the wood with salts of the metals. Notable amongst the latter are:—Boucherie's, in which copper sulphate is the impregnating material; Burnett's, in which diluted zinc chloride solution is employed; and Kyan's, Margary's, and Payne's processes, in which the materials injected are respectively solutions of corrosive sublimate (mercuric chloride), acetate or sulphate of copper, and sulphate of iron followed by zinc sulphate.

Levels and Cross Sections.

Before the blocks can be laid several matters of the greatest importance have to be attended to, one of which is the taking of levels with a dumpy level before the commencement of the work, and the preparation of sections, both longitudinally for the channels and crown of the road and transversely at intervals of 30ft. or 40ft. These should be calculated so as to give a cross fall of 1 in 36, and in this connection it is also important to remember that in no part of the channel should more than 7in. or less than 3in. of kerb be seen, from which it follows that the summits and gulleys must be arranged to allow this. A good formula for defining the cross section of a road is that of Deacon, which is as follows (where A equals

half the width of carriage-ways and R equals the rise to crown, the latter being $\frac{A}{36}$ for wood and $\frac{A}{48}$ for asphalt).

DEACON'S FORMULA

$$R = \frac{36A}{48} \text{ FOR WOOD } \frac{48A}{36} \text{ FOR ASPHALT}$$

$$R^1 = .87 R$$

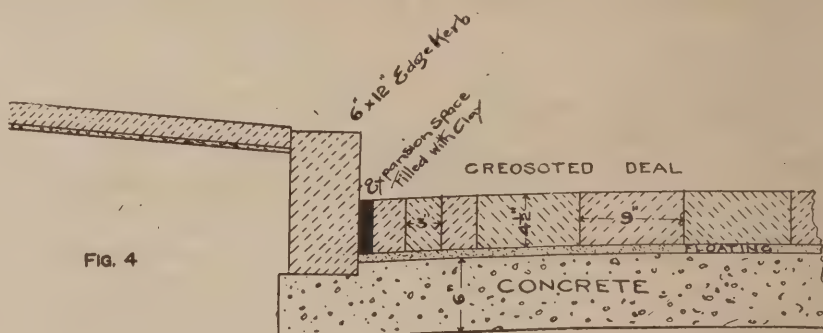
$$R^2 = .65 R$$

$$R^3 = .35 R$$

Another point that ought to be noted is that the gradients of wood-paved channels should not be less than 1 in 150.

Concrete Foundations and "Floating."

The sections being prepared, the surveyor is in a position to start on the carriage-way. In the event of it being already paved with macadam, it must be broken up, either by driving in steel wedges by hammers or by utilising one of the many excellent scarifiers which road-makers can call into service. The cross sections and channels should now be set out by means of steel pins driven in in such a manner that the tops will represent the level



of the finished surface of the carriage-way. If it is necessary, the hard core or earth beneath the macadam should be removed in order to permit the requisite thickness of concrete to be laid down. The precautions indicated in the case of a road paved with granite pitching, so far as concerns making good all soft places with hard core or concrete, should be equally observed in the making of wood roads. The concrete foundation, which is composed of six parts of Thames ballast to one of Portland cement, should be laid 6in. or 7in. in thickness. This having set, strips of wood, termed "screeds," should be fixed either by nailing on to the concrete direct, or on to pegs driven in to the concrete at distances 10ft. apart. The curves of these screeds should represent the true curvature of the road. Now things are sufficiently advanced for the reception of the "floating" coat, which is made up of a mixture of three parts of Thames sand to one of Portland cement. Its depth should be 1in., and all superfluous "floating" material or mortar should be removed by repeatedly drawing a straight-edge over pairs of screeds. Too much stress cannot be laid on the importance of the "floating" being thoroughly true and even before any attempt is made to adjust the blocks in their final position. It will only be when this has been thoroughly assured that matters will be ripe for placing the blocks.

Block Laying.

Remembering that the blocks must be laid vertically with the grain of the wood, the main features in the method of procedure (which is illustrated by Fig. 4) are to first lay two to four courses longitudinally in the channels, leaving a space of about 1 1/4 in.

between the kerb and the channel blocks, on each side of the thoroughfare, to allow for expansion in the wood. On completion of the carriage-way this space is filled up with clay. The blocks in the remaining portion of the road should be put transversely. As to whether the blocks should have tight joints or a space of 1/4 in. left between each row, engineers differ. If, however, a space is to be provided for, a lath or a strip of wood 1/4 in. in width should be inserted between the rows. Quickness in laying is accomplished by putting the blocks in a dry state ("heading up") on the floated surface of the road. They should then be taken up separately, and the ends and one side of each block dipped into a boiling mixture composed of, tar 5 gall., pitch 3wt., creosote oil 1 gall. These quantities can, of course, be varied so as to obtain a hard, plastic, yet not brittle composition when it sets. When dipping care should be taken that no composition or grout adheres to the bottom of the block, as this will expand and cause an upheaval. Thirty or forty feet of the carriage-way being thus laid, the joints should be grouted up by pouring the boiling mixture on to the surface of the road and raking it into the joints by means of squeegees. Before opening to vehicular traffic, the road should be dressed over with a coating of fine shingle 1/2 in. in thickness; this becomes crushed by the traffic passing over it, and the small sharp particles are pressed into the surface of the wood, making a hardened surface. Some engineers prefer to grout up the blocks with Portland cement grout, but this becomes hard and does

not allow for expansion and contraction in the wood, for it will be found that the blocks will loosen themselves in a little time. In concluding this portion of the subject it remains to be said that at the intersection of roads it is necessary to lay the blocks diagonally.

(To be concluded.)

"Swan" Fountain Pens.—Messrs. Mabie, Todd and Bard, of 93, Cheapside, E.C., resort to a most peculiar, but effective, form of advertising. They send us a copy of "King's New York Views," and intimate that they are willing to send a copy free to any applicant mentioning the BUILDERS' JOURNAL. This offer only lasts, however, while their stock lasts. The publication referred to is of a good size and contains more than a hundred reproductions of buildings in the American capital. It is well worth having.

Liverpool Architectural Society.—In the course of a lecture on "Notes on School Buildings," recently delivered before this society, Mr. E. P. Hind, A.R.I.B.A., said that suitable lighting, thorough ventilation, and warmth without draughts were the leading essentials in school buildings. Attention to small matters was extremely important, and sanitation was as desirable in a school as in a hospital. For the playgrounds asphalt or concrete was suitable, and the necessity for everything being easily kept clean had to be borne in mind, every part or corner where dust and dirt could lodge being carefully avoided. It was most desirable that the plans should be such as would meet the requirements of the next generation, who might have to pay for the buildings. The present tendency was to have small classrooms, especially for infants.

Views and Reviews.

THE GREATEST SOCIAL PROBLEM.

As a writer recently put it in a contemporary when referring to the housing question, "we may spread them out thin or we may pack them over each other's heads." The packing system has been most in vogue up to the present. But, in spite of all systems, the problem of housing the working classes becomes more acute every year—this is just what Lord Shaftesbury said at the time of the Royal Commission, which ended its labours eleven years ago. The little book under review briefly sets forth the various enactments for the better housing of the poor, intersperses a collection of rather wearisome, though appalling, figures, deals shortly with the matters of transit, the clearance of insanitary areas, and land acquisition, defines what the London County Council has done, and concludes with a chapter on "The Reform of Local Taxation," which is the best part of the book. The housing question is so great and has already been the subject of so much deliberation that the main evils and suggestions are now pretty well known by everybody. There seems to be no doubt that the solution of the problem lies in housing the overcrowded population outside and not inside the city. A certain proportion of workers *must* live near their work, but it is estimated that they do not number more than one-fourth; so that if the remaining three-fourths could be taken out to the suburbs quickly and cheaply, the evil would be greatly abated. But, says our author, under the present law, "the inequality of local taxation operates in favour of enterprise in commercial and central districts, and as a hindrance to building and to the development of land in the outskirts." He gives several instances to prove his contention. Take the case of some West End premises. The rent is £1,000 a year, and the building represents an annual value of £150. The site is therefore producing an annual income of £850. The taxes levied (at the rate of 25 per cent.) are £250 a year, or about 30 per cent. on the annual value of the site. Compare this with the case of a small house in an outer district. The rent is £30 per annum, and the building represents an annual value of £25. The site value as paid in ground rent is £5. The taxes, at the same rate as before, are £7 10s., or 150 per cent. on the annual value of the site! In the author's opinion, if site value were substituted for rateable value (not "rateable" as our author spells it) as the measure and basis of local taxation, the inequalities of burden, and the consequent evils, would be removed. This, in his opinion, is where the solution of the problem lies.

"The Housing Question." By Alfred Smith, L.C.C. London: Swan Sonnenschein and Co., Ltd., Paternoster Square. 1s.

HYDRAULIC RAMS.

This book forms one of a series of technical manuals dealing with various subjects. The writer deals with the subject in a very practical manner, and any person requiring information on the best method of fixing and working hydraulic rams will find this book of some value. All the little difficulties, such as air in the pipes, solid matter getting under the valves, pipes fouling, &c., are dealt with at some length. The author points out the necessity of straight-way stop valves, smooth-bore drive pipes and the absence of sharp bends, shoulders, and other obstructions in the drive pipe; and those who wish to get the best results from their ram will do well to carefully note these pages. We disagree with the author, however, when he suggests that bends in the drive pipe make very little difference. We think that if careful tests were made there would be found a considerable loss by friction and in the impact of the water springing the bent pipe further out of the straight. The result of a number of experiments with a model ram are given, all of which will be especially useful to the student. Theoretical considerations bear out the

author's statement that a long drive pipe gives a more powerful impulse than a short one, as the weight of the water, multiplied by the speed at which it is moving, gives the measure of power stored up for the impulse. Dealing with the question of the reversal or rebound of the water in the drive pipe on the dash-valve closing, we, of course, agree with the author that some water slips back past the delivery-valve before it has time to close, as in pump valves; but we also think that the small quantity of air which the water contains gives some elasticity to the otherwise practically incompressible fluid; and this helps the backward flow, and probably the pipes slightly expand with the shock and then immediately contracting further help it. The author describes and illustrates a few examples of the numerous patented rams, and the student can by this gain much useful knowledge. And we may here remark that the illustrations are all very good and clearly illustrate the text. In discussing the difficulty of keeping the air vessels charged with air, several valves are illustrated and described; but, speaking for ourselves, we have never found any of these automatic devices answer very well, and we prefer to fix air and drain cocks, with a stop-cock on the delivery-pipe to save emptying that when we recharge the vessel with air. But, as the writer points out, what is successful in one case may fail in another. Some good examples of pumping rams are given, and by the aid of the diagrams the student cannot fail to properly understand the principles involved in the general construction of these machines. In the concluding pages the author gives much useful information, the result of his practical experience in erecting, repairing, and altering defective rams. The book, altogether, is a very useful one, and is well worth the attention of not only the student, but of the practical engineer engaged in this branch of hydraulics.

"Hydraulic Rams: their Principles and Construction." By J. Wright Clarke. London: B. T. Batsford, 94, High Holborn. Price 2s.

HOUSE SANITATION.

House drainage—like the poor—is always with us, so that it seems only natural to expect a continual stream of literature (good, bad, and indifferent) bearing upon a subject of such importance to civilised communities. The medical and engineering professions, especially, have made most praiseworthy endeavours to secure a very high standard of sanitary efficiency for habitable buildings; with the result that this particular field of sanitary science has apparently been discussed and written upon from every conceivable standpoint. Perhaps some genius may yet arise, who, by patient and original research, will be capable of more or less revolutionising the existing methods of house drainage; but until that time arrives, a very considerable proportion of what has been, and is being, written upon this subject is nothing more than a reiteration of generally accepted principles and methods of construction.

This book consists chiefly of a series of articles recently contributed to "The Sanitary Record," and now issued in a collected form. A careful perusal of its contents reveals nothing of importance that is new, whilst there is much that is an obvious following of other well-known text-books upon the same subject. The author has, however, compiled a convenient and readable volume which will be very helpful in placing the orthodox methods of house drainage in a concise manner before students and others requiring information relating to ordinary drainage work.

The first part of the book deals with the general arrangement and laying of drains. The importance of proper drain ventilation and disconnection is also rightly insisted upon. The various forms of stoneware, iron, and lead pipes, joints, traps, inspection chambers, etc., are fully described and illustrated. Typical drainage plans for a large and small villa residence, respectively, are given, on which suitable positions for the necessary surface gulleys, inspection chambers, soil and vent pipes, fresh-air inlets, and disconnecting chambers are clearly indicated. It would

have added considerably to the usefulness of this portion of the work if the drainage plan for a large town house had also been included, for it is in such buildings that the greatest difficulties occur in the convenient and satisfactory arrangement of drains, together with their fittings.

As a matter of detail, exception may be taken to the small size (2ft. by 1ft. 6in.) laid down for shallow manholes. Such small chambers are inadequate for the proper reception of, say, two branch drains on each side of the central or main channel, nor do they afford proper facilities for inspection and clearing purposes. The method of construction recommended for drains with considerable fall, and illustrated in Fig. 146, possesses several serious drawbacks, for which any slight advantage gained by increased initial velocity of sewage flow scarcely offers sufficient compensation.

Various sanitary fittings are described and illustrated. The concluding chapter on drain testing contains some practical hints respecting the method of testing new drains by the water, pneumatic, and smoke tests. The book is produced in an excellent style, well printed, well bound, and forms a very neat volume.

"House Drainage and Sanitary Fittings." By G. J. G. Jenson, C.E. London: The Sanitary Publishing Co., Limited, 5, Fetter Lane. Price 5s. net.

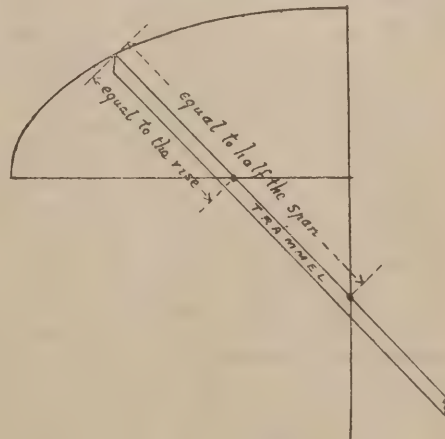
Correspondence.

Ellipse by Compasses.

To the Editor of THE BUILDERS' JOURNAL.

ELGIN ROAD, CROYDON.

SIR,—Referring to the correspondence in your journal for some time past on this subject, I take the liberty of offering my views as follows:—(1) A true elliptical curve being no part of a circle, but a continually changing curve, cannot be struck with compasses or from centres. (2) It appears to my mind a pity to introduce a wrong and complicated method of describing this beautiful



curve from centres, when the right way to do it is so simple and so easily understood by any intelligent carpenter or joiner, namely, the trammel system (see accompanying sketch). (3) As an architect I have always adopted this system, and there cannot be a more truthful or more simple method adopted for describing the curve either by the draughtsman or the carpenter. Of course, in an $\frac{1}{8}$ in. scale drawing of an elliptical curve I use the compasses, striking from three centres, which is the best way for so small a scale, but in $\frac{1}{2}$ in. or larger scale details I adopt the trammel system, by making sufficient points in the curve with a straight narrow strip of drawing paper, as a trammel rod, and then drawing the curved line through these points. The carpenter or joiner can easily follow such details, and the result is a true elliptical curve instead of a crippled one, which is always the case if the curve is struck from centres.—

Yours truly,

B. McClymont.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Sir, he made a chimney in my father's house, and the bricks are alive at this day to testify it."

—SHAKESPEARE.

Our Inset Sheets.

THE Spanish ironwork illustrations are dealt with in Mr. Jackson's article, which commences on page 163 of the present issue. The house at Luton Hoo (Mr. Louis Ambler, A.R.I.B.A., architect) is faced with red brick up to the first floor level (including the chimneys), and the upper part is of half-timber work, the wood being fir, coated with Stockholm tar. All the other woodwork, both external and internal, is painted white, except the outside doors, which are green, and the servants' offices, which are brown. The roofs are covered with local red tiles. Mr. S. Foster, of Kempston, near Bedford, was the builder, and Mr. D. Davies was the clerk of works. Mr. Frederick Ernest Williams, of London, W.C., is the architect for the house at Hartfield, Sussex, belonging to H. B. H. Turner, Esq., C.I.E. The house is built of purple-grey Crowborough bricks with red quoins, and the stone used for dressings, &c., is local sandstone, with bright red tiles for the roof. The general contractor was Mr. Charles Day, of Cowden, Kent.

Dublin's Ancient Gates.

THE Queen's visit adds fresh interest to everything connected with Ireland, and the delivery to Her Majesty of the keys of the city gate at Lesson Street Bridge, Dublin, makes it worth while to give a short account of the several portals which were built into the walls of old Dublin. It is generally admitted that the walls and gates were erected by the Danes, and when Melaghlin marched against the city in the year 1000 the strong masonry baffled all attempts of the besieging force to effect an entrance. In 1316, in anticipation of a siege by Edward Bruce of Scotland, the walls of Dublin were strengthened and enlarged on the northern portion above Merchant's Quay. Here a tower formerly stood, a little distance beyond the gate, while there was another gate in the street "where the taverns are." That is the locality now called Winetavern Street, leading up a steep hill, crowned by the cathedral of Christ Church. The historian enables us to form some approximate idea as to the exact circuit of the ancient walls of Dublin, that is, from the Winetavern gate along the south side of Cook Street till they joined Owen's Arch, now St. Audoen's Arch. This latter structure was one of the portals into the city, and from thence the walls were continued north of Owen's churchyard to Fagan's Castle in Page's Court, where there was another portal, and thence on to Newgate. The walls of the city, including those of Dublin Castle, did not in their widest compass occupy the length of an Irish mile. Dames' Gate, originally styled the Eastern Gate, and St. Mary's Gate, did not derive its name from the mill-dam near it, but from the Church of St. Mary les Dames. During the reign of Charles the Second the slough in the neighbourhood of Crane Lane was reclaimed, the Liffey embanked with quays, the council chamber of the Lord Lieutenant built there, and another aperture made in the city wall, while in 1675 Izod's Tower was taken down and a new entrance made—the Essex Gate.

The Course of the Wall.

FROM Izod's Tower the wall of Dublin took a N.N.W. direction till it joined Newman's (by some termed Buttevant's) Tower, on the banks of the Liffey, a little west of Essex Bridge, and a little further on was Case's Tower, subsequently known as the Baker's Hall. The city wall stretched in a direct line along Merchant's Quay. It joined the Bridge Gate near the Old Bridge, built in the reign of King John, which gave its name to what archaeologists consider to be one of the oldest streets in the metropolis of Ireland. The Bridge Gate was placed

between two turrets and ornamented with a public clock in 1573, suggested by the example of Queen Elizabeth. From this the wall was continued on the south side of Bridge Street and extended up a steep hill to New Gate, whence the wall was carried south-east along the rear of Back Lane to another aperture called St. Nicholas' Gate, where was also St. Francis' Tower, opposite the precincts of the priory of that Order. From St. Nicholas' Gate the wall went to St. Werburgh's Gate, where the only piece of the old wall of Dublin that remains now may be seen beside Hoye's Court, where Dean Swift was born. From the pole-gate the wall stretched in almost a straight line till it terminated with Dublin Castle at the Birmingham Tower.

Hanging Bridge, Manchester.

THE proposal to remove this ancient work from its present locality is causing a good deal of local uneasiness. A correspondent to the "Manchester Guardian" says: "In May, 1882, I visited the spot and caused a careful drawing to be made of the archway then exposed, stone for stone. A few days later and the opportunity was gone. Should this drawing be of any service at the present time to antiquarians or to the authorities I should be pleased to lend it upon any reasonable conditions as to its safety. . . . Why should these ancient relics be divorced from their original habitat? Could not the very capable cathedral architect or the skilful designer of "Old Manchester" be permitted to suggest some method, either by excavation, fencing round, or otherwise, of retaining Hanging Bridge *in situ*? Of our old cathedral not a single original stone remains. The few that I know—mostly gargoyles—are in the gardens of the Royal Botanical Society at Old Trafford. We have distributed St. Mary's Church to the four winds of heaven. . . . But what have we gained by such ruthless spoliation? Nothing but a few square yards of open space. . . . How many British subjects know the whereabouts of Temple Bar? Yet had it been re-erected in the Temple Gardens, where there is still room, millions would have seen it since it left its historic home; or, better still, a little ingenuity would have retained it in its original position by adapting the ancient roadway as the modern footpath, and completing the archway with a buttress or monumental tower. Why should we, therefore, take up Hanging Bridge, the very gate and threshold of our city, and cast it—disguise it as we may—into what would practically become, so uncongenial would be its surroundings, the potters' fields of Birch? Another correspondent says: "What should we think of York removing its walls to a field or park outside the city, or if Berwick carted away its picturesque walls by the Tweed? Or, turning westward, would anyone dare to transplant the venerable walls and towers of Carnarvon, Chester, or Conway? While Manchester remains disfigured by three or four of the most hideous churches man ever built in the last two centuries, let us at least be allowed to keep the "Hanging Bridge" of men who built with beauty as well as with durability."

Landscapes at the Academy.

IN summarising the work which has been done this year by the artists who are not members of the Royal Academy, says the "Globe," a place of some importance must be given to landscape. The pictures of this class are fairly numerous and decidedly interesting. They represent a sufficient variety in the convictions of the workers, and prove that there is no lack of enterprise among the painters of the open air, and no hesitation to attempt big undertakings. Mr. Yeend King, for instance, has one of the strongest pictures that he has ever painted, "The Avon by Bredon Hill," a splendidly brilliant rendering of sunny colour and subtle atmosphere. His other canvases, "The Fold Yard" and "The Duck Pond," are not on so large a scale, but are not less excellent in technical accomplishment. Mr. Mark Fisher, too, is seen quite at his best in a large study of summer sunlight, painted with

admirable certainty and yet with sensitive refinement. Mr. Edward Stott continues to work the same vein of pastoral romance from which he has already gained admirable results. Mr. Alfred Hartley's chief pictures are also pastorals. Mr. J. Buxton Knight sees nature on a larger scale. He has completed a delightful picture of a river valley with a stream winding through rich meadows and lighted by the last rays of the setting sun, a robust and masculine work worthy of all praise; and he has, as well, a finely composed view of Magdalen College, Oxford, that is full of originality and artistic perception. Mr. J. L. Pickering has varied his methods and has painted, in addition to several pure landscapes, a very impressive representation of a great foundry. Mr. J. Coutts Michie, though he has been lately much occupied with portraits, has ready for exhibition two open-air subjects, while Mr. R. Vicat Cole has a big woodland scene, a glade carpeted with hyacinths, that he calls "Spring's Delights," and a slightly smaller work, "Haytime in Wharfedale." Mr. F. Foottett, one of the few artists who uses landscape as a basis for fanciful and symbolical design, has carried out his aesthetic theories in several important pictures; and Mr. R. Onslow Ford, who, young as he is, well deserves to be reckoned among the best followers of the naturalistic school, has in two or three canvases made a very definite assertion of his sound insight into refinements of pictorial practice. Among other landscapes that must be noted are Mr. A. S. Hartrick's rustic scene, "The Wassail Bowl"; Mrs. Hartrick's paintings of a farmyard in winter time, and of a tree-shaded pool, thickly overgrown with tall water-plants; Mr. Lindsay Macarthur's subjects in the Cotswood Hills; and the works by Mr. H. Hughes Stanton, Mr. N. M. Lund, Mr. Clayton Adams, Mr. R. W. Allan, and Mr. Moffat Lindner.

Remodelling a Town Church.

BLACKBURN, whose ancient parish church was taken down early in the present century to make way for the present cathedral-like buildings—one of the earliest examples of the Gothic revival—possesses like its sister town, Preston, no ecclesiastical structure dating from pre-Reformation times. The oldest church in the town, St. John's, at the northern side of the market-place, was dedicated in 1788, and is a commodious building in the Classic style. Formerly a proprietary chapel, it is now a handsome parish church. Some five or six years ago the church was decorated and the structure strengthened at considerable cost, and this week will see the completion of a further scheme of improvement, which practically transforms the interior appearance of the building. A much-needed chancel, enlarged choir, and vestries are the main features, and a new and costly organ is subsequently to be added. St. John's is now really a model town church, whose interior reminds you in almost every detail of Wren's more famous city churches. The added portions are in keeping with the rest of the fabric as to style, which is described in Whitaker as Venetian. The new details, however, are more ornate. The chancel is revealed by a bold and lofty arch, of great dignity, and with classic mouldings of the Corinthian order, supported by fluted columns with suitable entablatures. Two stained-glass windows give light to the sanctuary. The large central window shows in the main light the Crucifixion, and in the two side lights the Resurrection and Ascension. The colours are rich but subdued, the figures unconventional, and the details Renaissance in subject and form. A three-light side window shows a representation, *Nunc Dimittis*, with the Good Shepherd, and Christ, the Light of the World, the latter a replica of Holman Hunt's famous painting now in Keble College Chapel. The windows are by Messrs. Seward and Co., of Lancaster. The east window is a private donation, but the southern window is the gift of Mrs. Embley, of Blackburn, in memory of her husband. A new oak reredos, of bold design, is a great feature. The panels in this are in mosaic work. Mr. Dresden is the architect.

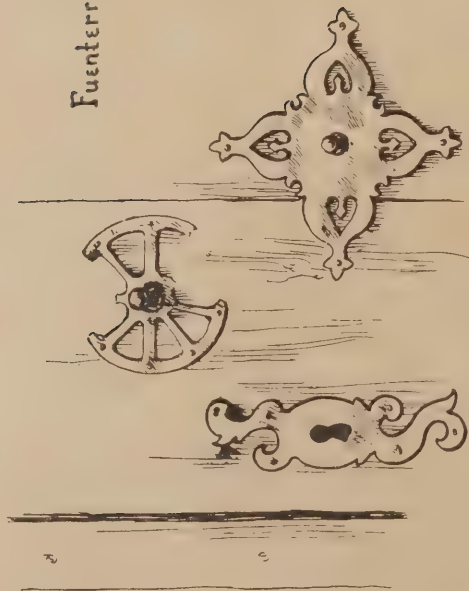
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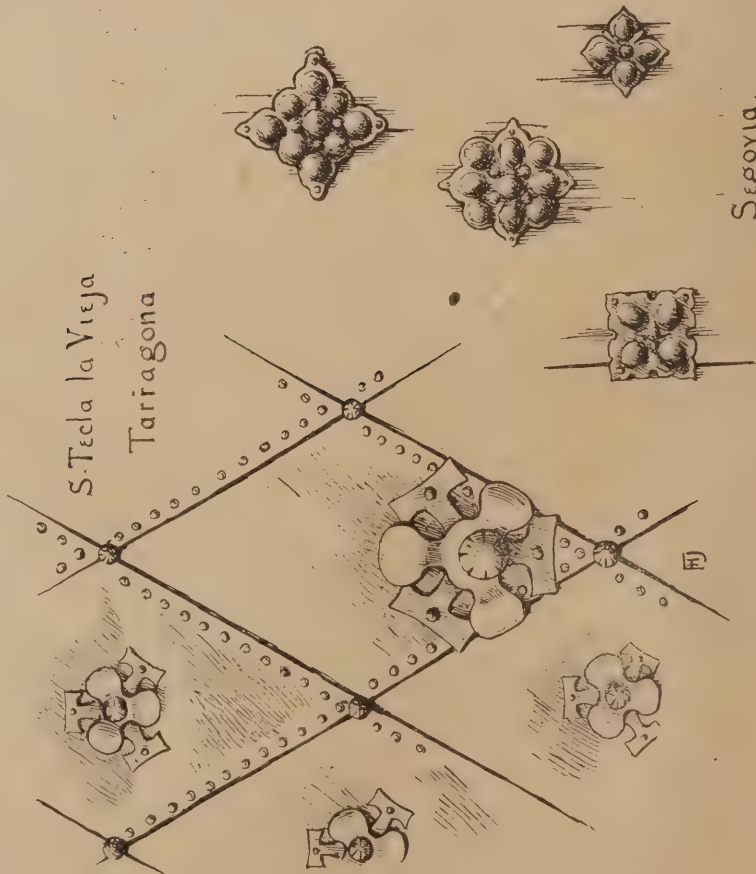
HOUSE AT LUTON HOO. LOUIS AMBLER, A.R.I.B.A., ARCHITECT.

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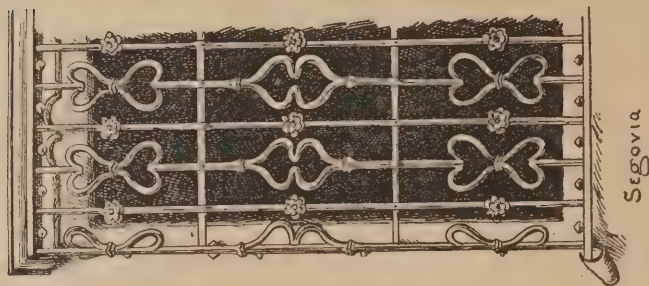


S. Tecla la Vieja
Tarragona



Segovia.

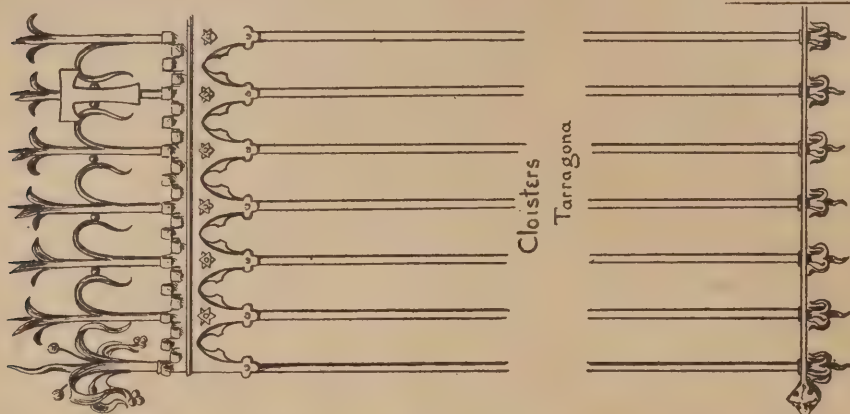
WINDOW GRILLES



Segovia



Barcelona

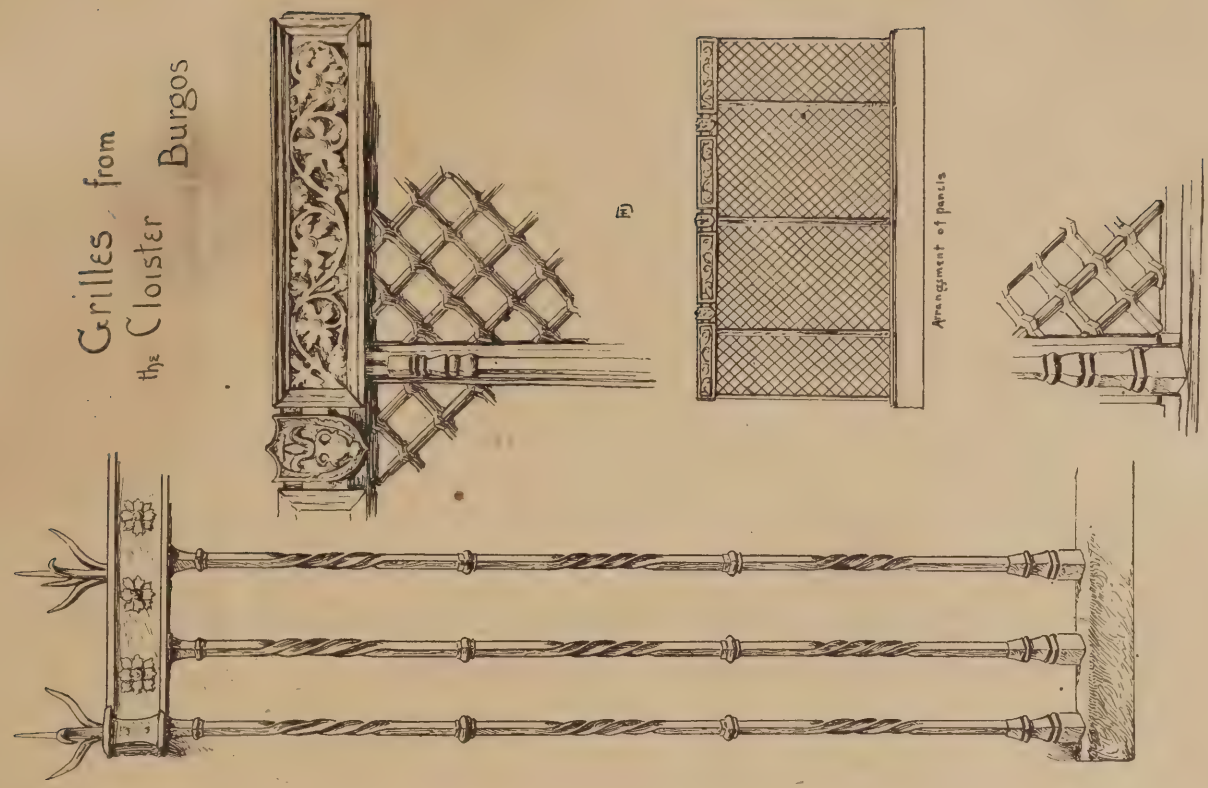


Cloisters
Tarragona

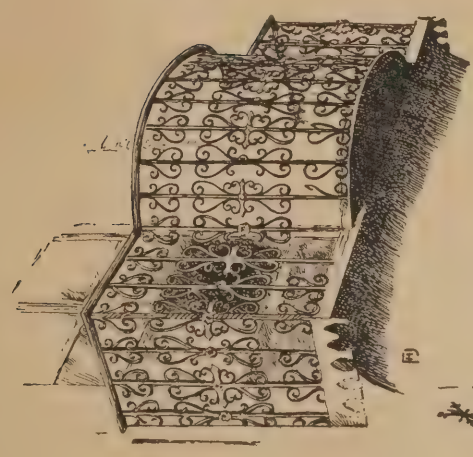


Toledo

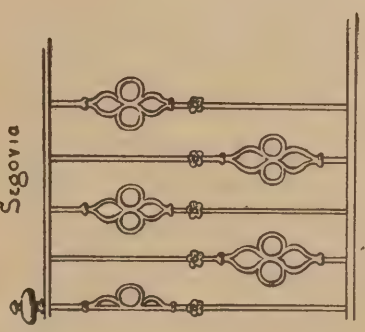
Grilles from
the Cloister
Burgos



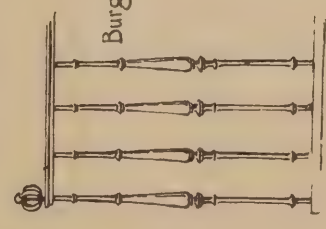
Casa del Infante
Zaragoza.



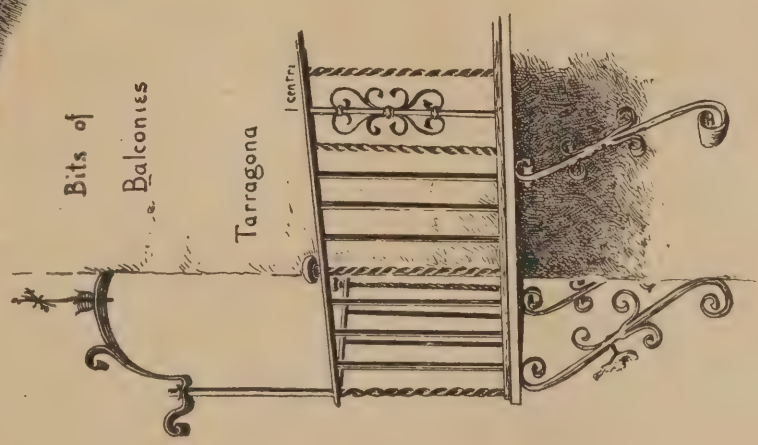
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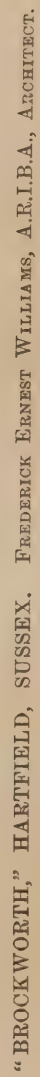


Bits of
Balconies



Tarragona

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Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

R.I.P.A. Preliminary Examination Papers.

MARLBOROUGH.—INQUISITIVE writes: "Is there any book published giving the examination papers of the Preliminary R.I.B.A.; or are any printed for, say, the past five years, without having to obtain the Kalendar for each year?"

Our correspondent can obtain the information he desires only in the R.I.B.A. Kalendars.

Builders' Book-keeping.

LEEK.—J. C. S. writes: "Can you kindly tell me if there is a really good book that specially gives information for keeping a set of books for a builder and contractor's business in an up-to-date manner?"

The only book on builders' book-keeping is that by Mr. Saker ("Builders' Book-keeping: A Perfected System.") The price is 3s. 6d.

Answers in Honours Building Construction.

PLYMOUTH.—STUDENT writes: "Could you tell me where I might obtain the answers to the questions set in Honours Building Construction, and the price of them for about six years?"

The only published solutions to Honours Building Construction questions of recent years are those in the "Building World," Nos. 35, 37, 39, 93, 97, 99, 143, 145, 147, 199, 201, 203, 205, 207, 209, 212, 215, 219, 224, 229, published by Cassell and Co., La Belle Sauvage, London, E.C. HENRY ADAMS.

Cost of Workhouse Pavilions.

MIDDLEWICH, CHESHIRE.—STUDENT writes: "What is the usual cost per cube foot for workhouse pavilions, i.e., in cubing them up? Does the cube price usually include the heating, ventilating, electric lighting, &c., or is it customary to add these in addition to the price per cubic foot? Any other particulars respecting cubing will oblige."

The cost of workhouses varies from about 6d. to 8d. per foot cube, exclusive of special sub-contracts after completion of structure, or say £50 or £60 per inmate. St. Thomas' Hospital, in London, built on the pavilion system, is reported to have cost 9d. per foot cube, or £250 per inmate.

HENRY ADAMS.

Skew Arches.

TROWBRIDGE.—YOUNG ENQUIRER writes: "I should like to know how to develop the soffit of a skew arch in masonry work."

The development of a skew arch in masonry is rather a large piece of work, and should be approached by graduated study. The following works may be consulted:—"A Practical Treatise on Oblique Arches," by J. Hart (Crosby Lookwood and Son, 7, Stationers' Hall Court, London, E.C., 3s.); "Skew Arches," by Prof. E. W. Hyde (2s.); "A Practical Treatise on Segmental and Elliptical Oblique or Skew Arches"; "The Principles and Details of Construction in Simple Terms" (21s. net); "A Treatise on Constructing Oblique Arches with Spiral Courses," by W. Donaldson (4s., E. and F. N. Spon, 125, Strand, London, W.C.).

HENRY ADAMS.

Iron Skylight.

RAVENSCOURT PARK, W.—ROWTON writes: "Will you please give details for an iron skylight in a corrugated-iron roof, the sheets being supported on purlins of angle-irons 5ft.

apart, roof slope 1 in 10. No boarding is to be used under the corrugated iron, and all the lead flashings should be shown."

The size and shape of skylight are not given, and the slope of 1 in 10 is too flat for a satisfactory corrugated iron roof. These roofs are usually curved, although not necessarily so, and the skylights are circular, 3ft. to 5ft. diameter placed along the middle, say, 12ft. 6in. centre to centre. Being placed on the highest part and shaped to the curve of roof they need no flashing.

HENRY ADAMS.

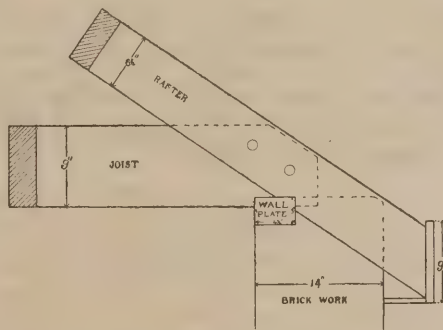
Books on Sanitary Engineering, &c.

CARDIFF.—A CONSTANT READER writes: "I desire to sit as a candidate for the Municipal and County Engineers examination and to extend my knowledge of general engineering from that of a small office. Would you name some good practical books that I could obtain to help me in sanitary engineering, water supply and service and road-making. The ones that I am able to obtain are very old editions and not at all up-to-date."

The best books to obtain would be "Modern House Construction" (Blackie, 48s.) and "Specification, No. 4," (these offices, 5s.). Both of these are exhaustive, and the former, though expensive, is well worth its cost, containing numerous well-drawn illustrations and dealing almost entirely with sanitary work and water supply. G. A. T. M.

Roof Rafters and Attic Joists.

ST. ANDREWS.—W. W. C. writes: "Could you publish a sketch showing the best way to rest the rafters of an eaves-projecting roof on attic joists which serve as ties to the roof? The joists are 9in. by 3in., and the rafters



RAFTERS AND ATTIC JOISTS.

6½in. by 2½in., both at 18in. centres; no principals are used, and the pitch of the roof is about 35 degrees."

The accompanying illustration shows both rafters and attic joists coggled to wall plate, and themselves pinned together with hardwood pins. This method of construction ought to meet the case. G. A. T. M.

Determining Relative Cost of Materials in Buildings.

SCARBOROUGH.—J. R. writes: "If the total amount of wages for all trades in building a good ordinary house amount to (say) £500, is there any rule by which the relative cost of materials in building such a house can be determined?"

In some trades, such as bricklayer and mason, the cost of material far exceeds the cost of labour; in others, such as joiner and plumber, they are about equal; and in others, such as painter, the cost of labour is the greater. Taken as a whole, it will generally be found that out of every shilling spent upon a dwelling house, 5d. is for labour and 7d. for materials, including builder's profit in both these amounts. This is a rough approximation only, and would vary according to the materials used and the district in which the house was built; but as a general rule one would expect materials to cost about £700 for a house upon which the wages bill amounted to £500. G. A. T. M.

Books on Working-Class Cottages, &c.

LIVERPOOL.—B. E. E. writes: "Which is the best and cheapest book dealing fully with cottages for the working classes and the drains that are necessary for such houses to ensure perfect sanitary arrangement? Plates showing this are desirable. Is there a book published giving the by-laws and regulations of every town, suitable for an architect's reference when submitting plans for a district he is not acquainted with? Which is the best book for estimating the cost of a building?"

"Houses for the Working Classes in Urban Districts," by S. W. Cranfield and H. I. Potter, Associates R.I.B.A. (price 15s. net, post free), will doubtless meet our correspondent's requirements. As far as we are aware no book has ever been published giving the by-laws and regulations of all the towns in the kingdom. A good book on estimating is "Estimating," by George Stephenson, price 5s. 6d. (The books mentioned can be obtained from B. T. Batsford, 94, High Holborn, W.C.).

Public Hall.

BLACKROCK, CO. DUBLIN.—E. C. J. writes: "I should be glad to know the cheapest and simplest form of wooden floor joist for a 30ft. span between the walls, which are more than 2ft. 6in. thick and of stone. What bearing would be required on each side, and which would be the simplest roof principal for the same span? Also, what would be the accommodation of a hall 30ft. by 40ft., and which is the simplest form of gallery that could be erected at the end of it? What space is allowed per person for seating accommodation?"

A wooden floor-joist would not be suitable for the floor of a public room 30ft. span. The greatest span for 11 by 3 fir joists 1ft. apart is 22ft. in a private house, or 15ft. in a public building. For a span of 30ft. rolled joists should be used, say, 18lbs. by 7lbs. by 75lbs. and 10ft. apart with a bearing of not less than 14in. on a good stone template. The roof should be formed of queen-post trusses 6in. thick and 10ft. apart. Allowing for a small platform and narrow gangways, a room 30ft. by 40ft. would hold a maximum of 240 persons seated, allowing a gross area of 5 square feet for each. The gallery might be formed with a similar rolled joist at front, carrying fir joists on the slope. HENRY ADAMS.

Laying a Dancing Floor.

LONDON, W.C.—J. H. writes: "I should feel obliged if you could give me your advice as to the best method of laying a floor for the purpose of dancing on so as to get a good spring. I enclose tracings (not reproduced) showing position of proposed floor, which is partly constructed of 9in. by 2½in. joists laid on 12in. by 12in. beams, there being a 6in. column underneath the centre of each beam. Would you advise laying another floor on above on carriage springs, or is there some method of vulcanite floors?"

Probably the best thing to do, preserving the present height of the room or nearly so, would be to remove the joists, so far as they are already laid, and refix them with a helical spring in a closed oil-containing cylinder under each where it rests upon the main beam. Of course the wall plates must not be bedded in the walls, as joists and floor must be free to spring. The springs would most likely have to be specially made, and one of the manufacturers of patent door-springs might be consulted with advantage. The joists should be scarfed and strapped at all heading joints. G. A. T. M.

Liability for Defective Roof.

CROUCH HILL, N.—J. D. S. writes: "About four years ago I was architect for a warehouse having a concrete and asphalt roof. Before the building was finished the asphalt cracked owing, in my opinion, to want of elasticity, and I called on the contractor to take it up and relay it. This he did and gave a guarantee for five years to make good any defects from bad workmanship or materials. The asphalt has

again cracked from the same cause and let in the water to the damage of my client's stock; the contractor is again willing to relay the asphalt. Under the circumstances, am I, as architect, in any way liable to my client? He informs me, on advice, that I am liable."

The answer to this question must depend on whether our correspondent has been guilty of any want of care or skill in the matter. If, for example, he has allowed asphalt of inferior or unsuitable quality to be used in the work, although by the exercise of reasonable skill and care he could have ascertained that fact, he will be liable. Or, again, if no asphalt would be suitable in such a position, and yet he ignorantly or carelessly designed a building in which asphalt was to be used, then he would be liable.

H. P. B.

Cast-Iron Stanchions.

KIRKCALDY.—CRONJE writes: "(1) What practical formula is there for ascertaining how to design a cast-iron stanchion as shown in sketch (not reproduced) to carry a given weight, the whole space from top to bottom between the back and front supports to be open? (2) How is the strength affected if two intermediate stiffeners or stays are introduced, say 4in. by 1½in. (3) Show by the formula what weight the stanchion as sketched would carry, and how the formula would reverse to find the section."

In any case of this kind it is necessary to consider the length and the least width of the unsupported portions. For instance, with the stanchion shown, consisting of an open cast-iron frame 11ft. high, 2ft. wide, and sides formed of 4in. by 3in. by 1½in. T-section, the length will be 11ft. and the least width 3in.; the strength will be determined by Gordon's formula, and, if loaded uniformly, half the load may be taken as carried by each side. In this case no additional strength would be gained by bracing the two sides, because the least width would remain unaltered. Gordon's formula, applicable to cast-iron T-section, is as follows:—

Breaking weight in tons = $\frac{36 S}{1 + \frac{l^2}{a d^2}}$
 where S = sectional area of metal in inches;
 l = length in inches; d = least width of section in inches; and a = 1500.

HENRY ADAMS.

Elizabethan, Queen Anne and Jacobean Architecture.

GRAVESEND.—VESWOR writes: "In your answer to my query relating to Elizabethan, Queen Anne and Jacobean styles of architecture (see page 97 of issue for March 14th) you refer me to the R.I.B.A. prize essay and to the folio works of Mr. J. A. Gutch and Messrs. Belcher and Macartney. Both of these sources are entirely out of my reach. I append a list (not reproduced) of buildings which I have placed under the heads of which I believe them to be characteristic. Illustrations of these works have recently appeared in the 'Architectural Review.' If they are not under proper heads will you kindly rearrange them for me. Will you also mention a few examples of the Jacobean period."

Were it not for the pity of it, this query would raise a smile. Our correspondent has evidently confounded the modern works of living men in the so-called Elizabethan, Jacobean and Queen Anne styles with the buildings actually erected in the sixteenth, seventeenth, and eighteenth centuries; apparently through confining his reading to a modern review without a basic knowledge of architectural history. With considerable regret we feel obliged to advise him to begin at the beginning, and to read such works as Hamlin's "History of Architecture" and Sturgis's "European Architecture," following these with Anderson's "Italian Renaissance"—and all this before specialising in the peculiar and somewhat debased English varieties of the Renaissance which he enquires about. These three books are neither of them expensive and might be purchased in the order named.

G. A. T. M.

Safe Load on Piers.

LEEDS.—LEEDS writes: "I should be glad to know what is the safe working load for piers of (1) ordinary bricks (say Flitton) in mortar, (2) pressed bricks in mortar, (3) pressed bricks in cement, (4) hard sandstone in cement, (5) granite. The authorities differ so much on some points."

The following is a complete table of the loads used in my practice:

	Tons per foot super.	
Granite...	15 = $\frac{1}{20}$ fracture load.	
Portland and compact Limestone ...	15 = $\frac{1}{15}$ "	
Sandstone ...	12 = $\frac{1}{10}$ "	

And with stone template interposed:—

Blue brick in cement...	9 = $\frac{1}{8}$ fracture load.
Stock brick in cement	6 = $\frac{1}{5}$ "
Stock brick in lias mortar ...	5 = $\frac{1}{4}$ "
Stock brick in grey lime mortar...	4 = $\frac{1}{3}$ "

And below the brickwork:—

Cement concrete ...	4 = $\frac{1}{8}$ fracture load.
Lime concrete ...	2 = $\frac{1}{5}$ "
Gravel and natural compact earth ...	2
Made ground rammed in layers ...	1

In architectural work, with dead loads only, these figures are often increased, say up to 50 per cent as a maximum, but for railway work for engines weighing from 40 to 50 tons and running at 60 miles per hour the factor of safety is not too great, considering the difficulty of bedding truly and the irregularity of the mortar joints.

HENRY ADAMS.

Architectural Practice in South Africa.

MILNSBRIDGE, NEAR HUDDERSFIELD.—YORK writes: "Can you give an architect, surveyor and estate agent an idea as to the best methods of procuring a practice or situation in South Africa—wages, prospects, and locality, and class of work required?"

I would refer "York" to my paper on South Africa in the Royal Institute Journal, and to the extensive report of my lecture on "Johannesburg before and after the war," in the BUILDERS' JOURNAL for March 7th last. I have there said all there is to say about "prospects." Wages to assistants have been high—nearly double in the Transvaal to those at home—but I should judge that a general access of settled prosperity would reduce these. As to "locality," a man should go where he can command influence, even more indispensable out there than at home. There are no recognised methods of obtaining work in South Africa that do not apply equally at home. See the copy books for many excellent maxims about industry, sobriety, &c. A man can only book his passage, go out, and begin pushing himself for all he is worth in the directions best suited to his attainments—social and professional. For the "class of work required," I should say that the man likely to succeed in South Africa is he who can "turn his hand to anything," and therefore he must be ready to tackle all classes of work. But especially he must be strong on the business side of his profession, and have a keen faculty for acquiring a knowledge of prices, and a happy knack of working within his estimates. He should also be able to make shift in the use of what materials come to his hand. Estate agency is no more incompatible with the practice of the architectural profession out there than at home, but as a general rule they are not found in combination. Estate agency is very frequently combined with auctioneering, and I should think "York" would find it too bustling a calling and too keenly borne in upon by competition—as practised, at any rate, in Johannesburg—to be successfully taken up along with the more sedentary occupation of an architect.

JOHN BEGG, A.R.I.B.A.

Masters and Men.

The Blackpool Painters have struck for an ½d. per hour increase. About 300 men are affected.

The Huddersfield Plasterers have agreed to accept the masters' offer of ½d. per hour advance in lieu of the 1d. they originally demanded.

The Dumfermline Operative Painters have struck for an advance in wages from 8d. to 8½d. per hour, and certain concessions in regard to country work.

The Hereford Labourers, who recently demanded 1d. per hour increase, have accepted the employers' offer of ¾d. advance from April 2nd and ¾d. on July 2nd.

The Edinburgh and Leith Master Joiners still adhere to their notice given in January to reduce the men's wages from 9½d. to 8½d. on the 15th inst.

A Section of the Arbroath Joiners, to the number of about twenty, struck last week against a proposal by the masters to reduce their wages from 8d. to 7½d. per hour.

The Taunton Carpenters and Bricklayers to the number of nearly 300 have struck for an advance in wages from 6d. to 7d. per hour. The masters are willing to grant fewer working hours.

The Liverpool Joiners have been locked out to the extent of 50 per cent. owing to a dispute arising out of the laying of wooden blocks for flooring. Unless the dispute is settled in the meantime, the remainder will be locked out on Saturday next.

Strikes at Tamworth.—The bricklayers of Tamworth and district have struck for an advance of 1d. per hour on their present wage of 8d. About sixty men are affected. The labourers have applied for an advance of ½d. per hour on their wage of 5½d., and the notice will expire in a week. The painters have struck for an advance of ½d. per hour.

The Colchester Bricklayers to the number of about 200 have struck for an advance in wages. About six months ago they demanded an increase of 1d. per hour on their then existing wage of 6½d., but agreed to accept the masters' offer of ¾d. It is not clear now whether the men want 1d. increase on the 6½d., making 7½d., or on the 7d., making 8d. per hour.

Labour Market in the Colonies.—The April circulars of the Emigrants' Information Office, 31, Broadway, Westminster, S.W., report that in New South Wales there has latterly been a burst of activity in the building and allied industries. Queensland reports an increasing demand for mechanics, except at Mackay and Charters Towers. New Zealand reports plenty of work; the building and engineering trades being especially busy in Auckland, Napier, Greymouth, Christchurch, Dunedin and Invercargill.

Painters' Wages Dispute at Perth Station.—Sheriff Fyfe, who was appointed arbitrator by the Glasgow Master Painters' Association and the Glasgow District of the Amalgamated Society of Operative Painters, has decided that the wages paid by Messrs. A. and J. Scott to local men taken on at Perth (viz., 9d. per hour) are fair and reasonable, and are in terms of the agreement betwixt the parties for the year 1900. It will be recollected that Messrs. Scott were paying 10d. per hour to the men on the job who were taken by them from Glasgow, and 9d. per hour to the local men employed at Perth. The Operative Society contended that the latter should also be paid 10d. per hour, but Sheriff Fyfe's decision upholds the contention of the masters that, in terms of the agreement for the year, Messrs. Scott were only bound to pay the local men the Glasgow rate—viz., 9d. per hour.

A new Hospital at North Berwick has been built from the designs of Mr. G. Morham, architect, of Edinburgh. It comprises two ward blocks and has cost £2,563.

Professional Practice.

Belfast.—The principal entrance of the Bank Buildings was thrown open for business last week, after the rebuilding of the front section of the premises. The work was commenced about eighteen months ago. The architect is Mr. W. H. Lynn, and the contractors are Messrs. James Henry and Sons. As the entire section to be rebuilt could not be handed over at once to the contractors without seriously interfering with the business, it was decided to do the work in two parts. The first and most complicated of these is now finished, and the second and final portion will be proceeded with immediately. Pedestals to piers and plinths under shop windows are of polished black granite. The piers are of polished

erected in Castle Street by the same architect and contractors. In front, the building is terminated by a balustrade and chimneys, one at each angle, with central dormer for clock, and is further ornamented by two copper figures representing winged cherubs supporting the Imperial crown. There is also a dormer in Castle Street, and one in Royal Avenue. The slates are green Westmorland, and the height of the building from pavement to clock is more than 100ft.; the width of the building in front is 74ft.; and the extreme depth from front to rear, when complete, about 350ft. An electric clock replaces the old "Bank Buildings Clock."

Brierley Hill.—The Church of St. Michael has been re-opened after extensive restorations and improvements, which have cost £5,000.

Chislehurst, Kent.—“Bullers Wood,” illustrated on this page, was designed by Mr. Ernest Newton for J. Sanderson, Esq. The builders were Messrs. Arnaud and Son, of Bromley, Kent. The materials used are hand-made red bricks and tiles, and the date of the building is 1889. Our drawing was made by Mr. W. R. Lethaby.

Liskeard.—The tower of Liskeard Parish Church having become insecure, it was decided some time ago to re-build it, and a competition was started in which Mr. John Sansom, architect, of Liskeard, was successful. His design, however, failed to receive the sanction of the diocesan authorities, as differing too widely from the whole structure, and in order to meet their views the tower was reduced in size, the pinnacles at the summit



"BULLERS WOOD," CHISLEHURST, KENT. ERNEST NEWTON, ARCHITECT.

granite of a rich chocolate colour in 12in. courses, channel jointed, with moulded caps and necking on top. The architrave, frieze, and cornice of first and second floors, and also the piers of the first floor, are constructed of the same material, highly moulded and polished. One of the most striking features in the front of the building is an arched doorway, rising two storeys, having pierced spandrels filled with clear glass. The entrance door and sashes are of Spanish mahogany, and the carved panelled ceiling is of polished teak, the extent and richness of which gives a peculiarly lofty appearance to the entrance. From the second floor cornice spring six Corinthian columns, 23ft. high, the bases and caps of which are of red sandstone and the shafts of polished granite, each shaft weighing seven tons. These shafts support the main entablature of the building. From the second floor, with the exception of the polished columns, the building is constructed of red sandstone, which harmonises with the extensive buildings previously

The original church was founded in the early years of George the Third's reign, and was established as a chapel-of-ease to the parish church of Kingswinford. At that time the needs of the neighbourhood were small, for fifty seats were deemed sufficient. The work done has wrought a great change. The new casing of the tower is particularly noticeable. The bells in the tower have been recast and rehung, and the quality of the peal is very good and pleasing. In the interior the architect (Mr. Cossins) has necessarily been tied to the lines of the old building, but he has made the most of the opportunities these afforded of improving the appearance of the church, adding to its comfort, and modernising its features. A new chancel has been built, and the other extensions of accommodation give substantial gain in several directions. A new organ chamber is provided. The old pews are replaced by pitch-pine seats, and the ventilation and heating have had due attention. Mr. C. A. Horton was the contractor.

were removed, and other alterations made. Meanwhile, owing to the borough surveyor having condemned the tower as dangerous, a portion of the structure was taken down to prevent collapse, and the remainder was removed subsequently. The new tower will be about 80ft. high. It is to be constructed in three stages, with a ringing chamber on the first floor and a bell chamber at the top. The ground floor of the tower will form part of the church, the old western door being inserted in the west wall, whilst the new tower arch will form an entrance. All the new dressings are to be of Cheesewring granite, and for the exterior facing up to the first stage the granite facings from the old tower will be utilised. Above this point a hard blue slate stone from Tencreek Quarry, near Liskeard, will be used. The interior walls of the tower will be lined with buff-coloured stone from St. Cleer. The whole of the interesting old features of the former structure are to be preserved wherever possible; and the actual

material from the old tower will be worked into the new building, including the old arch which formally stood at the west end, the small Norman windows, and the ancient Norman arch, the stones of which were discovered used as walling in the old tower. At the base of the tower is to be placed a baptistry. It is hoped to provide a peal of eight bells, adding to the present peal of six. The summit of the tower will be battlemented, and at the north-west corner there is to be an octagonal turret with interior spiral staircase. Mr. G. Trehane, Liskeard, is the builder, the amount of the contract being £5,126, of which about £3,000 remains to be raised.

PROCESS ENGRAVING.*

By CARL HENTSCHEL.

THE earliest form of engraving was that used by the Assyrians for the purpose of stamping impressions on bricks and other articles in clay; other stamps were made in brass for marking cloth, and it is said these stamps were also used for branding slaves. Improvement followed improvement, and about the end of the fourteenth or the beginning of the fifteenth century the German card makers, it is believed, adopted the principle of engraving in relief for the purpose of impressing the outlines of figures upon their cards, the outlines being afterwards filled in with colour. In Earl Spencer's library at Althorpe there is a copy of the celebrated woodcut of "St. Christopher," dated 1423. Its authenticity has been so well established that its production may be accepted as the historical starting point of this branch of the art of engraving. William Caxton, besides being acknowledged the first printer of England, is also credited with introducing wood engraving into this country. The next development of the art was the introduction of what is technically called cross-hatching. This consists of lines crossing each other at different angles; as these lines are closer together, so is the shading graduated. The "Nuremberg Chronicle" contains some instances of cross-hatching published about 1493. At this early period, Albert Dürer's name stands out before all others, both as an engraver and as an artist.

Among the earliest workers in the new world of art was William Hogarth. In 1733 appeared that famous series of prints "The Harlot's Progress," published by the artist and engraver. After about thirty years, British engraving sprung up from its condition of poverty, degradation, and obscurity to be a source of wealth and honour for its workers and publishers. About this time steel gradually took the place of copper for engraved plates.

It is recorded that Thomas Bewick and Robert Branstons were pioneers of wood engraving in England, and it is interesting to note that the earlier wood blocks were cut with knives, not with gravers. But it was to John Thompson, a pupil of Mauston, that the art of wood engraving was indebted for its early progress. He improved the tools, gave great care to the choice of material, and brought a large amount of practical study and artistic ability to the successfully achieved task of spreading abroad into a wider field the growing demand for wood engraving. Without tracing wood engraving down to the present period, it is worth while to point out that the very element which worked so much evil to steel and copper engraving was soon active in lowering the artistic quality of wood engraving—that is to say, cheapness (one of the traits of education and civilisation). At the present day the same thing is happening, and so I suppose it will always go on, the insidious influences of undue rapidity and cheapness undermining all artistic work. Amongst those who will always take a high rank in the modern English school of wood engraving are:—John

Jackson, H. Linton, W. J. Linton, E. Landells, W. T. Green, J. W. Whymper, W. H. Powis, Joseph Swain, W. L. Thomas, G. and E. Dalziel, and Mason Jackson.

Photo-engraving, which is in reality "process," is older than photography, since Niepce in 1814 commenced experiments, and in 1824 (if not earlier) actually produced proofs from photo-etched plates. In 1842 Poitevin endeavoured to prepare printing plates from Daguerreotypes. Fizeau improved this process and obtained results resembling photogravures. Talbot's first process was patented in 1852 and was called phototypy. Up to this time it may be said to have been the most important process of the day. It was he who suggested the use of those glass plates, ruled with fine lines or covered with opaque dots, which are the basis of half-tone work. Carl Klic, of Vienna, is said to have improved upon Talbot's methods considerably. The idea of a lined screen was followed by Berchold, in France, and C. J. Burnett, in England, in 1857 or 1858. In 1861, Baron F. W. von Egloffstein experimented with ruled screens in Philadelphia, and in 1865 E. and J. Bullock patented and worked for fifteen years a process in which the grain was produced by a line netting of cross lines.

It was, however, left to a Frenchman, M. Gillot, to perfect the etching of the line block. It must not be forgotten that all the early plates were either drawn on zinc or on transfer paper or litho stones, and then transferred to zinc and etched. It was not till later that the method of photographing direct on to the zinc was adopted. It was my father who at that time was endeavouring to photograph direct on to zinc, and his process, by those who were capable of judging, was considered the finest ever introduced. Some fine results were obtainable through wire gauze, but the scientific principle and method of breaking up the dots had not been gone into. It was Mr. Ives who first went thoroughly into this matter, and whose researches and experiments have proved of so great value to the trade. Pretsch blocks were really the first half-tone grain blocks, and the Pretsch process was developed by Swan, who obtained the gelatine relief with carbon tissue, thus avoiding irregular swelling and granulation of the gelatine, and afterwards by Geymet, Roussillon, Dawson and others. Messrs. Sprague's process (called the ink-photo process) must be mentioned as being based on the reticulated gelatine grain principle.

It is interesting to look back upon the early days and compare our present methods. I can well remember a time when if a block was turned out in a week it was thought something wonderful; afterwards, when I succeeded in turning out a block in twenty-four hours, it was specially noticed in the Press, and when a double-page pencil drawing by Melton Prior for the "Illustrated London News" was reproduced in nine hours the fact was regarded as marvellous. Now-a-days half-tone blocks are wanted in two to four hours and line blocks in two hours. From an artistic point of view this is to be deplored, but we live in an age of nervous rush and one must go the pace or be left behind; it is the pace that kills the workmen as well as his art, for certainly no one can put his best work into a block when only minutes are allowed for a difficult process requiring hours. But to return to our outline history. A name that stands out with great prominence in the evolution of process work is that of Meisenbach, who patented his process in 1882. Its important feature was the use of a finely-ruled glass screen, which was interposed in the camera between the original and the negative, the effect being to break up all the gradations and half-tones into different size blacks and cross lines.

This is the means employed in modern process work, and it may be interesting to note in conclusion how the cheap and rapid production of printing blocks by the photo-mechanical process is killing the art of wood engraving. The following numbers of firms show this:—

	1876.	1879.	1884.	1887.	1895.	1900.
Wood Engraving —	130	162	158	131	80	80
Process ...	1	2	6	14	53	56

BUILDING CONTRACTS.

RESPONSIBILITY FOR DELAY.

THE question in the case of *Leslie and Co., Ltd. v. The Managers of the Metropolitan Asylum District* (heard recently in the Queen's Bench Division of the High Court of Justice) arose upon a contract for the erection of a hospital for infectious fevers at Hither Green, Lewisham. A great part of the work had been let out to sub-contractors and experts, including Messrs. Doulton, of Lambeth, and Messrs. Berry and Sons, of Westminster. The contract between the plaintiffs and defendants provided that the plaintiffs should execute "the works" shown on the plans, including the chimney stacks and heating apparatus. The time in which the work was to be completed was two years, and the price to be paid was £210,000.

Among the works to be erected were twenty-nine chimney stacks, and with reference to these a correspondence took place between a Mr. Hall, the architect of the defendants, and Messrs. Doulton, as the result of which a price of £137 10s. for each stack was named. The contract contained the following clause relating particularly to these chimney stacks:—"The contractor shall provide the sum of £137 10s. prime cost for each central stack of flues in large wards above the level of the ground floor. These stacks will be of faience, fireclay, terra-cotta, and concrete, and, including, hearths, grates, &c., will be supplied, fixed, and finished complete by a specialist potter. The contractors are to supply all necessary scaffolding, plant, water, and hoisting." The plaintiffs then communicated with Messrs. Doulton, who undertook to do the necessary work. Part of the claim in the action arose from the alleged delay on the part of Messrs. Doulton in doing this work. A second head of claim arose from a sub-contract for the supply of the necessary steam and hot-water apparatus. A sub-contract was made between the plaintiffs and Messrs. Berry and Sons, by which the latter agreed to supply this apparatus for £11,900. It was alleged that Messrs. Berry had also been guilty of delay in executing this work. Owing to these alleged delays the plaintiffs could not complete their works and get the architect's final certificate and payment accordingly. They therefore claimed damages on the footing that there was an obligation upon the defendants to see that the work was done by the specialists and sub-contractors within a reasonable time. The claim was referred to an Official Referee, who considered the contract and voluminous correspondence involved in the case. Counsel for the defendants asked the learned Referee to non-suit the plaintiffs on the ground that Messrs. Doulton and Berry and Sons were sub-contractors with the plaintiffs, and any claim for delay lay against them and not with the defendants. The learned Referee refused to non-suit, and this was a motion by way of appeal from that refusal.

Mr. Justice Bigham, in giving judgment, said that the contract contained an undertaking by the plaintiffs to execute the works, which, in his view, meant the whole works to be done in accordance with the specifications, including the work actually done by Messrs. Doulton and Berry. The definition of "works" in the contract was wide enough to cover the works in question. The contract contained a clause by which the defendants reserved to themselves the right, that is to say, the option, to employ other parties to execute the works for which provisions were made. That would enable them to employ Messrs. Doulton and Berry. But this option, in his Lordship's opinion, the defendants did not exercise, but left the obligation on the plaintiffs to execute these works; in other words, they left the plaintiffs to enter into the sub-contracts with these specialists. The difficulty in the case arose from the provision that "contracts will during the progress of the works be let to other persons." In his Lordship's opinion that did not amount to an undertaking that the works should be let, but was merely a statement of what would become

* Résumé of a paper read before the Applied Art Section of the Society of Arts on April 3rd, 1900.

a fact and was in the contemplation of the parties. They foresaw that a contract would have to be entered into with other parties, possibly by the defendants, and provided that, in connection with such contracts, the plaintiffs should give the sub-contractors full opportunity to carry out their works. Therefore, it was the duty of the plaintiffs to enter into the contracts with these specialists. The defendants might have to indicate the specialists and to arrange contracts which should be within the specification; but having done this, the obligation of the defendants was discharged. It was then the duty of the plaintiffs to see that the contracts contained clauses and provisions which should either enable them to complete their works within the specified time or should specify penalties in the nature of damages to compensate the plaintiffs if, through delay of the specialists, the plaintiffs were unable to carry out their contract with the defendants. If the plaintiffs had failed to protect themselves in this way, it was a misfortune which they must bear themselves. It followed that the plaintiffs could not saddle the defendants with the consequences of the delay by the specialists, and the learned Official Referee ought to have held that these damages were not recoverable.—Mr. Justice Phillimore concurred.

Engineering Notes.

An International Tramway Congress is to be held in Paris from September 10th to 13th. Details are obtainable at 5, Henrietta Street, W.C.

Electric Light for Newark.—The Board of Trade have granted a Provisional Order to the Corporation of Newark to supply electricity within the borough, and to expend for that purpose £20,000.

Batley's Electric Traction Scheme Sanctioned.—The Board of Trade have issued an order sanctioning the Batley Corporation's application for leave to construct tramways throughout the borough.

Artesian Well for Hampstead.—The Hampstead Vestry are about to make an artesian well at their electric lighting station. It will be 400ft. deep, and the yield will be 5,000 gallons per hour.

Halifax Waterworks.—Tenders are to be invited for the execution of the works in connection with the construction of three reservoirs at Walshaw Dean, which are estimated to cost between £150,000 and £160,000.

Electric Light Extensions at West Hartlepool.—At the meeting of the West Hartlepool Town Council on April 3rd the Electric Lighting Committee were authorised to increase their borrowing powers by £19,000 for the purpose of extension of mains, &c.

New Gas Works at Cromer have been opened by the Cromer Gas Company. The capacity at the works at present is about 20,000,000 cubic feet per annum, but very slight extension will enlarge it to 40,000,000 cubic feet, when the capital cost will be proportionately reduced.

New Bridge at Rothiemay.—The new steel girder bridge which has been thrown over the river Deveron at Rothiemay by the Great North of Scotland Railway Company has now been completed. It was designed by Mr. P. M. Barnett, C.E., the Great North Railway Company's engineer-in-chief, and the contract for steel and iron work was placed in the hands of Messrs. Findlay and Co., of Motherwell.

New Waterworks at Arbroath.—After long and tedious operations in connection with the augmentation of the water supply for Arbroath, the new works at the Nolt Loan have now been practically completed. Mr. McCulloch, C.E., Edinburgh, was, after several plans had been discussed and disapproved, engaged as engineer for the works, which, it is understood, have cost £8,000.

Mr. Rogers Field, B.A. (London), M.I.C.E., whose death we briefly recorded last week, designed and superintended the

construction of the drainage and water supply arrangements of a great number of public institutions and private buildings in all parts of the country, including the drainage of Sandringham House and Bagshot Park. The automatic flushing tanks and syphons which he brought, after many laborious experiments, to a high degree of perfection, are largely used in drainage and sewerage works both in this country and in America. Mr. Field was connected with the Sanitary Institute from its commencement twenty-four years ago, and was for many years one of the most active members of its council and various committees. Moreover, he introduced thoroughly practical methods of judging at the exhibitions held at the annual congresses of the Institute. Through his generosity the Parke's Museum was entirely re-arranged and a catalogue of its contents issued.

Electric Light at Doncaster.—On April 2nd the Mayoress of Doncaster (Mrs. Bentley) turned on the light at the new electric light and power station in Grey Friars Road. It is proposed to erect tramcar sheds on the site immediately behind the swimming baths, and provision has been made in the arrangement of steam piping at the electric light station for heating both the slipper baths and the swimming bath by steam from the electric light boilers. The chief engineer of the electric light undertaking is Mr. James N. Shoolbred, C.E., of 32, Victoria Street, Westminster. Mr. Carl A. L. Prusmann is the resident electrical engineer of the Corporation. Mr. Crabtree, C.E., the borough surveyor, acting on lines laid down by Mr. Shoolbred, designed and superintended the construction of the electric light and power station buildings and chimney, and was assisted by Mr. Stacey, Mr. William Simons acting as clerk of works. Messrs. Charles Sprakes and Son, of Doncaster, were the contractors for the buildings; Messrs. Mather and Platt, Salford, contractors for the engines; Messrs. Tetlow Bros., Oldham, contractors for the boilers; and Messrs. Callender and Co., London, contractors for the cables. Stone for the area and footpaths was supplied by the Hard York Patent Stone Company, Lightcliffe. The price charged by the Corporation is 3d. per unit for power and 5d. per unit for light. The system is the three-wire continuous current, 230 voltage. The Mayor, before turning on the steam of the first engine, said that in 1764 the town was lighted with oil lamps, and the cost was £131. In 1827 a gas company was formed, and the Corporation were shareholders, the cost of the works being £11,600. Afterwards the Corporation secured the works for £17,000, and the works now stood in the books of the Corporation at £66,000. He held that the introduction of the electric light would not reduce the value of the gas works. The present works were only a portion of a full scheme, which included electric trams, and would cost £100,000. The sum of £30,000 would be devoted to the erection of the present works. About £70,000 was to be expended in the provision of electric trams, which would cover a distance of about seven miles.

For the Gladstone Memorial £5,830 has been received from 82,250 persons. A commission for the work was given about eighteen months ago to Mr. F. W. Pomeroy, the sculptor, who has nearly completed the statue, which, with the permission of the Office of Works, will be placed in the Central Lobby of Parliament and will be unveiled on Saturday, May 19th, by Sir Henry Campbell-Bannerman.

New Lunatic Asylum for Birmingham to cost £240,000.—At last week's meeting of the Birmingham City Council the Lunatic Asylums Committee proposed that the tender of Messrs. John Bowen and Sons for the erection of a new asylum at Hollymoor at a cost of £207,256 should be accepted; that tenders for other works necessary for the completion of the building be accepted; and that the sum of £240,000, the estimated total cost of the work, be borrowed. This was agreed to.

Builders' Notes.

Aberdeen Granite Work at the Paris Exhibition.—Messrs. Garden and Co., of the Victoria Granite Works, Aberdeen, will exhibit at the Paris Exhibition a military tomb composed entirely of Hill o' Fare granite. The exhibit is interesting as being the only one, it is stated, from Aberdeen granite merchants.

A Technical Dispute about Penalties.—The case of the *Buxton Lime Firing Company, Ltd., v. James Howe*, heard in the Queen's Bench Division on April 2nd, was a special case stated by justices of the peace for the Bakewell division of the county of Derby. Howe was in the employ of the plaintiffs, but, according to the agreement between them, he was "subject to a fine, or penalty, or drawback of 2s. 6d. for each and every working day on which he was absent without leave, except in case of sickness." If he broke any of the conditions he could be dismissed without notice, and could claim nothing for damages. On September 13th last Howe applied for leave of absence on the following three days, and leave was granted for the first day and refused for the other two. On hearing this he said he should take French leave, and did so. He afterwards returned and received wages, but no demand for penalties was made upon him. The company preferred their claim under the Employers' and Workmen Act, 1875, and claimed 5s. for Howe absenting himself without leave. The justices had dismissed the summons, but the Court allowed it.

The Rise in the Price of Materials is plainly shown by the table given below, which is taken from the last agenda of the School Board for London, who have accepted the increased prices:—

	Present price. s. d.	Revised price. s. d.
Best ground white lead...	16 6 cwt.	23 0 cwt.
Refined red lead ...	13 0 "	20 0 "
Turpentine ...	2 0 gall.	3 2 gall.
Lead milled ...	10 6 cwt.	17 6 cwt.
Lead pipe ...	11 0 "	18 0 "
Lead soil pipe ...	13 0 "	20 0 "
Zinc sheets V.M. ...	21 0 "	26 0 "
Solder, plumbers' ...	44 0 "	57 0 "
Solder, tinmans' ...	54 0 "	84 0 "
Solder, blow-pipe ...	65 0 "	102 0 "
Ingot tin, lamb and flag ...	86 0 "	152 0 "

Workmen's Compensation: A Scotch Case.—Mrs. Elizabeth Colquhoun, widow, was allowed compensation to the amount of £93 12s. in a recent action under the Workmen's Compensation Act in respect of the death of her son, a joiner. The deceased was in the employment of James Laidlaw, joiner, Playfair Street, Glasgow, who was a sub-contractor to Sir William Arrol and Co., Limited, Glasgow, the respondents in the erection of a new engineering shed at the Lanarkshire Steel Works, Motherwell. Colquhoun met his death by falling 40ft. off a building. At the time he was standing on sarking boards laid in the "pattern loft" of the works, and he was engaged sawing wood on these boards and having it handed up to the roof. The main question was whether the building was being constructed by means of a scaffolding. It was held that the sarking boards used should be regarded as a scaffold.

Gas Works and Building By-laws.—In the recent case of the *London County Council v. The Wandsworth and Putney Gas Company*, heard in the Queen's Bench Division, the question for decision was whether the gas company were empowered by the special Acts of 1866 and 1880 to erect buildings in contravention of the general Acts relating to buildings in London. The complaint was that the respondents had built a purifying house within 15ft. of the centre of the highway. The contention of the respondents was that they did not come within the London Building or the Metropolitan Management Acts, and the magistrate dismissed the summons, but stated a special case.—Lord Robert Cecil submitted that the learned magistrate was right in dismissing the summons, as the private Acts of 1866 and 1880, read together, gave the gas company power to erect buildings on whatever part of their own land they thought fit, and

section 205 of the London Building Act, 1894, expressly exempted them from the conditions imposed by section 13.—Mr. Justice Ridley, in giving judgment, said he thought the respondents were subject to the London Building Act. The company, in contending they had power to put their buildings where they thought fit, had to satisfy the Court there was something in their Acts which was inconsistent with the Act of 1894. He did not find there was any expression in the respondents' series of Acts that led to that conclusion.—Mr. Justice Darling concurred, and the appeal was allowed, with costs.

A Case about an Electric Lift—The action of *Turner and Sons v. Brinsmead*, heard in the Queen's Bench Division on Saturday, was to recover £260 for work and labour done and materials supplied. Defendant pleaded that the plaintiffs had committed a breach of contract, and he counter-claimed for £608 8s. beyond the amount of the plaintiffs' claim. It appeared that in 1897 the defendant was engaged in the construction of some flats at Maitland Park, Haverstock Hill, N.W., and he entered into a contract with the plaintiffs by which the plaintiffs agreed to supply for £260 an electric lift which could be worked by the occupants of the flats without the assistance of an attendant. Plaintiffs said that they supplied and fixed the lift in accordance with the contract, that it was approved by the defendant's engineer, and that, therefore, they were entitled to recover. Defendant, on the other hand, submitted that the lift was fragile and unfit for the purpose for which it was required, that it was not supplied in the time specified in the contract, and that in consequence of its condition it had to be removed and a more durable lift put in its place. He further said that in consequence of the plaintiffs' breach he was unable to let certain flats, and had been put to an expense of £608 8s. beyond the amount of the plaintiffs' claim.—Mr. Justice Mathew, who had reserved judgment, now suggested that the parties should come to terms, and it was eventually agreed that the record should be withdrawn, the plaintiffs would pay £100 towards the defendant's costs, and the plaintiffs would have back their lift, with the exception of £99 worth of the work, which the defendant would keep without payment.

London County Council.—At last week's meeting of the Council the General Purposes Committee brought up the report on No. 17, Fleet Street, which we gave on page 152 of last week's issue; after discussion this was approved by a majority of one, so that the "palace" will be preserved.—Reporting on the syllabus of instruction prepared by the Sanitary Inspectors' Examination Board, on which the Plumbers' Company have a representative, a joint committee of the Public Health Committee and the Technical Education Board recommended that the Council should have two representatives on the examination board, one to represent it in its sanitary aspect and the other in its educational aspect; and should make an application to the Local Government Board accordingly. This was agreed to.—The Finance Committee reported that several of the workmen in the employ of the Works Department had been detected, convicted, and sent to prison for practising what was known as the "dead men" fraud. Forged requests for wages to be paid to nominees by men who had left the Council's employ, or who were not working, were, with the connivance of a timekeeper, passed, with the result that the Council had been defrauded of over £100.—The Housing Committee recommended in connection with the Council's Housing Bill: (1) The extension of the period for the repayment of the capital cost of working-class dwellings from sixty to one hundred years; (2) the value of the land on which the dwellings are erected being taken as an asset against debt, instead of being repaid within the sinking fund period as at present; (3) the amalgamation of accounts under the different parts of the Act, so as to show the true cost of improvement on housing schemes affected by the Act. They also recommended that a joint deputation of the Housing of the Working Classes

and Parliamentary Committees should wait on the president of the Local Government Board in order to induce him to include the above amendments in the Bill. This was deferred.

Interesting Workmen's Compensation Case.—The case of *Former v. The Danville Asbestos Plastering Company* was heard in the Court of Appeal on Saturday. The facts were as follows:—The owner of 72, Coleman Street, E.C., decided to entirely reconstruct the interior of the building, making contracts direct with various persons to do each of the different branches of the work. He agreed with the Danville Asbestos Plastering Company to do some 1000ft. super. of plastering work, and the applicant was one of the men the company employed to take down the old plaster and put up the new. The scaffold on which he was working gave way, and he sought compensation for injuries sustained. The case came on in the City of London Court on February 14th, three days before the Court of Appeal decided in the case of *Mason v. Dean* (see issue for February 28th last) that a firm who took their contract to do work directly from the building owner were undertakers, and not sub-contractors within the meaning of the Act, though the owner had contracted with another builder to carry out all the building operations except that part of the work which he had himself directly contracted with a third party to do for him.—Mr. Roskill, for the company, said it was uncertain who was the building owner. The learned judge, after hearing the evidence, came to the conclusion that somebody, he could not say whom, had been engaged by the building owner to reconstruct the interior of the premises, and therefore that the respondents to this appeal were merely sub-contractors of that unknown person, and not liable under this Act to their workman.—Lord Justice Collins, in giving judgment, said it was clear that somebody was the building contractor, and that the present respondents were merely sub-contractors. He thought this case was distinguishable from *Mason v. Dean*, in which the building owner had contracted with a third party to build for him the Lyceum Theatre at Eccles. By a clause in that agreement his architect was to have the option of giving out any of the finishing work to other firms, and under that clause Messrs. A. R. Dean, Ltd., were directly engaged to construct and decorate the proscenium and boxes. That was a different case to this, as it appeared that the owner here was also the builder. The building owner, therefore, whoever he might be, was the undertaker, and the present respondents were merely his sub-contractors, and as such not liable under this Act to their workman. The other Lords Justices concurred.

Workington's Town Hall.—At last week's meeting of the Workington Town Council a heated discussion took place on a motion not to proceed with the building of the new town hall. This motion was lost by eleven votes to thirteen. The first prize for the competition for the town hall was awarded to Messrs. Oliver and Dodgshun, of Carlisle and Leeds.

Leeds City Council.—At last Wednesday's meeting of the Council it was decided to purchase the Gateforth Estate, near Selby, for £85,000, as a site for intended new sewage works. It was also decided to pay £46,000 for St. Ann's Cathedral, and to provide another site for the vendors. The property covers an area of 3,120 square yards and is required for the widening of the lower part of Cookridge Street, where vehicular traffic is now often congested.

Van Dyck Memorial.—A correspondent to a contemporary says: "Five years later (1646) the fine monument erected over Van Dyck's grave perished in the Great Fire of London, which also destroyed the whole of old St. Paul's Cathedral. But is it not extraordinary, is it not strange in the extreme, that among the numberless monuments which have since been placed in the new cathedral of St. Paul's there is not even a simple memorial tablet to remind visitors that the illustrious Van Dyck once lay buried in London's great old cathedral?"

New Patents.

These patents are open to opposition until May 14th.

1899.—Scaffold Boards.—5,344. J. J. CARR, Malton, Yorks. The underside of the plank is grooved, and at the end of each groove a strong spike is fixed. The plank is then bent and a wire fixed across and secured by passing the loop at each end over the head of the spike. When the plank is released the wire lies taut in the groove and is fixed there with staples. A plank treated in this way is stated to be rendered much less springy.

Collapsible Tables, &c.—5,466. L. H. ELLINGTON, London. The descending platform is connected to two flap lids that ordinarily form the top of the table, but it is also connected by a series of levers to a piston rod which works in a perforated cylinder fixed underneath the table. As the platform is being lowered the air is compressed, so that when it is being forced out by the falling piston it acts as a cushion.

Ventilation of Sewers.—5,735. R. T. PRESTON and G. R. RALSTON, London, S.E. The object of this invention is to do away with the injurious effect of noxious gases escaping from sewers up ventilating shafts. For this purpose water pressure from the main is utilised to cause the sewer gas in the vicinity of the shaft to pass through water and to mix with fresh air, the gas then escaping into the atmosphere.

Electric Light Globes.—6,054. S. BERDITSCHESKY-APOSTOLOFF, London, E.C. This invention relates to a light refracting and diffusing screen for an electric lamp, and consists of a globe formed of a spirally-coiled glass rod covered by an outer plain globe. The globe is made in two parts.

Ventilating Water Closets.—8,005. J. MCINTYRE and THE SANITARY VENTILATING SYNDICATE, LTD.; both of Dublin. In order to draw off any smell from water-closet apartments, there is fitted on top of the cistern a water turbine with propellers for spokes. This turbine is driven by the water as it enters the cistern, and so draws off the foul air. It is covered, of course, by a casing or splash rim.

Varnish-mixing Machinery.—8,889. T. C. BARRACLOUGH, London, and T. T. HEATON, Uxbridge, Middlesex. The mixing drum is of metal and has a smooth inside surface. It revolves on a hollow axis which is arranged to receive steam, hot water or gas, several regulating appliances being provided. By these means the mixing is improved and expedited and a regular and increased output obtained.

Paint for Outside Work.—9,652. J. R. HATMAKER, London, S.W. First take 300 parts of well-dried, powdered talc or steatite and 183 parts of red or white lead, and mix together. Lampblack or any suitable colouring can be added if desired. Next mix together some boiled linseed oil and linseed oil varnish in the proportion of three parts of oil to one of varnish. Sufficient of this mixture is added to the pigment ingredients, and the whole is then well ground. Lastly, a dryer is added. Paint made in this way is said to be very durable and quite impervious to water.

Brick-making Machines.—10,599. A. ADAMS and W. NEALE; both of Old Fletton, Hunts; and L. SIMPSON, Eye Green, Peterborough. The plunger or other part to which it is desired to convey steam is connected to the fixed part of the machine by metal tubes that slide within each other. The fixed part of the machine is connected to the boiler. This arrangement economises steam.

The following specifications were published on Saturday last, and are open to opposition until May 21st. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—5,566. HINTERBERGER, ventilating rooms and other enclosed spaces. 5,603,

COULON, apparatus for the manufacture of artificial stone. 6,329, PATERSON, filters. 6,333, GLITSCH, lighting and heating apparatus using liquid combustible. 6,832, CODD, non-return valves for steam, water and gas, and other fittings. 7,134, WOOD, spirit levels. 7,347, DENYER, hot-water radiators and similar heating apparatus. 7,538, CUSSONS and EAGLES, machine for testing the strengths of materials. 7,746, KAY, LOBLEY and BUNKALL, brick-making machines. 8,148, HORWOOD, disinfecting apparatus for closets, drains, &c. 8,210, HOPPS, manufacture of Portland cement. 8,378, FASSETT, door catches. 8,912, ASTON, parquetry, marquetry, mosaic and similar woodwork for various purposes. 9,101, PENNYCUICK and BARRETT, globes or protectors for electric and other lighting apparatus. 9,322, ELLEN and DAVIES, acetylene gas generators. 9,384, KNOX and KNOX, circular-saw frames. 9,401, CARINGTON and MEIKLEJOHN, self-closing cocks. 9,441, ALEXANDER, drying chamber for the hardening of bricks, artificial stone, &c. 9,544, HOEVEL, chains. 9,690, DENAYROUZE, incandescence lamps. 9,714, ASA LEES and Co., LTD., and DUNKERLEY, guards for circular saws. 10,330, CRITALL, radiators for heating and cooling. 10,381, ANDERSON and DICKIE, valves and cocks. 10,506, SUGG, gas lighting. 10,743, POWERS, apparatus for generating and storing acetylene gas. 11,372, HUDSWELL, window-sash fasteners and holders. 13,038, ROBERTSON, means for securing tiles and marble slabs to walls, ceilings, and other surfaces. 16,166, BOULT (*Isitt*), manufacture of mantles to be used in incandescent gas lighting. 22,511, CLARE, combined timber and concrete walling, flooring, and roofing. 23,566, BERNSTEIN, gas burners. 24,327, DODGE, stair lifts. 24,829, POPESCO, locks. 25,088, BECK (*Pataky and Pataky*), filters. 25,293, ANDERSON, apparatus for treating water by heat. 25,336, KARUTZ, indicating device in connection with glass doors.

1900.—320, MARTIN, roofing plates and machines for manufacturing them. 1,495, ALLEN and DAVIS, acetylene gas generators. 1,999, DRESSER, detachable pipe couplings. 2,248, BEESE, inverted gas burner for incandescent lamps. 2,867, SCHLICKEYSEN, brick, tile, and pipe moulding machines. 3,205, VALSLER, apparatus for raising and delivering water under pressure.

Under Discussion.

Mr. Blashill on Housing.

Mr. Thomas Blashill, F.R.I.B.A., late superintending architect to the London County Council, addressed the Sanitary Institute on Wednesday evening on the subject of "The Housing of the Working Classes in London in the Future." Mr. Blashill urged that municipalities instead of paying heavily for slum property for clearance ought simply to rehouse the affected tenants elsewhere, and thus reduce the expense of such housing schemes by three-fourths. A census should be compiled of all overcrowded houses, and penalties enforced against the admission of more inmates until the numbers were reduced below the lawful number. The local authority should set about providing accommodation for the families who would have to leave because of overcrowding. In view of the cheapness of transit, the new accommodation need not necessarily be in the same neighbourhood. In most cases it would be necessary to rehouse at greater cost than the families could afford, as some of them who had lived in one room would have to take two or three in order to prevent overcrowding. This extra cost would have to be provided in the first instance by the municipality, including compensation for long distance travel, by payments made on account of the weekly rent paid direct to the owner of the newly-acquired tenements. If the new tenements had been built by the municipality such an arrangement would be very simple. The municipality required larger powers to compel owners to keep their property in a healthy state.

Surveying and Sanitary Notes.

For Street Improvements at Halifax £78,859 are to be borrowed.

Insanitary Houses at Liverpool.—In the course of a recent lecture before the New Century Society at Liverpool, Dr. W. Permewan said that there were more than 8,000 insanitary houses in the city, being, in the words of the Act, "unfit for human habitation."

At the Hull City Council Meeting last Thursday the minutes of the Sanitary Committee, containing a scheme for the substitution of water closets for the present dry-earth closets throughout the city, were the cause of much discussion. It was eventually decided to call a special meeting to consider the question towards the end of the current month.

An Extensive Drainage Scheme for Wirral, Birkenhead.—Messrs. Beloe and Priest, engineers to the Wirral Rural District Council, submitted completed plans and estimates to that authority on April 2nd for the Fender Valley outfall sewerage scheme. This scheme is to embrace a wide area, covering twelve or thirteen townships and a small portion of the borough of Birkenhead, and the total estimated cost is £27,500. The Council resolved to submit the scheme to the Local Government Board.

Disinfecting Water Mains.—At a meeting of the Society of Engineers held on April 2nd a paper was read on "The Disinfection of the Maidstone Water Service Mains," by Dr. G. Sims Woodhead, M.A., and Mr. W. J. Ware, M.B.A. of Water Engineers. After briefly describing the position of Maidstone and the growth of its population, the authors gave an account of the conditions under which it was found necessary to carry out sterilisation of the mains in order (1) to do away with the possibility of any infective material that might have made its way into the main remaining in any of the pipes, especially in the dead-ends; and (2) to restore public confidence, which could only be done by rendering it absolutely impossible for any such infective material to remain. After a careful study it was decided that the mains and service pipes should be filled with chlorinated lime solution in a strength of at least one per cent., or one-third per cent. of the available chlorine. On a Saturday night the entire water service of the town was shut off except from a few selected houses in the district worst infected. Chloride of lime was first mixed with the water in the reservoirs and forced through the mains until the outflow in the house taps became milky. Then the mains were pumped empty by means of fire-engines, the reservoirs thoroughly cleansed, and pure water allowed to flow. The operation, which occupied twelve hours, is the only instance of disinfection of water-mains on so large a scale. Apart from some damage to washers, clothing and pump-buckets, no ill effect of any kind was traceable to the use of the chlorinated lime solution. As a result of the treatment, everyone was satisfied that, so far as the mains and service pipes that conveyed the high-pressure water were concerned, there was no possibility that any typhoid organisms could continue to exist in them.

Bawtry Church is being restored. From the body of the church all the old pews, which were put in some sixty years ago, have been cleared out. The west gallery, too, has been removed, and the west tower arch exposed to view. It is expected that the work will last some months, as the plaster and stucco have to be taken off the walls and the masonry of the exterior pointed afresh. The floor is also to be covered with concrete and wood blocking, and the roof to be boarded with oak boards. The work will cost about £2,370, without the seats and fittings.

Keystones.

New Liberal Rooms at Saltcoats have been opened.

Jeffrey Square, St. Mary Axe, E.C., is to be closed.

The death is announced of Mr. Frederick Church, the well-known painter and illustrator.

Four new Stained-glass Windows in Maybole Parish Church have been erected by Messrs. Stephen Adam and Son, of Glasgow.

A new Mission Hall at Paisley is being built from designs by Mr. John Robb, architect, of Glasgow. The cost will be about £1,400.

Eight Cottage Homes at Stockton have been completed by the Board of Guardians. The cost has been between £10,000 and £11,000.

Re-opening of Spurgeon's Tabernacle.—It is understood that the opening of this place of worship will take place on September 19th next.

York House, Twickenham, the residence until recently of the Duc d'Orléans, is to be sold by private auction. The price will lie between £30,000 and £40,000.

The Death is announced of Mr. G. R. N. Wright, F.S.A., at the age of eighty. He was connected with the British Archaeological Association from its foundation in 1843.

Restoration of a City Crypt.—The ancient Norman crypt which extends under the whole length of the parish church of St. John's, Clerkenwell, is to be restored at a cost of £1,400.

A new Hotel at Southwold, called the Marlborough Hotel, has been built from designs by Mr. Arthur Pells, F.S.I., of Beccles. The hotel is situated at the corner of Danwich and Corporation Roads.

Birmingham Ruskin Society.—The membership of this society now stands at 477, an increase of fifty-two over the previous session. There is a balance in hand on the general account of £41 14s. 4d.

A new Church at Cardiff is being erected from the designs of Mr. E. M. Bruce Vaughan at a cost of £5,000. It is situated in West Bute Street and will accommodate 500 persons. Messrs. E. Turner and Sons are the contractors.

The Waddesdon Collection of Art Treasures, now at the British Museum, which Baron Ferdinand de Rothschild bequeathed to the nation, is representative of the productions of the later Renaissance. It comprises cups, vases, goldsmith's work, enamels, armour, and carvings in wood.

Court of Common Council.—At last week's meeting of this council the tender of the Limner Asphalt Company, amounting to £5,980 13s. 6d., for paving the carriage-way of Holborn Viaduct, was accepted. It is hoped that a final decision will shortly be come to with regard to the competitive designs for the rebuilding of the Old Bailey.

Result of Competition.—Mr. W. McLaughlan, of 43, Houldsworth Street, Glasgow, has been awarded the premium of one hundred guineas offered by the British Charrier Wood-Carving Company, Limited, of 49, St. Mary Axe, E.C., for a design of the interior of a room showing the best application of their carving. Professor Aitchison was the assessor.

New Buildings at Darwen.—The students attending the building construction classes at the Darwen and Westhoughton Technical Schools recently made a joint sessional visit to works in progress in the town. The Provident Co-operative Society's new central stores (architects, Messrs. Sawes and Green) were first visited, and the party then went on to the new electricity and refuse destructor works, over which the students were conducted by Mr. R. W. Smith-Saville, A.M.I.C.E., the borough engineer. The cost of the latter works up to the present time has been about £24,000.

New Companies.

Hillsbrough Estates, Limited.

This company was registered on March 19th with a capital of £16,000 in £1 shares to acquire from H. Ripley certain freehold lands at Wadsley, near Sheffield, to lay out and develop such lands for building and other purposes, and to carry on the business of brick, timber, and lime merchants, &c. The first directors (to number not less than two nor more than six) are G. E. Branson and H. Ripley. Registered office: 9, Bank Street, Sheffield.

Thorn and Hoddle Acetylene Co., Ltd.

This company was registered on March 20th with a capital of £20,000 in £1 shares to acquire and carry on the business of manufacturers and vendors of acetylene gas generators and appliances carried on at 1, Tothill Street, Westminster, and Harris Street, Camberwell, as Thorn and Hoddle. The first directors (to number not less than three nor more than five) are F. J. Gibbs, C. Hine, J. F. Gore, F. S. Thorn and C. Hoddle. Registered office: 1, Tothill Street, S.W.

John Langfield and Co., Limited.

This company was registered on March 21st with a capital of £10,000 in £1 shares to acquire the business carried on under the style of John Langfield and Co. by W. Ingham and J. Langfield at Cromwell Buildings, 11, Blackfriars Street, Manchester, and at Furnace Street, Dukinfield, Cheshire; and as manufacturers of and dealers in heating, sanitary, automatic, and fuel-saving machinery and apparatus, &c. The first directors (to number not less than three nor more than five) are W. Ingham, J. Langfield and G. H. Hollingworth. Registered office: Cromwell Buildings, 11, Blackfriars Street, Manchester.

W. and T. Garrett, Limited.

This company was registered on March 26th with a capital of £11,500 in £1 shares to acquire the business carried on by W. and T. Garrett at Brighton, and to carry on the business of builders, contractors, timber and hardware merchants, &c. The first directors (to number not less than three nor more than seven) are W. Garrett, T. Garrett, S. Garrett, W. Garrett, jun., and B. D. Garrett.

Denny, Mott and Dixon, Limited.

This company was registered on March 28th with a capital of £200,000 in £100 shares (750 preference and 1,250 ordinary) to adopt and carry into effect an agreement expressed to be made between F. D. Mott, J. Dickson and C. F. Denny of the one part and this company of the other part for the acquisition by purchase or otherwise, as a going concern, of the business now and hitherto carried on by the parties to the above-mentioned agreement under the style or firm of Denny, Mott and Dixon, and to carry on the businesses of timber merchants, dealers in wood goods of every description, mahogany and teak merchants, sawmill proprietors, &c. The first directors (of whom there shall be not less than four nor more than eight) are C. F. Denny, F. D. Mott, J. Dixon, M. S. Allan and F. D. Mott.

Chiltern Estates Company, Limited.

This company was registered on March 30th with a capital of £25,000 in £100 shares to adopt an agreement with H. H. Gardiner, and to carry on the business of landowners, builders, contractors, &c. The first directors (to number not less than two nor more than seven) are H. G. Gardiner and W. Park, jun. Registered office: 23, Coleman Street, E.C.

Broomgrove Brick Company, Limited.

This company was registered on March 30th with a capital of £8,100 in £10 shares to acquire certain lands and buildings at Ore, near Hastings, and to carry on the business of brickmakers, builders, timber and hardware merchants, &c. The first directors (to number

not less than three nor more than five) are P. H. Ellis, A. Ellis and C. F. Ellis (all permanent).

C. H. Barber, Limited.

This company was registered on March 31st with a capital of £9,000 in £1 shares to acquire the business carried on by C. H. Barber at Coventry, and to carry on the business of builders, contractors, painters, carpenters, joiners, electrical and general engineers, hardwaremen, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: 22, Bishop Street, Coventry.

Tolson's Estate, Limited.

This company was registered on April 2nd with a capital of £1,500 in £10 shares to acquire any lands, buildings, and hereditaments in the counties of Stafford and Warwick, and to carry on the business of builders, contractors, decorators, merchants, &c. The first directors (to number not less than three nor more than seven) are R. Tolson, W. W. Tolson, D. Lyell and J. Garnett.

CURRENT PRICES.

OILS AND PAINTS.

		£ s. d.	£ s. d.
Castor Oil, French	per cwt.	1 8 6	1 9 9
Colza Oil, English	per cwt.	1 9 0	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 16 0	—
Linseed Oil	per cwt.	1 6 6	—
Petroleum, American	per gal.	0 0 7 9/16	0 0 7 3/4
Do., Russian	per gal.	0 0 7	—
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 7 0	1 10 6
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 2 0	—
Lead, white, ground, carbonate	per cwt.	1 2 10	—
Do. red	per cwt.	1 0 4 1/2	—
Soda crystals	per ton	2 17 6	—
Shellac, orange	per cwt.	8 0 0	—

METALS.

Copper, sheet, strong	per ton	88 0 0	89 0 0
Iron, Staffs., bar	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 15 0	—
Do. English common	do.	17 0 0	—
Do. sheet, English, 3lb. persq.ft. and upwards	do.	30 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, sin. to 6in.	do.	12 0 0	13 0 0
Do. floor brass	do.	11 15 0	12 15 0
Steel, Staffs., Girders and	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	135 15 0	136 5 0
Do. English ingots	do.	140 0 0	140 10 0
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne	do.	27 7 6	—
Do. Spelter	do.	22 0 9	22 12 6

TIMBER.

Soft Woods.

Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	8 14 0	4 4 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 4 1/2	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	12 10 0	14 5 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	17 15 0
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	10 15 0	11 0 0
Do. do. White	do.	7 15 0	11 5 0
Do. Swedish	per P. Std.	14 5 0	15 0 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	23 15 0	—
Do. do. 2nd	do.	13 15 0	—
Do. do. 3rd & 4th	do.	9 0 0	10 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	9 10 0	10 0 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 0 0	15 5 0
Flooring, Boards, 1 in.	per square	0 9 9	0 11 3
Do. 2nd	do.	0 10 6	—
Do. 3rd & 4th	do.	0 9 0	0 9 3

HARD WOODS.

Ash, Quebec	per load	8 17 6	4 10 0
Birch, Quebec	do.	8 12 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4 1/2	—
Do. Honduras	do.	0 0 8 25/32	—
Do. Tobasco	do.	0 0 4	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 5 1/16	—
Do. African	do.	0 0 3 9/16	—
Do. St. Domingo	do.	0 0 5 1/2	—
Do. Tobasco	do.	0 0 5 15/32	—
Do. Cuba	do.	0 0 8 3/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Waincoat, Riga (Bauk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 3 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRYN (Wales).—For the execution of sewerage works for the Margam Urban District Council. Mr. J. Cox, surveyor, Port Talbot:—
Barnes, Chaplin, ... £1,786 0 0
Thomas Jenkins, ... 1,710 0 0
Thomas Taylor, ... 1,599 6 7
John Davis, ... £1,420 0 0
Mark Thompson, ... 1,410 7 0
*Accepted.

CHELMSFORD.—For alterations and additions to the London and County Bank. Mr. Pertwee and Mr. Frank Whitmore, joint architects:—
Brown and Son, ... £25,966
H. Porter, ... 5,890
Keridge and Shaw, ... 5,170
Coulson and Loftis, ... 5,195
Silas Parmenter, ... 5,087
F. Johnson (too late), ... £4,896
Moss and Co., ... 4,750
Choate and Son, ... 4,689
E. West, Chelmsford, ... 4,561
*Accepted.

DARTFORD (Kent).—For the erection of the Joyce Green Hospital (first section), for the Metropolitan Asylums Board. Messrs. A. and C. Harston, architects, 15, Leadenhall-street. Quantities by Mr. W. T. Farthing:—
Martin Wells, ... £229,580
Spencer, Santo and Co., Ltd., ... 234,250
McCormick & Sons, ... 228,822
Charles Wall, ... £228,350
Patman and Fotheringham, ... 227,500
Leslie & Co., Ltd., ... 222,459
*Accepted.

LONDON.—For clearing away the existing block of offices in centre of playground, erecting new offices for boys, girls, and infants against the boundary wall, in order that if halls are at any time provided they may not be in the way; refitting lavatories and providing new drainage at Ruby-street Schools, for the London School Board. Mr. T. J. Bailey, architect:—
J. W. Baker & Sons, ... £2,474
Lathey Bros., ... 2,469
W. Akers and Co., ... 2,325
W. Downs, ... 2,304
J. and C. Bowyer, ... 2,234
F. Bull, ... £2,050
Martin, Wells, & Co., ... London and Aldershot, ... 1,724
*Accepted.

LONDON.—For enlargement of Upton House, for the London School Board. Mr. T. J. Bailey, architect:—
Leslie and Co., Ltd., ... £7,593 0 0
Williams and Son, ... 7,409 0
Miskin and Sons, ... 7,300 0
Lawrence and Sons, ... 7,253 0
Snewin Bros., and Co., ... 7,191 0
Staines and Son, ... 7,048 0
W. Shummur, ... £7,486 0
T. L. Green, ... 7,081 0
Well and Co., ... 6,992 0
Willmott and Sons, ... 6,926 0
Chessum and Sons, ... 6,735 0
C. Cox (accepted), ... 6,690 0

LONDON.—For erecting swimming bath, including offices, laundry, &c., at Lyham-road School, for the London School Board. Mr. T. J. Bailey, architect:—
W. Downs, ... £7,490
E. P. Bull and Co., ... 7,399
J. Appleby, ... 7,156
J. Garrett and Son, ... 7,148
H. Wall and Co., ... 7,011
W. H. Lorden and Son, ... 6,938
W. J. Mitchell and Sons, ... 6,970
F. and H. F. Higgs, ... £6,504
Holliday and Green-wood, ... 6,890
Edwards and Medway, ... 6,741
J. and C. Bowyer, ... 6,650
A. White and Co., ... 6,543
Unsign, ... 6,530
E. Triggs, ... 6,338
*Accepted.

LONDON.—For the erection of manual training centre for twenty boys, with power of extension to forty, add art-room over, at Dulwich Hamlet School, for the London School Board. Mr. T. J. Bailey, architect:—
F. and H. F. Higgs, ... £2,328 0 0
W. Downs, ... 2,259 0 0
Thomas & Edge, ... 2,211 0 0
Holliday and Greenwood, ... 2,128 16 1
Rice and Son, ... 2,124 0 0
Smith and Sons, Ltd., ... 2,116 0 0
Garrett and Son, ... £2,096 0 0
Akers and Co., ... 2,083 0 0
A. J. Acworth, ... 2,066 0 0
Bull and Co., ... 2,066 0 0
H. Leney, ... 2,063 0 0
J. & C. Bowyer, ... 1,986 0 0
E. Triggs, ... 1,980 0 0
*Accepted.

LONDON.—For the execution of drainage and other works at infirmary, Lower-road, Rotherhithe, for the St. Olave's Union Guardians. Messrs. Newman and Newman, architects, 31, Tooley-street, S.E.:—
Pritchard & Renwick, ... £2,759
Beattie and Co., ... 2,725
W. Reason, ... 2,695
Finch and Co., ... 2,667
Barlow and Roberts, ... 2,250
Gibb and Co., ... £2,211
Wells and Son, ... 2,196
Balam Bros., Old Kent-road, ... 2,188
*Accepted.

LEICESTER.—For erecting Pike-street warehouse, Leicester. Mr. C. Kempson, architect. Quantities by the architect:—
F. Elliott, ... £2,314
W. M. Sharp, ... 2,308
Mason and Sons, ... 2,268
W. Haddon, ... 2,265
T. R. Tebbatt, ... £2,183
W. J. W. Jones, ... 2,159
A. Carr, ... 2,143
Carr Bros., ... 2,142
*Accepted.

LINCOLN.—For the erection of buildings at the Gasworks, Bridge-bridge, for the Corporation. Mr. R. A. M. Brair, Surveyor, Corporation Offices, Lincoln. Quantities by surveyor:—
Halkes Bros., ... £4,380
H. S. and W. Close, ... £4,247
W. M. Halkes, ... £4,150
J. M. Harrison, ... 3,915
*Accepted.

LYMINGTON (Hants).—For the execution of paving works, for the Corporation. Mr. J. Pym-Jones, borough engineer, Town-hall, Lymington. Quantities by borough engineer and surveyor:—
T. Rashley, ... £2,775 0 0
H. Preston, ... 2,692 10 0
The Patent Victoria Stone Company, ... 2,394 11 4
Free and Sons, ... £2,383 0 0
A. T. Catley, ... 2,236 0 0
Grounds and Newton, ... 2,198 17 4
*Accepted.

LONDONDERRY.—For the erection and completion of two dwelling-houses, Brandywell-road, for Mr. George Kiley. Mr. James P. McGrath, architect, 28, Carlisle-road, Londonderry:—
Joseph Shannon, ... £460 0
S. M. Laughlin & Co., ... 420 0
Dan Gillespie, ... 370 0
Shannon and Routledge, London, ... £247 10
*Accepted.

LONDONDERRY.—For alterations and improvements to licensed premises, Lecky-road, for Mr. Neal Craig. Mr. James P. McGrath, architect, 28, Carlisle-road, Londonderry:—
Shannon and Routledge, ... £320 10
B. Ferris, ... 324 10
Daniel Gillespie, Londonderry, ... £260
*Accepted.

LONDONDERRY.—Accepted for alterations and improvements to licensed premises, Great James-street, for Mr. Hugh Barr, per amended plans. Mr. James P. McGrath, architect, 28, Carlisle-road, Londonderry:—
Dan Gillespie, Londonderry, ... £265

MIDDLESBROUGH.—For the erection of Ayresome Schools for the Middlesbrough School Board, providing accommodation for 1,270 children and for the caretaker's house. Mr. J. Mitchell Bottomley, architect, 23, Albert-road, Middlesbrough and Leeds:—
G. Leeder and Waking, ... £15,936 3 1
Son, ... £18,253 1 1
S. Coates, ... 16,918 8 1
J. Johnson, ... 16,264 0 0
W. Pounson, ... 15,721 15 4
G. Scales, ... 15,96 0 0
Allison Bros., ... 14,724 0 0

COMING EVENTS.

Wednesday, April 11.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m. Members' Sessional Meeting at 7 p.m.

EDINBURGH ARCHITECTURAL SOCIETY.—Presidential Address by Mr. R. S. Lorimer, A.R.I.B.A., and award of prizes.

BIRMINGHAM AND DISTRICT CLERK OF WORKS' AND BUILDERS' FOREMAN'S ASSOCIATION.—Mr. F. B. Andrews, A.R.I.B.A., on "Venice, and Some of her Buildings." 8 p.m.

Friday, April 13.

GLASGOW AND WEST OF SCOTLAND TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. Thomas S. Fraser on "Some Principles of Practical Design." 8 p.m.

Saturday, April 14.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—Council Meeting at 1.30 p.m. General Meeting at 2 p.m.

OPENING OF PARIS EXHIBITION.

Thursday, April 19.

NATIONAL ASSOCIATION OF MANUAL TRAINING TEACHERS.—Conference at the Society of Arts.

Friday, April 20.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XIV.

Saturday, April 21.

DUNDEE INSTITUTE OF ARCHITECTURE, &c.—Visit to Messrs. Justice and Sons' Works, and to Kingoodie House. 1.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Dysart House, Ravenscraig Castle, and St. Serf's Tower.

CONTRACTS OPEN.

CITY of WINCHESTER.

TO BUILDERS.

The Corporation of the City of Winchester invite TENDERS for the ERECTION of PUBLIC BATHS, consisting of Swimming Bath, Slipper Baths, and Turkish Baths, on land facing North Walls, and Lower Brook-street, Winchester.

The drawings, specification, and conditions of contract can be inspected on and after APRIL 17th, between the hours of TEN a.m. and FOUR p.m. (Saturdays until One p.m.), on application either to the Town Clerk, at the Guildhall, Winchester, or to the Architects Messrs. LANSDALL and HARRISON, 33, Bow-lane, Cheapside, E.C., from either of whom bills of quantities and forms of Tender can be obtained, upon depositing the sum of £5, which will be returned to the depositor upon receipt of a bona-fide Tender.

Tenders (upon the printed form) must be signed, enclosed in a sealed envelope, and endorsed "Tender for Public Baths," and addressed to the undersigned and delivered at the Guildhall, Winchester, not later than TWELVE o'clock noon, on FRIDAY, APRIL 27th. The builder whose Tender is accepted will be required to enter into a bond with two sufficient sureties for the due performance of the contract.

The Corporation do not bind themselves to accept the lowest or any Tender.

WALTER BAILEY.

Town Clerk.

Guildhall, Winchester.
April, 1900.

WHITECHAPEL DISTRICT BOARD of WORKS.

TO BUILDERS, ENGINEERS, CONTRACTORS, AND OTHERS.

The Board of Works for the District of Whitechapel are desirous of receiving TENDERS for the CONSTRUCTION of an ELECTRICITY SUPPLY STATION at Osborn-street, Whitechapel, E.

Drawings may be seen on application to M. W.

JAMESON, Esq., Engineer and Surveyor to the Board, and a copy of the stipulations, specification, conditions, schedule form, bill of quantities, and Tender form may be obtained on payment of a Five Pound Bank of England note, which will be returned after the receipt of a bona-fide Tender and a fully-priced and monied-out bill of quantities and schedule, and the return of the remainder of the documents issued.

Tenders must be enclosed and sealed in envelopes supplied (which are endorsed "Electricity Supply Station"), and must be delivered at the undermentioned address not later than THREE p.m. on TUESDAY, APRIL 24th, 1900.

The Board do not bind themselves to accept the lowest or any Tender.

(Signed) ALFRED TURNER,
Offices of the Board, Clerk to the Board.
No. 15, Great Alie-street,
Whitechapel, E.,
April, 1900.

NORWOOD (MIDDLESEX) SCHOOL BOARD.

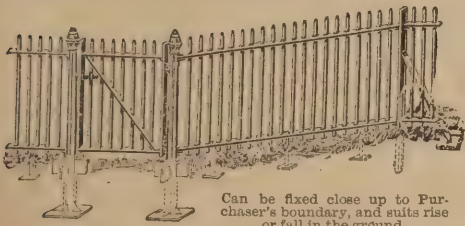
The Board are about to BUILD a SCHOOL for 800 Children in the Featherstone-road, Southall, Middlesex and to ENLARGE the present BOYS' SCHOOL in the said Featherstone-road.

Contractors wishing to submit Tenders for same are requested to send their applications to the Board's Architect, Mr. G. E. T. LAWRENCE, A.R.I.B.A., 22, Buckingham-street, Adelphi, W.C., on or before APRIL 21st instant, accompanied by a deposit of One Guinea for each School for which they intend to Tender. The deposit will be returned on receipt of a bona-fide Tender.

The Board do not bind themselves to accept the lowest or any Tender, and may accept any one of two Tenders.

The acceptance of a Tender will be subject to the approval of the Education Department.

A. LAWRENCE HOULDER,
School Board Office, Clerk to the Board.
Southall, Middlesex.
April, 1900.



Can be fixed close up to Purchaser's boundary, and suits rise or fall in the ground.

BAYLISS JONES & BAYLISS'

NEW PATENT
SELF-ADJUSTING ROUND-BAR
RAILING (No. 2740),

Is, we believe, the cheapest in the market.

ILLUSTRATED CATALOGUE OF ALL KINDS OF RAILINGS, FENCING, GATES, &c., FREE.
VICTORIA WORKS, WOLVERHAMPTON.

LONDON OFFICE AND SHOW ROOMS:—135 & 141, CANNON STREET, E.C.

ROOFING SLATES:

Velinhell, Penrhyn, and Westmoreland.

SLATE SLAB GOODS:

Both Plain and Enamelled.

ALFRED CARTER & CO., LIVERPOOL.

PERFECTION

IN

Spring Hinges

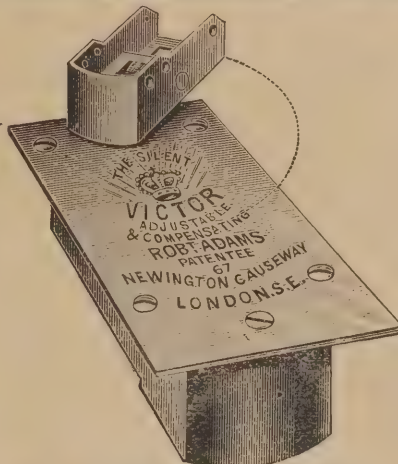
The "VICTOR" Double Action Spring Hinges open wider than any other—viz., 135° each way, i.e., 45° beyond right angles—and close with a perfect check action.

ROBERT ADAMS,

PATENTEE,

65 & 67, Newington Causeway, LONDON, S.E.

Telegrams: "ROBERT ADAMS, LONDON."



The "Crown Victor" showing opening capacity.

PERFECTION

IN

Spring Hinges

The "VICTOR" Single Action Spring Hinges open wider than any other—opening and closing from the angle of 180°, i.e., the half circle, with a perfect check action.

ROBERT ADAMS,

PATENTEE,

65 & 67, Newington Causeway, LONDON, S.E.

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VERY EXTENSIVE AND WELL-ARRANGED SHOWROOMS.

FIREPLACES,
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BATHS & LAVATORIES,
KITCHEN RANGES,
GATES & RAILING,
BALUSTERS,



FOUNTAINS & STATUES,
BALCONIES,
VERANDAHS,
PORCHES,
BROSELEY
"LIGHTMOOR"
ROOFING TILES.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
April 13	Haddo Ho. Estates, Aberdeen—Additions to Steadings	Corporation ..	C. G. Smith, Factor, Haddo House, Aberdeen.
" 13	Manchester—Extension, &c., of Carcass Market, &c....		City Surveyor, Town Hall, Manchester.
" 13	Neath—Congregational Chapel		W. Williams, 63, Wind-street, Swansea.
" 13	Dewsbury—Stables	Pioneers' Industrial Society Limited ..	Holtom and Fox, Corporation-street, Dewsbury.
" 14	Dartford—Premises	Co-operative Society, Ltd.	Co-operative Society, 13, Spital-street, Dartford.
" 14	Stafford—Cottages		W. Blackshaw, Borough Hall, Stafford.
" 14	Castletar, Ireland—Roman Catholic Chapel	District Lunatic Asylum Managers	J. T. Kelly, Clerk of Asylum, Castletar.
" 14	Shotley Bridge—Alterations, &c., to Public-house		D. M. Spence, Architect, Ashmount, Shotley Bridge.
" 17	Atersychan—Stables and Warehouse	Co-operative Society, Ltd.	J. Maggs, Secretary, Abersychan.
" 17	Llandudno—Theatre	Grand Theatre Co., Ltd.	G. A. Humphreys, Architect, Llandudno.
" 17	Mooncoin, co. Kilkenny—National Schools		Rev. P. Phelan, F.P., Mooncoin, co. Kilkenny.
" 17	Cork—Additions		Postmaster, Post Office, Cork.
" 18	Enfield—Stable	Urban District Council	R. Collins, Surveyor, Council Offices, Enfield.
" 18	Salford, Manchester—Sorting Office	H.M. Office of Works	Secretary, Office of Works, Storey's-gate, S.W.
" 18	Brighton—Additions	H.M. Office of Works	The Secretary, Office of Works, Storey's Gate, S.W.
" 18	Rotherham—Additions, &c., to Branch Stores	Masborough Equitable Pioneers' Soc.	Swallownest Stores, Rotherham.
" 18	Lytham, Lancs.—Court-room, Cells, dwelling-house, &c.	County Council	H. Littler, Architect, County Offices, Preston.
" 18	Lightcliffe, Yorks.—Vicarage		Walsh & Nicholas, Lancs. and Yorks. Bank-chmbrs., Halifax.
" 18	Ellon, Aberdeen—Hall		Jenkins and Marr, 16, Bridge-street, Aberdeen.
" 19	Burry Port, Wales—Altering, &c., Chapel		Caretaker, Tabernacle Chapel, Burry Port.
" 19	Coalbrookdale, Shropshire—Parish Hall		H. Hughes, Coalbrookdale.
" 19	Swaffham, Norfolk—Laundry	Guardians	A. Clarke, 126, London-road, Lowestoft.
" 20	Boston, Lincs.—Alterations to Offices, &c.	Harbour and Docks Commissioners	Engineer, Market-place, Boston.
" 20	East Finchley, N.—Sorting Office	Commissioners of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's-gate, S.W.
" 21	Norwood, Middlesex—School, &c.	School Board	G. E. T. Lawrence, 22, Buckingham-street, Adelphi, W.C.
" 24	London, E.—Electricity Supply Station	Whitechapel District Board of Works	N. W. Jameson, 15, Great Alie-street, Whitechapel, E.
" 25	Plumstead—Nurses' Home	Woolwich Union Guardians	C. W. Brooks, 63, Finsbury-pavement, E.C.
" 26	Croydon—Small Pox Hospital, &c.	Joint Small Pox Hospital Board	Chart, Son and Reading, Union Bank-chambers, Croydon.
" 27	Winchester—Public Baths	Corporation	Lansell and Harrison, 33, Bow-lane, Cheapside, E.C.
" 28	Dedham, near Colchester—Rebuilding Bridge	Essex and East Suffolk County Cncls.	Widnell & Trollope, Broad Sanctuary-chmbrs., Westminster.
ENGINEERING—			
April 13	Glasgow—Railways	Caledonian Railway Co.	Company's Engineer, Buchanan-street Station, Glasgow.
" 14	Coleraine, Ireland—Reservoir	Urban District Council	W. J. Given, Town Surveyor, Coleraine.
" 15	Corunna—Electrical Machinery	Electric Co-operative Society	Señor Dr. M. Baifa, Calle de Zafateria, No. 5, Corunna.
" 17	Bury, Lancs.—Floors	Sewage Committee	A. W. Bradley, Engineer, Corporation Offices, Bury.
" 17	Chewton, Lymington—Concrete and Brick Bridge	Lymington Rural District Council	J. D. Rawlins, 33, High-street, Lymington.
" 17	Huddersfield—Pipe Laying, &c.	Corporation	T. and C. Hawksley, 30, Great George-street, Westminster.
" 19	Glasgow—Two Steam Road Rollers and Scarifiers	Corporation	J. Lindsay, Interim Clerk, City-chambers, Glasgow.
" 19	North Berwick—Filters, Pure Water Tank, &c.	Burgh Commissioners	J. and A. Leslie and Reid, 72a, George-street, Edinburgh.
" 20	Portknockie, Scotland—Breakwater and Quays	Harbour Trust	D. and C. Stevenson, 84, George-street, Edinburgh.
" 21	Dartmouth—Floating Bridge Chains, &c.		J. M. Andrew, 10, Princess-square, Plymouth.
" 21	New Mills—Telescoping Gasholder, &c.	Gas Committee	E. Jones, Gas Engineer, Town Hall, New Mills.
" 21	Birmingham—Cold-water Tank	Baths and Parks Committee	J. Cox, Engineer, Kent-street, Birmingham.
" 21	Birmingham—Engine and Pumping Machinery	Baths and Parks Committee	J. Cox, Engineer, Kent-street, Birmingham.
" 23	Pollington, near Snaith, Yorks.—Well, &c.	Goole Urban District Council	J. C. Melliss, 264, Gresham House, Old Broad-street, E.C.
" 23	Romford—Laundry Machinery, &c.	Union Guardians	W. Smith, Clerk to Guardians, Romford.
" 23	Ilford—Gasholder	Gas Company	J. H. Brown, Engineer, Gas Works, Ilford.
" 23	Finedon, Northampton—Well	Urban District Council	Mosley and Scrivener, Engineers, Fish-st., Northampton.
" 16	Mariupol—Electric Railway and Electric Light	Municipality	Commercial Department, Foreign Office, S.W.

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April 13	IRON AND STEEL-- Dundee--Cast-iron Pipes	Water Commissioners	G. S. Baxter, 93, Commercial-street, Dundee.
" 14	Coleraine, Ireland--Pipes	Urban District Council	W. J. Given, Town Hall, Coleraine.
" 16	Shipston-on-Stour--Cast-iron Pipes, &c.	Rural District Council	J. E. Wilcox, Union-chambers, Temple-row, Birmingham.
" 17	Hindley, Lancs.--Gas Pipes, &c.	Urban District Council	W. Dickinson, Gas Manager, Council Offices, Hindley.
April 14	PAINTING AND PLUMBING-- Huntingdon--Painting County Hospital	County Hospital	A. G. Dilley, Assistant Secretary, Market-hill, Huntingdon.
" 21	Banbury--Painting Posts and Railings	Town Council	N. H. Dawson, Borough Surveyor, Town Hall, Banbury.
April 13	ROADS AND CARTAGE-- East Ilsley, Wantage, Berks.--Stones	Wantage Rural District Council	District Surveyor, East Ilsley.
" 14	Wolverhampton--Setts	Tramways Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 16	Midsomer Norton, Somerset--Materials	Urban District Council	Surveyor, Market Hall, Midsomer Norton.
" 16	Stafford--Road Metal, &c.	County Council	J. Moncur, Surveyor, County Council Buildings, Stafford.
" 17	Bury, Lancs.--Street Works	Corporation	A. W. Bradley, Borough Surveyor, Corporation Offices, Bury.
" 17	Ince, near Wigan--Setts	Urban District Council	A. T. Swain, Surveyor, Council Offices, Ince Green-lane.
" 17	Maindee, Newport, Mon.--Roads, &c.	Estate Co. Limited	A. T. Roberts, Hill and Co., 23, St. Mary-street, Cardiff.
" 17	Mansfield--Street Works	Corporation	R. F. Vallance, White Hart-chambers, Mansfield.
" 18	Rochester--Materials	Corporation	W. Banks, City Surveyor, Rochester.
" 18	Abersychan--Street Improvements	Urban District Council	E. Cooke, Council Offices, Abersychan.
" 19	Walthamstow--Concrete Flags and Stone Coping	Urban District Council	E. Morley, Surveyor, Town Hall, Walthamstow.
" 20	Worcester--Improvements	County Council	The Surveyor, Rural District Council Offices, Tenbury.
" 21	Warminster, Wilts.--Pavement	Urban District Council	A. F. Long, Surveyor, Council Offices, Warminster.
April 17	SANITARY-- Hertford--Sewers	Urban Sanitary Authority	U. Smith, 41, Parliament-street, S.W.
" 17	Portland--Sewers, &c.	Urban District Council	E. J. Elford, Engineer, New-road, Portland.
" 18	Bicton Heath, near Shrewsbury--Sewer at Asylum .....	.....	Surveyor, Shire Hall, Shrewsbury.
" 18	Croydon--Extensions of Sewers	Rural District Council	Chart, Son, and Reading, Union Bank-chambers, Croydon.
" 19	Sutton Coldfield--Drain	Corporation	W. A. H. Clarry, Surveyor, Town Hall, Sutton Coldfield.
" 19	Chadley--Sewerage Works	Rural District Council	Towell and Co., Lewes.
" 21	Guildersome--Sewers	Urban District Council	J. Waugh, Engineer, Sun bridge-chambers, Braiford.
" 21	Huddersfield--Outfall Sewer	Joint Sewerage Board	Abbey and Hanson, Civil Engineers, Huddersfield.
" 23	Plymouth--Sewerage Works	Corporation	Town Clerk, Municipal-buildings, Plymouth.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
April 17	Whitchurch, near Cardiff--Asylum .....	.....	J. L. Wheatley, Town Clerk, Town Hall, Cardiff.
" 20	Buckie, Scotland--Bridge .....	.....	J. A. Budge, Burgh Surveyor, Buckie, Scotland.
" 20	Pontefract--Adapting .....	.....	The Clerk, Union Offices, Pontefract.
" 28	Leicester--Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight--Buildings	£50, £50	W. H. Woodbridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne--Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
June 1	Bury, Lancs.--Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 30	Riviera--Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

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H.M. Office of Works, &c.,
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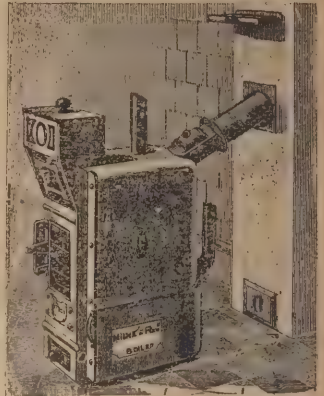
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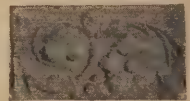
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APRIL 18, 1900.
No. CCLXXI.

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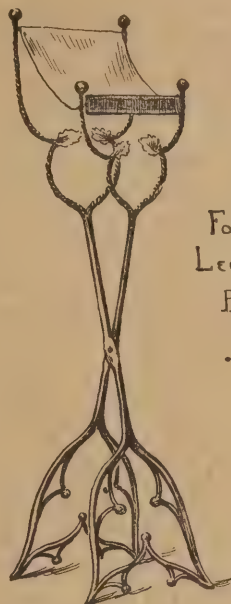
An Architectural Causerie.

Harmonies of Nature.

BENDING ridge-pole and curving roof-tree, with the bellying body of the old tiled roof in between, propped lazily at each end by the twisted half-timber gables! These everyday country sights, so thoroughly English, exemplify effectively Nature's successful protest against the rigidly square and harsh straight lines of constructive modernity. They prove the power of Nature—her superiority over our human geometric laws, over the inherent tendency to compass design by the aid of square and rule alone; and the thought instinctively arises, if we would only take her into partnership what could not be accomplished! On each side of the main mother-roof lean what I will call the offspring, acting almost the part of transcepts to the central line of building. Their green-stained and black-timbered gables stoop backwards towards it; the curving ridge-poles, covered with old silver-grey lead, bending inwards together, and forming a graceful conjunction with the main sweep of the roof. At the far end a low abutment of an irregular hexagonal form, as if rough-hewn out of the solid, makes—to pursue the parallel—a low apsidal finish to the building. There are four chimney clusters breaking the long undulation of the ridges with an inevitable certainty of charm. They do not demand imperiously the attention, as is unhappily the way of modern stacks; there is no self-assertiveness about them, as they slip up quietly into the sky-line and the view. They seem to efface themselves rather than like those new creations, which cut out squarely their legitimate block of sky. These old square stacks, which even smoke, vomit smoke and make a smother gracefully, let the blue background of heaven slip by their crumbling joints, round the red notched edges of the bricks and through the crevices, from where the mortar has departed at the earnest solicitations of the wind and rain, and the numerous years. Their crowns of pots, if there were ever any, have long since departed, and now the stout splay of cement springing from the outer edge of the circling corbelling, is scaling and crumbling in its turn: stained, shaped and coaxed by the weather into a more felicitous curve than was its original. The gables are possessed of long low windows, much like the old weaver windows of Spitalfields, filled with leaded panes bulging with age and so warped that the light catches each diamond differently. Some of the glass has been made good with that of a thick bottle-green quality,

full of faults and shakes such as would drive even a philosophic glazier to desperation. A stone labelling runs squarely round these windows, literally weathered to a perfect moulding by the weather alone, only with this advantage, that with each foot the mould varies—an infinite variation, perhaps, but still there is a difference. I will not attempt the porch, it is inexplicable. How was it possible for such a porch to be beautiful, made up as it is of two leaning walls, some 10ft. apart, of grey-blue stone interspersed with bright red-brick and strung

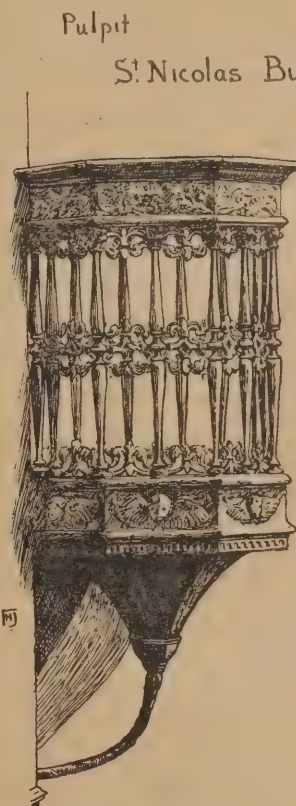
lichen lingering on the walls, the moss and tiny grass blades delving from between the tile-joints, and the weather-stained aspect, as if the elements had decided to accomplish a piece of enamelling and colour decoration on their own account. The buttresses here and there propping the wall face are more decorative, offering as they do a greater opportunity to the weather artist. Weasels sometimes use them as staircases to the eaves when in search of the rats lurking under the big rambling roof. Starlings and house sparrows are everywhere about it



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Pulpit
St. Nicolas Burgos

SOME SPANISH IRONWORK. DRAWN BY F. HAMILTON JACKSON, R.E.A.

together overhead with a rough arching of black timbers on which recline—I use the word meaningfully—the strangest collection of dull red tiles ever seen together. Yet the fact is unchallengeable and the swallows recognise it, for under the eaves, almost within reach of the rosy-cheeked maid who places her butter pans to dry there, are the nests—three or four in number—occupied year after year, and patched, like the old house, most diligently.

Over the whole building the hand of Nature is visibly laid. It is apparent in the

while the house martins have a colony in the eaves. A small company of wrens love the extreme edge of the south gable ridge, and sit staring into the east at sunrise with the starlings circling above them, their dark bronzed plumage showing strange hidden gleams of green in the reviving light. The heavy tiles were originally bedded upon hay, and the wagtails, swifts, and swallows have, after many a summer's diligence, drawn it out in places piece by piece; and then a few of the tiles have loosened, and with the first big wind come scattering down in

shattered ruins under the eaves. Hence a patch of pure vermilion against the dull red area of roof. The moss upon the old tiles, brilliantly green and fresh, the vermilion of the new work, and the old deep tone of the roof, make such a scheme of harmony which it would not be easy for a rival to challenge. Yet it was declared with positive emphasis, previous to Rossetti's great picture, in which vermilion and green had the predominance, that these two colours could never harmonize, which they had been doing ever since English tilers patched English roofs and Nature had her say in the matter.

From behind the building great fleecy masses of golden-red cloud float dreamingly upward, with the red winter sunlight full upon them. They slip along the ridge for a little, and then drifting high into the open azure sea of the heavens pass over the distant elms and black poplars until they finally fade into the hazy Indigo shades beyond. A green shoulder of the upland, projecting round the building, throws into strong relief the hexagonal apse-like finish I have noticed. Its windows are flung wide to the hurrying impetuous freshness of the wind, and within the glistening pans, almost level with cream, can be distinctly seen. A distorted cluster of pines frame the opposite side, bent all one way and stooping in a protective manner over the farthest main gable. Brown twisted tendrils of creeper push upward to meet the pine tresses clearly outlined against the brilliant atmosphere. They are wrinkled and bare, and look really dead contrasted with the brightness all around; yet their splendour of spring is soon to be repeated, and their autumnal glory will assuredly follow. The strangeness and haunting beauty is—in this, that the old comfortable farmhouse is in everything a vital part of, and not an accessory to, the scene. It is at one with the shadowy purple of the trees in the distant landscape, with the sailing fleet of clouds overhead, with the pines, and the elms, and the uplands behind. It is one with the starlings and wrens, the swallows, swifts and the flock of greedy sparrows, the hunting weasel and the hunted rats; they all aid and abet one another to make the charm and assure the beauty. Nature has entered into partnership with man, and the result is unparalleled and past description. At the most it could be drawn imperfectly, but its colour is too illusive and of a far too evanescent quality to be seized by any artist. How could he harmonize that sunburnt tile colour, the patches of vivid vermilion, the moist flashing green of the moss and upland, and the dull yellow of the lichen, the cold blue winter heaven and its golden suite of cloud, with the endless, endless surrounding colours beside. As Thackeray said, by the mouth of one of his characters, you can compel a line to come right, but colour will as it will; you cannot compel the surrounding air; and that is the peculiar quality of Nature, her medium unmatchable by even Tintoretto.

F. B.

On Reflection.

An Architectural Prospect.

THE scheme for inviting a select number of architects to submit designs for the new buildings to be erected facing the Strand, and on the crescent road to be formed between Wellington Street and Clement's Inn, in connection with the great new street, furnished the members of the London County Council with fine matter for discussion last week. The Improvements Committee proposed, and their proposal has now received the Council's sanction, that eight architects should be invited to submit designs, and that they should each receive £250 for their trouble. This at once led Mr. Walter Emden, who is the president of the Society of Architects, to express his opinion in favour of an open competition instead of a limited one, and he suggested that the plans should be put before a consultative committee consisting of the president of the Royal Institute of British Architects, an architect to be appointed by the Council, and the Council's superintending architect, now Mr. Riley. This matter of an open or a closed competition received the Improvements Committee's special consideration, and we think that the decision they came to was the right one, for while an open competition with large premiums may appear to be more catholic, and will give a larger number of drawings from which to make a selection, it is fairly certain that very few, if any, of the leading professional men would enter if one were proposed for the new street, which would most probably result in the best work being excluded. It must be remembered that the recommendation of the committee refers only to the crescent and Strand frontages of the new street, and not to the straight portion leading to Holborn, as these frontages being opposite Somerset House and King's College require special treatment in order that an architectural harmony may be secured. The Council's decision to adopt their committee's idea marks a great change in the metropolitan conscience, for never before have the architectural features of a new London street received similar consideration; Charing Cross Road and Shaftesbury Avenue are dreadful examples of this lack of perception on the part of the authorities. The Council's predecessor, the Metropolitan Board of Works, it is true, submitted the designs of the buildings forming Northumberland Avenue to the Council of the Royal Institute; but this is not comparable to the present case. After the discussion on the main question had been finished with, the question of what materials were to be used for the new buildings caused more dispute. The committee recommended that only stone, marble or granite should be used. Mr. Emden wanted "terra-cotta or any other suitable material" to be added, but this was not agreed to, though eventually the word "brick" was added. The examples in London of the use of terra-cotta are too painful to wish that terra-cotta should be put in contrast with the stone of Somerset House, and we hope that granite will be used most sparingly, if at all.

Are we Artistic?

Is it true that if you only go down deep enough you will find in almost everybody an artistic faculty? Sir William Richmond thinks it is true, but it is to be feared that one would need to go down a very long, long way with many persons—so far down, in fact, that you could never bring your discovery to the surface. To begin with, it is perplexing to define what the artistic faculty really is. If we accept Sir William's definition of an artist as one gifted with keen perception

for all that is beautiful in nature, and not only in nature, but all that is beautiful in thought, we do not think that the artistic faculty is so widespread as he tells us; and it must be admitted that his definition is a good one. In the address he delivered last week on the occasion of the opening of the free picture exhibition at West Ham, a report of which will be found in another column, he says that when he decided not to employ foreign labour in the copying of his designs in mosaic for St. Paul's Cathedral he was laughed at, and was told that he would have to go to Italy for his workmen, there being a firm in Venice which was established in the sixteenth century. But Sir William Richmond put his critics aside and took, haphazard, five or six men "who had never drawn a line in their lives, had been to no drawing classes in Board schools, but had simply received an ordinary education in reading and writing, and they did not show the slightest artistic faculty." These men were taught by Sir William and it is they who have laid the mosaics in the great metropolitan cathedral. But if they have proved so artistic as has been inferred, it is equally reasonable to suppose that they possessed a considerable artistic faculty to begin with. Again it may be asked, does the laying of mosaics require this? We rather think not; it is more a mechanical process, requiring considerable skill and deftness on the part of the workman. Sir William's claim that the fact of these men having done such work was a proof of our artistic merits as a nation needs more support. Sir William was also very enthusiastic and hopeful about our technical schools and said that the conclusion he came to after a tour around the German schools two years ago was that in workmanship the Germans were, perhaps, ahead of us, but in design they were a long way behind. This is very comforting, especially as coming from one who holds so prominent a position in the art world of to-day. We certainly believe that there is a great deal of silly talk about the artistic qualities of the foreigner and our own prosy practicality, and it is a relief when a man like Sir William Richmond turns round the picture and tells us that we have been looking at the back all the time.

A Very Speculative Builder.

THE speculative builder of the ordinary row-of-villas type we all know, but when "a very speculative" one comes under notice it is worth while to consider his methods. One of this type was before the Hull Bankruptcy Court last week and his name is Mr. Arthur Gibson; he lives in De La Pall Avenue, a place where, from its title, one would expect all "very speculative" builders to live. If you go to an unscrupulous company promoter he will tell you that it is possible to start a syndicate having a capital that runs into five figures with a remarkably small amount of money—that is, real money. Other persons who set up in business for themselves find that they need considerable capital to do any good. Mr. Gibson says "No." According to him, £10 will set up any speculative builder, and, in fact, that is what his capital was when he began his building operations in 1896—and this £10 he borrowed from his wife! It is a pity that he gave the opinion in a Bankruptcy Court, for it was there shown that his liabilities were £2,528 8s. 4d. and his assets £384 15s. 5d., which is not inspiring. He said, with delightful irony, that he did not always make a profit on his business, and at the time when he bought his wife a piano-forte, a gold watch, and a sham gold bracelet he was earning £2 a week. It may be mentioned incidentally that he was then keeping two horses and a groom. How some people live is wonderful!



PORTION OF CHAPEL GRILLE, TARRAGONA CATHEDRAL.

SOME NOTES ON SPANISH IRONWORK.—II.

(Concluded from page 165, No. CCLXX.)

By F. HAMILTON JACKSON.

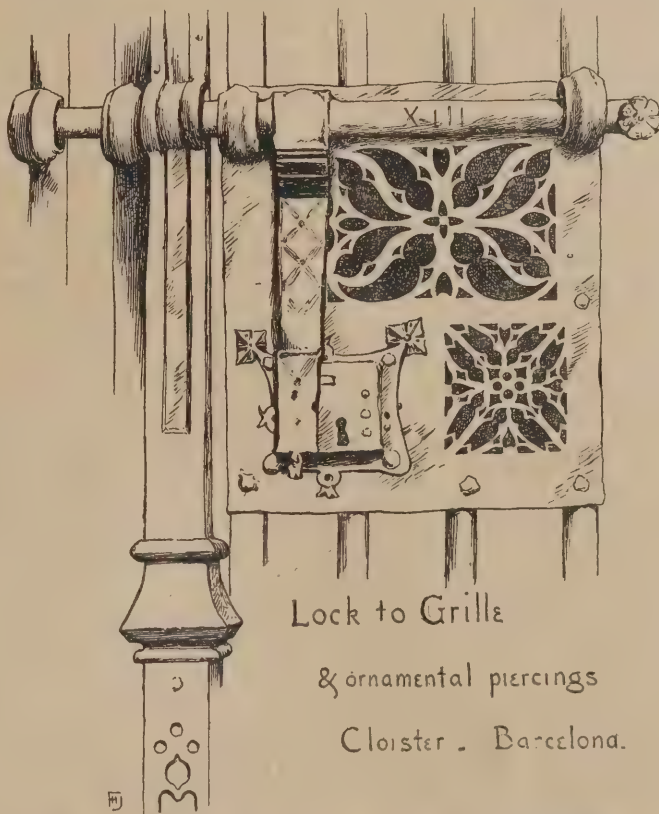
A PART from the work on doors and around windows and balconies, the outdoor ironwork of the north of Spain does not much strike the eye. The towers of churches are sometimes crowned with an ornamental iron staging which supports two or three bells, light and delicate in effect, though actually strong and massive, and outside some of the cathedrals there are railings a good deal ornamented, in the manner of the one drawn from Toledo (see Part I.). But one does not see the elaborate well-heads and the railings around fountains and wells which are so common in Germany, though in court-yards one finds every now and then such work as the well-head drawn from Segovia (shown on the next page). That drawn from the cloisters, Tarragona, is on the terrace above the ambulatory, from which the dwellings of the canons open, and is no longer in use. It probably replaced one of earlier date. But it is within the ecclesiastical buildings that the most noticeable pieces of ironwork are to be found. Among these are the pulpits which are to be seen in every parish church, and of which the cathedrals possess two, one on the gospel and one on the epistle side of the *capilla mayor*. They are generally gilt either wholly or in part and are of all grades of simplicity or ornateness. The one from Corpus Christi, Segovia (see page 181), is an example of the simplest form, and that from St. Nicolas, Burgos, is a slightly more elaborate treatment of the same motif, spindled balusters set in an upper and a lower rim; but many of them are made of a rigid iron framing with repoussé panels filled with arabesques, of which an example may be seen at Las Huelgas near Burgos, the pulpit from which St. Vincent Ferrer preached. To this there are no structural steps, entrance being obtained by means of movable ones. Another with pierced panels is figured by Street from S. Gil, Burgos, and in the cathedrals the workmanship becomes most elaborate, the relief being considerable and the designs (which embrace figure subjects) chased and chiselled so elaborately as to rank among works of sculpture rather than of ironwork. There are two in Avila Cathedral which have been often drawn; one elaborately pierced with tracery of Gothic character, the other of a later date equally elaborately repoussé with figure subjects. These later pulpits are very difficult to distinguish in the dim light of the cathedrals from those worked in bronze, which shows to what a high pitch the working of iron had been brought in Spain.

The lecterns are often very fine works of art; one at Toledo which is wrought in mixed metals and much gilded may be specially mentioned. It consists of an eagle standing upon a Gothic tower, the niches of which are filled with beautiful little figures. Three steps, defended by a railing, ascend to a little platform behind the eagle, and round the base,

and resting against the flying buttresses of the tower and the little lions which serve as feet, are great choral books, bound with heavy bosses and with corners of silver and brass, making a most picturesque pile in the dim light of the choir. Less imposing lecterns are sometimes to be seen inside chapels—such as the one drawn from Burgos, which folds for convenience of transport. Candelabra are numerous but are rarely made of iron. Most of them are plateresque in style, and here again the dim light makes it difficult to properly appreciate the beauty of workmanship and fanciful design which characterise them. A few of more ancient date are to be seen here and there, one of which is drawn from Tarragona, the bulk of which is very quaint and curious. The greater part of this is forged without being touched after it was cold as far as I could see, though the candle sockets and the lamp at the top appear to be later additions. It was in a rather dark chapel behind the choir, in which was a dead

Christ, fine in feeling and well carved, and bore several lighted votive candles. It is more usual to find the Virgin's shrine blazing with tapers and surrounded by worshippers, while that of the Christ is left solitary and dark.

Before entering on a description of the most elaborate works of the Spanish smiths, it may be as well to recall the difficulties which must always accompany working in iron, as well as those special difficulties which the mediæval smiths had to encounter, which made some of those tasks that are now quite easy among the most difficult which they had to accomplish. Without pretending to write full notes upon the manufacture of iron, two or three points of difference may be mentioned. The Catalan forge has been already referred to. This was a rectangular hearth in a permanent building without a chimney, but with a hole in the roof. The furnace was made up and renewed with alternate layers of sifted ore and fuel upon a layer of charcoal 18 in. deep, the blast being obtained by manual labour. Ten men were employed to each furnace, and after six hours of the blast the iron was found separated, and was manipulated until it coalesced into a lump at the bottom. It was then lifted by levers over the edge of the furnace and hammered, at first by hand but later by helve-hammers weighing from 1,200 lbs. to 1,500 lbs. or more. These were worked by a rough cog-wheel driven by water power in England, and were used to beat the rough "bloom" into bars on a slightly tapering anvil. The name "Hammer pond," so common in Surrey and Sussex, indicates the water power used in such a manufactory. As long as charcoal was used for smelting, malleable iron could be produced direct from the ore and in contact with the fuel; the mediæval and much of the Renaissance iron was so produced. Before the invention of rolling mills, grilles made of plain upright bars, whether of square or circular section, were the most difficult



things which a smith could have to make, the equality of thickness and regularity of shape having to be produced from the rough ingot solely by hammering. At the same time such grilles served the purpose of protection better than any other, being quite unsurmountable without ladders, and one frequently finds them either quite plain or ornamented with twistings at regular intervals like one of those in the cloisters at Burgos (see previous article). This twisting, by the bye, besides being a very decorative addition, adds greatly to the strength of the iron while absolutely increasing the appearance of lightness. It will easily be realised that while in a square bar the resistance at the centre of each side is only that of the diameter,

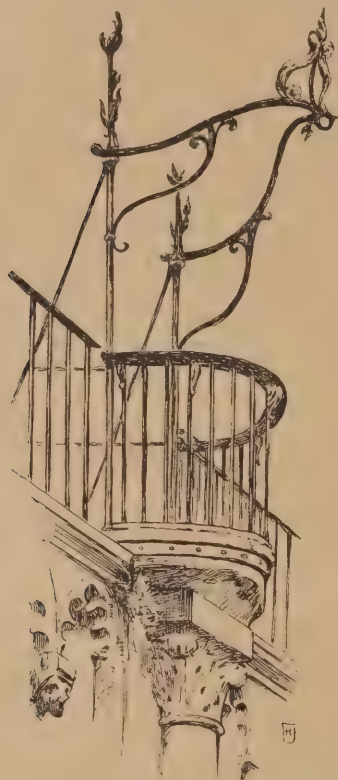
able richness of effect at small cost of labour. The secret of preparing dies of steel or chilled-iron was certainly known in England in the thirteenth century, and also in France, and it seems probable that the smiths who made the screens near Madrid, which show French influence so strongly, may have brought the knowledge into Spain, where the same mode of working iron was made use of at a later date in the production of the great *rejas*. The black-smith's art resembles that of the glass-blower in that there must be no hesitation or delay on the part of the worker. As the material cools it loses plasticity; the shaping must be done with rapidity and decision; the planning and thinking out which every

screens which Spain alone produced: "The ironwork became of so grand and impressive a character as to confound all our previous conceptions of the capabilities of the material. The limits that its stubborn nature and the technical difficulties of the craft seem to impose are disregarded, and in contemplating the colossal *rejas* or screens in the great Spanish cathedrals it is hard to realise that effects in iron must be got swiftly by the hammer and punch while the iron is hot, or tediously by the file, chisel, and drill while it is cold. Hitherto spindled balusters with mouldings had rarely been attempted in hammered iron, or merely produced in twos or threes, but in the screens and railings of the later plateresque we find them in ranks and rows, and, literally, in thousands. They actually appear commoner than plain rectangular bars, and, as if to excite greater astonishment, whole rows of them are embellished with foliage carved out of the solid. Human figures, so rarely attempted by the smith, except in minute size, are not merely introduced singly or in pairs, but in multitudes, and the master ironworkers have not hesitated to attempt even the portrayal of scenes and historical events. The character and execution of the figure work make it impossible to believe that those who produced it were only smiths, and we find, in fact, that the masters who signed their names to such magnificent productions are spoken of by contemporaries as sculptors and architects, and were in two or three instances in holy orders. They were, indeed, artists of the highest rank."

The cloisters of Barcelona Cathedral are surrounded by chapels on three sides, and these chapels are shut in by iron grilles. Barcelona possessed a guild of ironworkers as early as the thirteenth century, so that there was hereditary dexterity to count upon when, in the fifteenth century, the cathedral was completed. At that time numerous screens were made for the chapels inside, which bear a certain resemblance to each other, being for the most part finished with a cresting of spiky liliaceous leaves, which are characteristic of Spanish smithing of that date. Some of the screens in the cloisters have the same cresting, but those that I have drawn appear to me to be framed on a rather earlier tradition. They show a mode of work in which the Spaniards especially excelled—I mean the mingling of solid forged parts with others cut and pierced from thinner metal, sometimes also punched and repoussé, like the ornamental panels from the grille at Burgos already illustrated. The rosette and twisted border pattern surrounded the two doors of several grilles which were made of rounded bars, a noticeable peculiarity, for they are more commonly square, set angle-wise, at this period. The architectural-looking gate struck me as very good in every way, the forms being modified to suit the working of the material while still recalling and harmonising with the surrounding architecture.

There was considerable mingling of styles in Spain during the early Renaissance, and the latest Gothic was still used in ecclesiastical buildings after the Renaissance was generally adopted in domestic architecture. In Burgos Cathedral the change can be well studied—the *reja* of the chapel of S. Ana has a very Gothic appearance; the next chapel "of the Presentation" shows the Renaissance feeling strongly although the component parts are practically the same; that is, the construction remains the same while the decoration changes its style. A little further in the Capilla del Condestable the upper part of the *reja* is differently constructed.

The great *rejas*, such as those of Burgos and Toledo, were sometimes 30ft. or 40ft. high and their construction was as follows:—The spindles and framing bars were forged in the solid, the ornamental parts being apparently struck into dies and finished afterwards with chasing. Viollet-le-Duc maintains that some of the German work of a somewhat similar kind was made of repoussé leaves, attached to the solid spindle round their edges, which seems a difficult, if not impossible, manner of producing the effect; but the Spanish work appears to be solid. The square or rounded pilasters and the cornice work, which are always so beauti-



Well heads
Cloisters
Tarragona
& Segovia



Tarra
Gona



designer must bestow upon his work being completed before the execution commences, though in matters of detail suggestions may often be taken by a clever man from accident or incompleteness. The operation of welding again, upon which the stability of smith's work depends so much, requires great skill and dexterity. The welding point is the highest degree of heat which the iron will bear without burning or disintegrating, and in complicated forgings, such as the elaborate hinges of some of the French doors, the greatest management and foresight were required. The putting together of the smaller pieces so as to make larger groupings, and the arrangement of the joinings of the larger branches so that the weldings should not require the application of the greatest heat several times in the same place, demanded great skill and judgment, some portions of the work requiring to be made white hot while others were only cherry red. Add to this the difficulty of manipulating large and heavy forgings, and it will be seen that to become a successful smith demanded great qualities of head and hand, almost justifying Mr. Starkie Gardner's contention that the quality of the smith's work and the amount of its use may be taken as a measure of the virility of the nation. I quote a fine passage from his book on ironwork, which refers to the magnificent

and at the angles that of the diagonal, if the bar be twisted so that the angular diameter revolves the strength is increased by the difference between the length of the diameter and the diagonal, whilst the apparent thickness in a perspective view of the bar is diminished, as one no longer has a continuous view of two sides at the same time. The Renaissance *rejas* were developed from these upright barred grilles, the essential portions of construction being ornamented, sometimes, perhaps, in the later work a little over-ornamented.

The tools of the smithy proper consist only of hammer and anvil, forge and bellows, tongs, chisels, and punches or dies. The last are used either to strike on to the hot iron or to strike the iron into position, thereby gaining consider-

fully repoussé, are made with wooden cores, upon which the angle mouldings are nailed (such mouldings being equally made of thin metal), the thin repoussé plates of ornament, which are often in quite small pieces, being made to overlap the lower parts of these mouldings so cunningly that in the obscurity of the cathedrals it is most difficult to see how the effect is produced. The crestings, which are so splendid a feature, were also made of thin iron repoussé to a considerable curve, so that figures of angels appear fairly completely modelled, though made in two halves and put together over a core which of course is supported by an iron framing that passes up the centre. The candelabra and large pieces of scroll work are put together in the same way. The top of the screen from S. Juan dela Penitencia at Toledo is a modest work of this sort, which can therefore be more easily examined, though the actual grille bears a great resemblance to some of the balcony panels which have been illustrated. Sometimes in the earlier grilles long pieces of thin metal are pierced in a lace-like fashion and very slightly repoussé, and in this case they are riveted at intervals to supports which have a square hole in them, intended to slide over one of the main bars of the grille, being stopped either by a wedge or a projecting rivet; but in the Renaissance *rejas* the plates are all repoussé in the purest Italian taste and in the most perfect manner, the relief being sometimes very high, and always chiselled a great deal after becoming cold. In this place mention must be made of the staircase to the north door of Burgos cathedral, so finely wrought by Cristobal Andino about 1520 from the designs of Diogo de Silve, the metal part of which consists of panels containing elaborate arabesques and medallions which ramp with the stairs, worked with the same delicacy and beauty which characterise his *reja* for the Capilla del Condestable.

Doors are frequently strengthened with plates of iron cut into curious shapes and nailed on, as was noted when speaking of knockers. A few drawn from various towns were given last week. The door of S. Maria del Mar at Barcelona is covered with similar plates which form an openwork pattern, among which are inserted some figures of labourers which are said to record the fact that workmen contributed to the funds for the completion of the church. At Tarragona are to be found examples of a very complete sheathing, the old church of S. Tecla la Vièja having a door covered with overlapping plates nailed on with copper nails and with ornamental bosses of bronze, a form of ornamental strengthening which was adopted in the sixteenth century for the west door of the cathedral, the design of which was more elaborate but evidently suggested by the earlier work.

In bringing these notes to a close, I should like to lay stress again upon what seems to be the special aptitude which the Spaniards have shown for ironwork—which is shown not only by the magnificent *chefs d'œuvre* produced by the most celebrated smiths, but by the fact that the tradition of good design lasted so much longer than it did in other countries; and by another fact to which I have not yet referred, namely, that side by side with the wrought ironwork, which has been the subject of these notes, cast-iron was produced showing just as complete an appreciation of the qualities which should govern design in that material. Among other things which I saw, I may mention some rain-water pipes at Burgos which were covered with excellent ornament, because afterwards, at Segovia, I saw pipes of the same design but with the mark of the foundry at that town where they are still made.

Proposed Ruskin Memorials.—It is proposed to erect an early English cross at Friar's Crag, Derwentwater, to the memory of John Ruskin. A petition has also been presented to the Dean of Westminster asking for permission to place a memorial of Ruskin in Westminster Abbey. The Dean has given his hearty consent to the proposal, and has provisionally allocated a site for the memorial.

BUILDING STONES AROUND LIVERPOOL.*

I.—By ERNEST C. ALDRIDGE.

THE subject of building stones is rather a ponderous one, as we have to do with questions of fact rather than with matters of opinion, and I have found that some knowledge of the science of geology is necessary in order to use the facts in an intelligent and practical manner.

I propose first to deal with a geological map of the British Isles. On it are tabulated the various formations (consisting of London clay, oolite, new red sandstone, magnesian limestone, carboniferous system, old red sandstone, schistose system (quartz and mica) and granite), and the localities where these formations occur are coloured to correspond. On consulting the map with a view to the local formation, we find that practically the whole of Cheshire and a good half of Lancashire, including all the basin of the Mersey, is coloured the same tint, which indicates new red sandstone. This consists of a large series of reddish-coloured shales and sandstones resting on the carboniferous rocks, and so-called to distinguish these strata from the old red sandstone, which is similar to them in mineral structure but lies below the coal measures. The only exception to this formation occurring in Cheshire is a small patch on the banks of the Dee, round Neston, where the coal measures crop out.

The half of Lancashire which is not new red

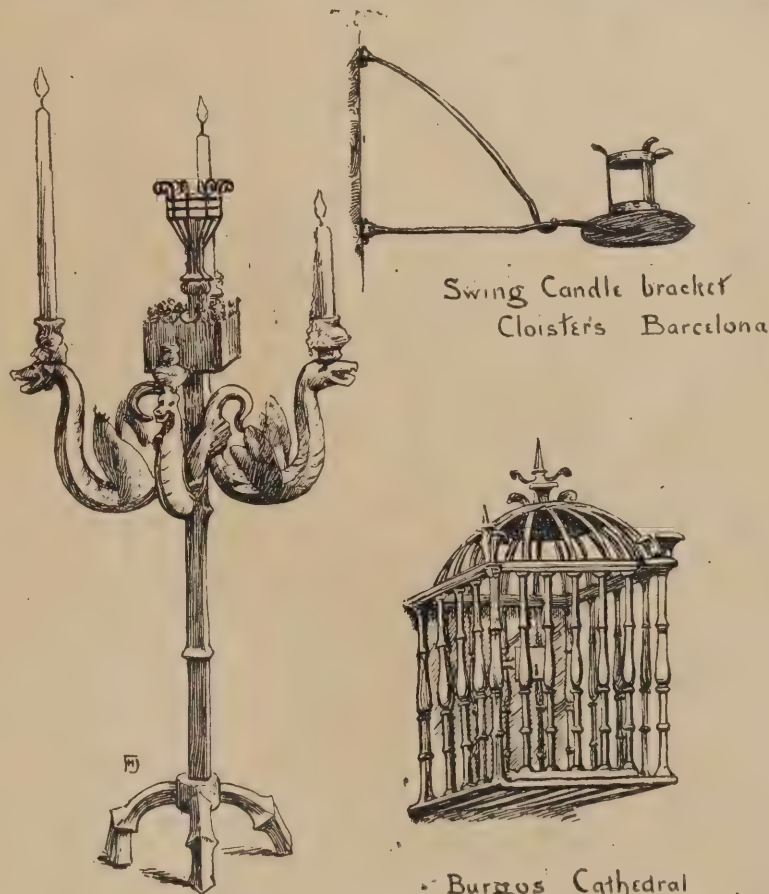
* Papers read before the Liverpool Architectural Society on March 19th, 1900.

sandstone lies to the north-east of Liverpool, through Wigan, Bolton, Bury, Rochdale, and forms a part of the great carboniferous system of the country, which starts in the Midlands and runs up due north through Derbyshire, Yorkshire, Durham and Northumberland.

I have selected a small map of the district by Mr. G. H. Morton, F.G.S., to help us. His book on the "Geology of the Country around Liverpool" is very interesting and useful. To go with this map I have prepared a section showing the formation in south-west Lancashire and Winal.

	Drift Sand.	
	Recent and Post-Glacial.	
	Red Marl.	Keuper
	Keuper Sandstone.	
	Upper Soft Sandstone.	Bunter
	Upper Hard Sandstone.	
	Lower Hard Sandstone.	
	Lower Soft Sandstone.	Carboniferous.
	Permian.	
	Upper and Middle Coal-Measures.	
	Lower Coal-Measures.	
	Millstone Grit.	

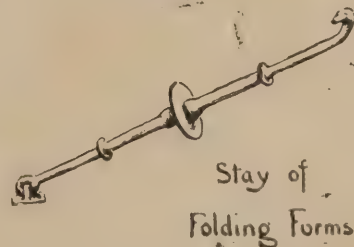
I propose to take the strata separately, trace them to the surface, note their appearance and peculiarities, try and find out their qualities as building stones; and lastly, give



Candelabrum

Tarragona Cathedral.

Burgos Cathedral



Stay of Folding Forms

a list of some of the buildings where they have been used, and note the weathering qualities they have displayed.

Carboniferous Strata.

Beginning with the lowest subdivision on our section of the new red sandstone of Lancashire and Winal, we come at once upon a building stone. It is the carboniferous sandstone which always accompanies and underlies the coal measures, and is called *millstone grit*. As the name implies, it is an exceedingly hard carboniferous sandstone, with both coarse-grained

from Cefu, near Ruabon, though here the grit is softer and more easily worked.

Speaking of our two local quarries, the thin beds from Upholland are made up into rock-faced bricks, 3in. to 6in. thick, called "shoddies." Any quantity of this work may be seen about Liverpool, usually in churches and chapels, the colour often being a dirty khaki, which is fashionable enough just now but does not look well made up into churches. Sometimes the shoddies are grey, and look rather well with bands of dressed stone—perhaps red. I cannot name any building of

and carbonate of magnesia in nearly equal quantities; very durable, and fit for carvings, mouldings, and the finest ashlar work.

Bunter Strata.

We now come to the strata which are of the greatest consequence to us, for the Keuper and Bunter, the two main divisions of the trias, provide the whole of our local freestone. It is necessary also to know their sub-divisions, the lower soft sandstone, the lower hard sandstone, the upper hard sandstone, and the upper soft sandstone of the Bunter (the two middle ones being known as the pebble beds and producing building stone), and the Keuper sandstone and red marl belonging to the Keuper.

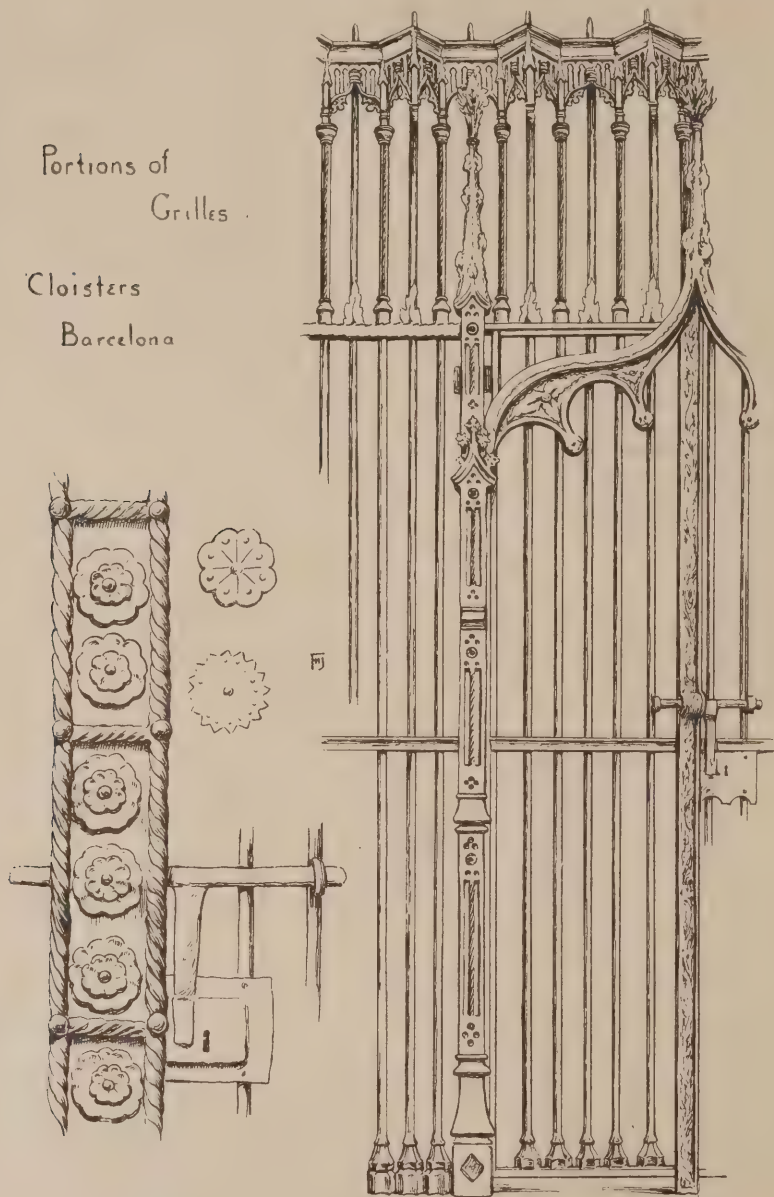
To examine this series in detail we will begin with the *lower soft sandstone* of the Bunter. It consists of bright or orange-red and yellow sandstone, sometimes so soft as to be obtained in the condition of sand, but now and then quite hard, though I believe never fit for building purposes. The lower soft sandstone occurs over a considerable area between Old Swan and Huyton, Prescott, St. Helens, and Rainford, and in the Winal at Eastham and Burton Point, near Neston, where there is a very fine exposure. Of course it is quite likely that this stone is used locally for walling and in cottages, &c., but it cannot be called a building stone on that account.

The *lower hard sandstone* of the Bunter is of importance, as it provides quite one of our best building stones. It is a hard brown-red stone, separated into beds (6ft. to 10ft. thick) by bands of grey, and may often be found variegated. It contains pebbles of quartz and grit in great numbers scattered through the stone, which gives it the name of pebble beds. Some of the beds, however, are almost entirely free of pebbles, and these provide our building stone. That with pebbles does very well for the jerry builder's heads and sills. The most important exposures in the Winal are Hilbre Island, Middle Island, and Little Eye, all of which are composed of the lower hard sandstone, and on the Lancashire side round Wavertree, Woolton, Speke and Rainhill, each of which has its quarries. Those best known are Rainhill and Woolton, which produce a really excellent red stone suitable for carving or fine ashlar work. I consider the variegated stone from these quarries very handsome, and believe that it can be used for interiors with very good effect. The Woolton white is the best white stone we have, but most unfortunately it is only obtainable in very small quantities. It was used in the Wavertree Clock Tower, built in 1884 by the late Sir J. A. Picton, the stone for which, he says in a letter, was obtained with difficulty. Fenwick Chambers in Fenwick Street are also of white Woolton. I am told the red stone used in the Liverpool Stock Exchange is from two beds in the Woolton quarries.

The *upper hard sandstone*, or upper pebble beds, also produce a building stone. In colour it is a dull red with grey streaks up to a foot in thickness. It is particularly well exposed in the Edge Hill Railway cutting, where it presents a solid bed of hard sandstone without any seams of shale dividing it up. The Mersey tunnel is contained entirely within the limits of this subdivision. There have been several quarries of it on the northern and eastern sides of Liverpool, where it has been largely used for building purposes, particularly in dwelling houses. The stone from the Lime Street cutting was used up in the buildings in the neighbourhood of Edge Lane. The principal quarries producing this stone (which is suitable for interiors) are two large ones in Hawthorne Road, Bootle. Christ Church, Waterloo, is lined with a variegated stone from these quarries and the effect is very good.

We now come to the highest subdivision of the Bunter, the *upper soft sandstone*. Sometimes this is of a bright-red colour, with interbedded streaks of white or grey, but often the upper beds are of a bright yellow resting upon the red beneath. The stone is very well exposed in its two colours at the famous "red and yellow noses" at New Brighton, while the red variety may be seen

Portions of
Grilles
Cloisters
Barcelona



and fine-grained varieties. In colour it varies considerably, white, yellow, brown, and red being found, as well as a coarse grey variety, which often weathers to a light brown colour. The nearest important exposure of the millstone grit is at Upholland, about twelve miles from Liverpool, while there is a much more extensive one at Parbold, sixteen miles from Liverpool and six from Wigan. From the description you will probably have recognised its similarity to "York" stone, and, indeed, they are one and the same, both belonging to the carboniferous system and cropping out from below the coal measures. The grit is very largely used in steps and landings on account of its hardness, and is extensively employed for building purposes on account of its lasting qualities. In Liverpool millstone grit has been used in St. Luke's Church (erected 1830), in St. George's Hall (erected 1850), in the Municipal Offices (erected 1867), and in St. George's Church; while the Free Library and Museum (1859) and Walker Art Gallery (1877) are of similar coal measures

dressed stone from these local quarries, but Parbold yields an excellent white building stone. The thin beds of grit from the neighbourhood of Upholland provided the stone slates used in old Liverpool, and still to be seen in the country outside, and are now used for flags and curbstones, and the waste for road metal.

The coal measures form the upper part of the carboniferous division; their thickness is very great, exceeding 4,000ft. The nearest exposure of the middle or productive subdivision occurs round Prescott and St. Helens, and produces one of the finest crops of chimneys in the country.

The *permian bed* comes next, separating the carboniferous system from the new red sandstone. There are only one or two small exposures within our radius, and these yield no building stone. The permian system is of importance, however, for the Mansfield stone—one of the most celebrated building stones in the country—is found in it. The Mansfield is a dolomite, that is, with carbonate of lime

in the cliffs at Dingle Point. Like the lower soft sandstone, which it resembles in character, this subdivision is unfit for use as a building stone except in the humble capacity of rubble walling, gate piers, copings, &c.

Keuper Strata.

The Keuper succeeds the Bunter formation in ascending order and is probably, from an architect's point of view, the most important of those we are now dealing with.

It is divided into two subdivisions, the Keuper sandstone and the red marl. The Keuper sandstone varies considerably both in colour and microscopic character. Sometimes it is of a good light red, as at the celebrated quarries of Runcorn, Frodsham and Heswell; sometimes it is yellow, white, or grey, as at the well-tried quarry of Storeton. Under the east and north of Liverpool the stone is of the white and yellow variety, closely resembling that at Storeton, while under the south end it is red, resembling that at Heswell and Runcorn. The lower beds of white and yellow were well exposed and extensively quarried along the rising ground on the east of the city, and to a very large extent provided the building stone used in its gradual growth until at length the building area spread over the quarries themselves, and hid them from view. The most notable instance of this is St. James's Cemetery, the site of which was formerly a large quarry of yellow keuper sandstone, and provided the material for several important buildings in the town, notably, St. Thomas's Church (1750), the Town Hall, except portico (1754), and St. Paul's Church (1769). Of these, the town hall stone was probably obtained from lower beds, for it has resisted decay much the best, and far better than most buildings out of this quarry, for which we are duly thankful; especially so when we see the sad state of St. Thomas's Church, built only four years before with stone from the same quarry. As a rule, this St. James's stone begins to crumble away after fifty or sixty years.

A celebrated old quarry of white Keuper was situated in Rathbone Street (just south of St. James's Cemetery), and provided the stone for the Great George Street Chapel (1841), the columns in front of which are, I believe, the finest monoliths in Liverpool. The portico, too, of the town hall, which was a later addition, is out of Rathbone Street quarry, and I consider the columns forming this portico have weathered into one of the most striking architectural features of Liverpool.

Another of the main quarries of old Liverpool was Brownlow Hill, now the site of the Liverpool College. The Keuper from here was mainly red, resembling Runcorn, and was very largely used as a building stone. Several quarries at the top of Mill Street, Park Road, of both the white and the red stone, were being well worked about forty-five years ago, and provided the stone for many buildings in that neighbourhood, one of the best known being St. John the Baptist's Church, Park Road, which shows unmistakable signs of decay to-day. But this, although most interesting, is ancient history, and we must push along to consider for a short time our present-day quarries producing building stone.

Liverpool Quarries.

At Storeton the lower beds of the Keuper are more fully exposed than anywhere in the country around Liverpool. The stone quarried is of a white, cream, yellow, or pink tint. I am afraid we shall have to speak of Storeton in a past tense, as it has seen its day and is getting pretty well worked out.

It is quite likely that this stone will work up all right for ashlar walling, or two-faced work, but probably would not for three or four-faced work. What has the quarry done for us in the past? and how is the work standing? The Custom House, one of our most important public buildings, erected in 1828, is chiefly of Storeton stone. Here the stone seems to have weathered fairly, but strikes me as not being a very good sample on account of the great number of small holes, often in very prominent places. The Wellington

Column was quarried at Storeton (its date is 1863), whilst among a host of other buildings built of this stone are the Liverpool Institute (1835), the Philharmonic Hall (1845), and the Birkenhead Town Hall (1883).

With Storeton we will leave the white keuper, and look for a minute or two at the red variety. The principal quarries and those best known to us are Heswell, Frodsham and Runcorn. In colour, the stone is a light red. The lower beds produce a good building stone, that from Runcorn and Frodsham being more durable than the Liverpool or Storeton stone. Mr. Norman Shaw used the Heswell stone at "Dawpool," the beautiful house built for the late Mr. Ismay. Along the high road from Caldy to Thurston will be noticed several small quarries of this red stone, which is no doubt used as dressings in the houses in this neighbourhood, one which is rapidly becoming a favourite residential district. Runcorn, like Storeton, is a well-tried quarry, and has produced some really good building stone. The old Liverpool College in Shaw Street, St. Cyprian's Church, Edge Lane, and the handsome Turner Memorial Home are of Runcorn stone.

I am told that an excellent stone is being quarried at Helsby, even better than that now coming from Runcorn. If this is the case it is probable that they are working in indifferent beds at Runcorn, whilst the best beds are just now being worked at Helsby. Rivington in his third volume supports this view, for he says of Runcorn "that it is a good and bad stone in alternate layers." All quarries turn out stone of differing quality from time to time as they work the different lifts, so that where there are several quarries of the same (as at Woolton, for instance) it is quite a good thing to pay them a visit—or send your clerk of works—and then specify that quarry producing the stone which best suits your requirements.

Well, that completes the list of the sandstones around Liverpool. To sum up what I have said, the fact has to be admitted that we are not able to boast a really superior building stone in this neighbourhood. We see this by the increasing number of buildings which were erected with stone from distant localities as railway facilities improved. Limestones from Ancaster, Bath, Hopton Wood, and Portland; grits from Darley Dale, Minera, and many parts of Yorkshire; and sandstones from Mansfield and Cefu, have been introduced in the place of our local stone.

Again, is not the supply of such building stone as the neighbourhood provides failing us? The quarries of St. James's, Brownlow Hill, Rathbone Street, and Mill Street, beside many others less known, are now built over and forgotten. Storeton we fear is getting worked out. The white Woolton, which was a beautiful stone of excellent quality, is unobtainable now, except in small quantities; while just at the present time, I am told, the Runcorn quarries are producing a rather indifferent stone. What have we left? Of those within the range of my present paper, and not counting Cefu or Minera, I should place the lower hard sandstone from Rainhill and Woolton first, and the Keuper from Runcorn and Helsby second, amongst the red and variegated; whilst, for a white stone, we should have to make the best of Storeton.

II.

By A. W. STREET.

THE building stones around Liverpool largely consist of sandstones, but limestones, granites and marbles from all parts of England are used for building purposes in and around the city.

Sandstones.

Sandstones generally consist of grains of silica cemented together by various materials, of which silica is the most durable. The durability of a sandstone depends upon the cementing material and its presence in sufficient quantity to form a homogeneous mass. Thus,

a heap of loose sand, practically composed of little else than pure silica, would be valueless as a building stone, though perfect according to chemical analysis. Sandstones are found in great variety of colour—white, yellow, grey, greenish grey, light brown, brown, red, dark blue, and even black. The colour is generally caused by the presence or absence of oxide of iron. Some persons consider coarse-grained sandstones most durable. This, however, seems doubtful, for some fine-grained varieties weather better than the coarse. The hardest and best sandstones should be used for important ashlar work, and the finer-grained stones for carving, &c. The principal sandstones of the Liverpool district are obtained from the quarries at Storeton, Woolton and Runcorn. Storeton stone is an even-grained compact stone, easily worked and durable. It is white and light red in colour. Storeton quarries are well worth a visit, for it is here, in the close proximity of the quarry, where a good idea of the weathering properties of the stone can be obtained by a careful examination of the bare faces of the "old quarries" which have stood the weather for ages. Runcorn and Woolton stones are very similar to Storeton. Woolton is dark brown in colour, and Runcorn is red. Both these stones are very suitable for Liverpool. They weather well, even in the smoky air of the town.

The Sailors' Home, Liverpool, and the basement of the "Daily Post" offices in Victoria Street, are constructed of Woolton stone. This shows no sign of disintegration and has weathered admirably. The Exchange Buildings, and the Philharmonic Hall are very good examples of the durability of Storeton stone. Hollington stone is also used in the Exchange Buildings and it is so like Storeton that it is impossible to distinguish them. St. Sylvester's Church in Scotland Road is built of Runcorn (outside) and Storeton (inside). It has weathered well and makes a very good job.

Limestones.

The term limestone is applied to any stone the greater proportion of which consists of carbonate of lime. Chalk, Portland stone, marble, and other varieties of limestones consist of nearly pure carbonate of lime, though they are very dissimilar in texture, hardness and weathering qualities. The carbonate of lime in these stones is of course liable to attack from the carbonic acid dissolved in the moisture of ordinary air, and is in time destroyed by the more violent acids and vapours generally found in the atmosphere of large towns. The best weathering limestones are dense, uniform and homogeneous in structure and composition, with fine grains, and are of a crystalline texture. Some limestones consist of a mass of fossils, either entire or broken up, united by cementing matter. Others are entirely made up of round grains of carbonate of lime, generally held together by cement of the same material.

Portland stone is one of the finest limestones to be obtained for general building purposes; that is, if you happen to obtain the white-bed and not the basebed, for the weathering qualities of the latter are greatly inferior. Basebed is fit only for internal work, and great disappointment is caused when it is used, mistaking it for whitebed, in external work exposed to trying atmospheres. The carver, however, prefers basebed, though it is not so durable, because it looks better and is more easily worked. The Law Courts in Victoria Street, Liverpool, are a very good example of how a Portland stone building will appear when it has stood a great deal of weathering. If you take particular notice of the mouldings, cornices, and especially the coping to the area; you will find that the acids floating about in the air have eaten away the underside of these mouldings. The coping to the area is like a piece of pumice stone in appearance; this is, of course, the result of disintegration. Portland stone is also used in the White Star offices, and the new Post Office.

Bath stone is well-known, and is sometimes used in Liverpool, but not with very good results, for it is one of the worst stones possible

for building in smoky districts. It is quarried in summer only, for it would fall to pieces in winter owing to the action of the frost. It contains so much quarry sap that it takes about two years to get rid of this. It may be used for interior work with good effect, but it should not be used for exterior work in the North. As an example of the effect of the weather on a building of Bath stone, examine the Unitarian church in Hope Street and you will find that one side of the building is almost black, and in many parts disintegration has got a firm hold. The boundary wall, in particular, has suffered badly. Although this stone weathers so badly in the town, or near it, it nevertheless makes a good building stone for the country; in fact, most limestones do—that is, if they are kept clear of any bleaching factories. St. Agnes's Church, Ullett Road, is another building where Bath stone has been used with the same results.

Ancastr stone is largely used in Liverpool. It is a very compact, fine-grained stone, and becomes harder after it is quarried. It is white, yellow and pink in colour, and very durable. The Central Station is built of this stone, and is very satisfactory.

Granites.

Granite consists of crystals of quartz, felspar and particles of mica. The quartz is a very hard, glossy substance in grey or colourless amorphous lumps, occasionally in crystals. The felspar should be crystalline and lustrous, not earthy in appearance; its grains are of different shapes and sizes, and their colour may be white, grey, yellowish-pink, red or reddish-brown. The mica is in dark grey, black, or brown, flexible semi-transparent glistening scales, which can easily be flaked off with a knife. The colour of the stone depends upon that of the predominating ingredient, felspar. The durability of the granite depends upon the quantity of the quartz and the nature of the felspar. If the granite contains a large proportion of quartz, it will be hard to work; but, unless the felspar is of a bad description it will weather well. Mica is easily decomposed, and it is therefore a source of weakness. The elements of decay in all granite are potash, felspar, mica and iron. Hornblende sometimes takes the place of mica in the composition of granite. Where it is the main ingredient the granite is called "syenite." Granite like most stones is absorbent; it contains quarry sap when first quarried, and is then easier to work than when it is dry. Close-grained granite is more uniform in wear than the coarse varieties. Large masses of felspar are an element of danger in a granite. Any felspar having an earthy appearance is untrustworthy, and felspar, to be good, should be crystalline in appearance. Iron is easily seen in the "grey" varieties. On exposure to atmospheric action rust stains are observed, and an addition of a small proportion of nitric acid enables the presence of iron to be detected with greater care.

Peterhead granite is composed of red felspar, black mica and quartz. It takes a good polish is fairly durable and make a good ornamental granite. The columns in the large hall of St. George's Hall are of the granite. The Church Street branch of the Bank of Liverpool is either of Peterhead granite or of a similar granite.

Shap Fells granite has large flesh-coloured crystals of felspar, reddish-brown in colour, and it takes a very good polish. It is used in the "Junior Reform Club" in Dale Street and the "Don" Association buildings, Paradise Street.

Dalbeattie granite is grey in colour, is very durable, and has a good appearance. The docks at Liverpool and Birkenhead are largely built of it. The "White Star" offices are built of this or a similar granite.

Chemical Composition of Stones.

The chemical composition of a stone should be such that it will resist the action of the atmosphere and of the dangerous acids, which, especially in large cities, the atmosphere often contains. These destroying substances are collected from the air by the rain and driven into the pores of the stone. The sulphur acids, carbonic acid, hydrochloric acid, and

traces of nitric acid in the smoky air of the towns, and the carbonic acid which exists even in the pure atmosphere of the country, ultimately decompose any stone of which either carbonate of lime or carbonate of magnesia forms a considerable part.

The oxygen even in ordinary air will act upon a stone containing much iron, and the fumes from bleaching works and factories of different kinds very soon destroy stones whose constituents are liable to be decomposed by the particular acids which the fumes respectively contain.

In addition to the direct chemical action of the sulphuric and sulphurous acids upon the constituents of stones, sulphates are sometimes formed by them, which crystallise in the pores of the stone, expanding and throwing off fragments from the surface. The durability of a stone depends, therefore, to a great extent upon the relation between its chemical constituents and those of the surrounding atmosphere. A stone which will weather well in the pure air of the country may be rapidly destroyed in the smoky atmosphere of a large town.

Correspondence.

Damp Walls.

To the Editor of THE BUILDERS' JOURNAL.

IPSWICH.

SIR,—With reference to the reply to the query about damp walls on page 154 of your issue for April 4th, the only remedy would be to rake out all the joints in the brickwork, thoroughly wet and brush same in order to remove all superfluous dirt, and apply a uniform thickness of Portland cement stucco. I can guarantee querist will then experience no further trouble from this source, providing the work is done with approved materials and by a practical man. Tile hanging or slates may be suitable for plain surfaces to a certain extent, but it is difficult to cope with damp round reveals, doorways, &c.; there is also the possibility of one tile becoming detached or broken, which, if neglected, will cause the grounds on which the tiles are hung to decay and so make a greater evil than existed before their use. In order to further improve the damp-proof qualities of stucco executed in Portland cement, it should be painted a year after it has been finished, and then annually.

W. H. H.

Unlovely London.

To the Editor of THE BUILDERS' JOURNAL.
LONDON, W.C.

SIR,—Referring to the articles which have appeared in your columns on this subject and touching on the question of æsthetics, I take it the question is not so much "What is lovely" as what is decidedly unlovely, and how matters in this respect can be improved. Everybody will admit that there are certain things which are unlovely, such, for instance, as dirty streets and "groggy" lamp-posts, and the railway bridge at Ludgate Circus which obscures the view of St. Paul's. Undoubtedly we might learn much from the French that would help us to improve our city if only in the matter of sculpture. Even in Trafalgar Square some of the monumental sculpture is of a very poor character considering the greatness of the heroes. To show the great superiority of French work in this direction I need only mention two illustrations which appeared in this journal a short time back, namely, base of a statue erected in memory of General Chanzy at Le Mans, by Croisy, and La Fontaine St. Michael at Paris (see issues for July 26th and August 2nd, 1899).

Suggestions have from time to time been made by different art enthusiasts for acquiring the poverty-stricken gardens lining each side of the Euston Road and converting a portion of that thoroughfare into a boulevard. Would not this have been done long ago in Paris? Portions of the bequest of the late Sir Frederick Leighton for the improvement of London streets might be supplemented and used for schemes of this kind.

The local authorities now seem to be interesting themselves in this subject, and not long since one of the vestries invited competitive designs for lamp standards. Let us hope their example will be generally followed.

That the man in the street is becoming interested in the artistic aspect of London is evident from recent occurrences. I refer to the controversy over the new Vauxhall bridge, the prevention of flash-light advertisements by the County Council, &c.; and in the new Strand to Holborn scheme it is to be hoped that designs will be exhibited to the public in a more accessible place than the committee room of the House of Lords, as was the case with the Government Offices.

One would think that the R.I.B.A. would foster such exhibitions, if only for the sake of further interesting the people in the architecture of their own city. The Passmore Edwards Settlement is undoubtedly doing great good in placing before the public such subjects as "Unlovely London," "A Garden City," and "Paris and the Exhibition." There are at the present time a number of art reformers, including Lord Wemyss, Mr. Walter Crane, Mr. Howard and Mr. Richard Whiteing, each of whom is working in his own particular way; if they were to combine surely something creditable would result.—Yours faithfully,

C. HENZELL-ASCROFT.

Valuation of Houses (Repairs and Empties).

To the Editor of THE BUILDERS' JOURNAL.

PEVENSEY, SUSSEX.

SIR,—The further remarks of "F.S.I." upon this subject are instructive, even if they but represent the different opinions which may arise from a particular course of experience differing from that of others, and I thank him for having made my reply to the querist the subject of so comprehensive a letter. I will endeavour to avoid, as "F.S.I." does not wish to continue the correspondence, giving any occasion for his further reply, and limit my remarks to some few points upon which my arguments are particularly questioned.

In "F.S.I.'s" example the house in Pimlico—of gross rental value £120 per annum—was bought by the present owner ten years ago, apparently in good order. In 1896 it was redraided for £70, and in 1899 £477 was paid for repairs and plain decoration. Very well, then, in this case the owner, if he bought it ten years ago in the belief that it was worth £120 per annum rent, as it was "apparently in good order," was mistaken; or if, on the other hand, he persuaded a tenant to take it on lease at £120 per annum in his (the tenant's) belief that it was "in good order," he misled him. I consider that these outlays should not be taken as ordinary repairs, but as improvements, wherein "F.S.I." differs. The rent in proper estimation should have been less by a reasonable percentage upon the stated outlays until these were done, when, and not until when, it should have been worth the £120. As improvements they should bear a reasonable return in the increased value of the holding, and as they were not calculated upon when the building was purchased, they certainly should not form a deduction under the head of ordinary repairs.

I must say, whilst not wishing to provoke further discussion, that if, in this case, the owner was advised to purchase the house apparently in good order, and in nine years' time had to pay away in unlooked-for "extraordinaries" over four-and-a-half years' value of the gross rental, he certainly was not advised honestly, nor had he the picture presented in its proper colours.

With regard to rates and taxes, I take it that in estimating the rent which a property is worth to him, say, for instance, to an owner in occupation, the variable amounts of rates and taxes, including those payable by occupier, must, together with all other outgoings, be taken into consideration. If, however, the value be estimated upon the rent yielded when a property is let, the tenant paying rates and taxes, then it will be understood to have been reduced by the amounts of these.—Yours truly,

E. BRAND.

THE PAVING OF CARRIAGEWAYS.—II.

BY A SURVEYOR.

(Concluded from p. 170 No. CCLXX.)

THAT ideal material for the paving of carriage-ways—**asphalt**—must now engage attention for a short time. Considering some of the advantages of this material, its superiority to any other form of paving, from a sanitary point of view, is obvious from the small amount of moisture it absorbs. It also commends itself on account of the simplicity with which it can be cleansed, its noiseless character, the ease with which it can be repaired without depriving vehicles of the use of a particular street, its unquestionable durability, and its great resisting power. Our principal sources of supply of this bituminous limestone are in rocky formations situated, amongst other places, in the Val de Travers, Neuchâtel, Switzerland. The Pyrimont and Garde Bois mines of Seyssel, France, and Limmer, Hanover, also furnish large quantities, and the famous asphalt lake in the island of Trinidad must be mentioned more particularly as the chief provider of the

Asphalt-Paved Roadways

of the United States. Asphalt, as a rule, contains from 8 per cent. to 12 per cent. of bitumen. A material that is liable to crack is produced when 8 per cent. or less of bitumen is present, and if there is more than 12 per cent. the heat of the sun's rays will have a softening effect. Of the two classes into which asphalt can be naturally divided, the



FIG. 5

compressed variety is more suitable for carriage-way purposes than the mastic kind. In the making of compressed asphalt, preparatory to heating the rock asphalt, it has to be subjected first to a crushing process in a suitable machine and then to pulverisation. In the operation of heating, the temperature, which varies from 240 to 260 deg. F., must be such as to secure adhesion of the material by compression whilst obviating calcination. In the preparation of the roadway for the reception of the asphalt the same method must be adopted as if wood were to be the external covering of the carriage-way. That is to say, a foundation must be made of 6 in. of Portland cement concrete, and the surface floated with Portland cement mortar. The foundation having set and become thoroughly hard, it should be concealed by a 3 in. layer of asphalt (see Fig. 5). Ramming with hot irons until the thickness has been reduced to 2½ in. or thereabouts will constitute the finishing process previous to allowing the passage of vehicular traffic, after the whole has cooled. An asphalt-paved road should have a cross-fall of 1 in 48, and with regard to gradients no vehicular passway with a steeper gradient than 1 in 65 should be covered with this material. In general, asphalt is only called into requisition for the paving of the roadways of large towns and cities, and then its use is mostly confined to the narrow streets, wood being the medium adopted for the broader arteries of traffic.

Where questions of quietness are all-important, wood has long been resorted to as a paving material, but one that has come into vogue considerably of late, and answers admirably, is

Cork Paving.

The cork bricks placed on the market by the Improved Cork Pavement Company, Limited, consist of blocks 9 in. long by 4½ in. broad by



FIG. 6

2½ in. thick, composed of chips of cork compressed into the form of a brick with tar and other materials. Just as if preparing for a wood pavement, a concrete foundation is made 6 in. in thickness with lin. floated surface. Time having been allotted for this to set, the surface should receive a coating consisting of a hot mixture of tar and tallow in the proportion of 1 gallon of the former to 4 oz. of the latter. This in its turn should be allowed to become firm. Due caution being observed to prevent burning, the jointing material should be heated in an asphalt boiler and may be conveyed, so long as it is quite hot, in pails to the actual scene of the cork laying. Here the cork bricks should be dipped into the buckets in such manner that the lower surface is covered together with lin. up the side (see Fig. 6). This can be easily accomplished if the service of a sharp-pointed tool, like a slater's hammer, is utilised as a handle by sticking it into the brick. Then the cork bricks should be stuck down on to the floated surface of the concrete as close together as possible. Public authorities in all parts of the country have used this

making special bricks for paving carriage-ways. The product turned out is a brick very similar to blue Staffordshires, but without any frog, and the arrises are rounded in order to prevent chipping of the edges. Several samples of these bricks have been laid down, experimentally, in a London thoroughfare, but sufficient time has not elapsed to enable any definite opinion to be formed as to their utility. The method of procedure pursued was to prepare a 6 in. foundation of Portland cement. This was worked up to a fairly smooth surface, and when set a layer of fine sand was spread on it, upon which the bricks were laid in the same manner as are granite setts (see Fig. 7). Courses numbering three were laid next the kerb and parallel to it in order to form the channel, and the bricks in the carriage-way were laid close together at right angles to the kerb. They were then rammed with a wooden rammer and grouted up with bituminous grout composed of pitch and tar in the proportion of 4 cwt. pitch to 5 gallons tar. Finally a dressing of shingle was spread over the road, and the whole closed to traffic for one week.

Other Trials.

At different times various other materials have been suggested for carriage-way paving. For instance, some years ago a combination of wood and steel was tried at Sheffield. The steel was in the shape of an angle piece at the corner of each wood block, and had a foot which rested on the concrete foundation. These feet were embedded in a thin layer of pitch run over the concrete, and the interstices of the wood blocks were filled in with pitch. Then, with a view to obtaining a minimum of noise, gutta-percha has been used in short sections at Glasgow and also at the entrance to Euston Station, London, but this form of paving has not been sufficiently widely used for any opinion to be expressed as to its utility.

Prime Cost and Lasting Power.

In concluding these articles, a few remarks remain to be made concerning the cost and duration of carriage-ways. These two matters, with the question of the price of maintenance, are of the highest importance. Often the material of a road for a particular street is determined by how much money must be expended in laying, or what term of service will be given in return for the outlay, or what will be the yearly cost of keeping the road in proper condition. A macadamized road, for instance, costs from 6s. to 8s. per yard super., but the amount required for keeping it in repair is excessive, being from 2s. to 3s. per yard super. per annum. But still, the consideration must not be lost sight of that there is practically no limit to the duration of such a road if periodically attended to. Then to pave a road in Guernsey granite setts 3 in. by

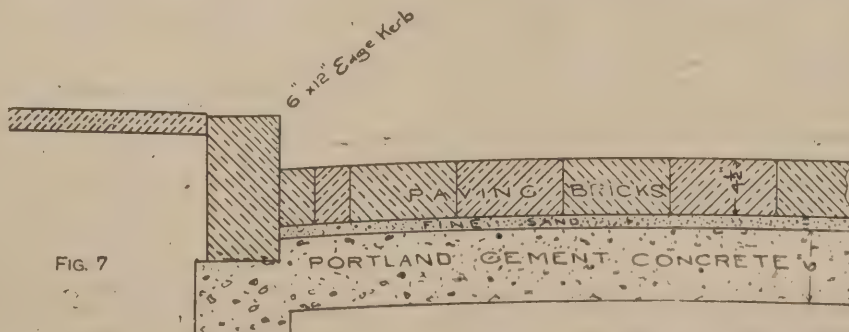


FIG. 7

9in. by 6in. deep in London would cost about 18s. per yard super., including a foundation 6in. thick of Portland cement concrete. Such a paving would probably last twenty years, but it would require redressing and relaying during this period, and the expense of this would be 5s. per yard super. The cost of a carriage-way paved with creosoted deal blocks 5in. deep, laid upon a Portland cement concrete foundation 6in. in thickness, works out at about 10s. per yard super., and has lasted from six to nine years. Quite uncertain is the duration of a road having jarrah 5in. thick laid upon a foundation similar to that last named. It will have cost about 15s. per yard super. when the work is finished. For a metallic asphalt laid on a 6in. Portland cement concrete foundation in a London thoroughfare the authorities will have to pay from 14s. to 16s. per yard super., and it will last, with ordinary repair, from fifteen to twenty years. The expense of a cork paving 2½in. thick on 6in. Portland cement concrete will be 13s. per yard super.

DOMESTIC WATER SUPPLY.*

By G. M. ROSS, M.A., B.E., M.I.C.E.I.

THE importance of a plentiful supply of pure water and the difficulties which have to be overcome to obtain it are seldom realised by persons living in towns and cities supplied with water by local authorities. The water, which is as necessary to their existence as the air they breathe, or as the food they eat, scarce gives them a thought, unless, indeed, by some chance, such as frost or the bursting of a main, the supply is cut off and they are left for a few hours without water.

The care of the engineer or the architect is, however, very different. Suppose he is called upon to supply an existing house with water, or to design a house to be supplied with water in a country district. Let the house be large or small, be it a hunting lodge or a nobleman's mansion, a supply of water has to be found, and the health and comfort of the inhabitants depends in a far greater degree than is commonly thought on the quantity and quality of the supply provided, on the quantity for the efficient flushing of the drains, for the supply of baths, washing purposes, &c., and on the quality of the water used for dietetic purposes. When either the quantity or quality of the water is defective the community must suffer. If the quantity is deficient, flushing of drains, personal cleanliness, baths, washing of clothes, &c., must be neglected; while the use of impure water for dietetic purposes is now known to be one of the causes, if not the most fruitful cause, of disease.

It should be at once laid down that no water which is unfit to be used for dietetic purposes should be supplied to any house unless under the very strictest precautions. The prevalent idea that any water is good enough for baths and similar purposes, and that the comparatively small quantity required for drinking and cooking can be drawn from some other source, perhaps carried by hand from a distant spring, should not be entertained for a moment. True, it may not be so necessary to have an absolutely pure water for a bath or similar service, but who can guarantee that the general water supply for the house will not be drawn from the nearest and most convenient tap? Indeed it may safely be asserted that unless a more handy means is provided the water used in the bedroom will be drawn from the bath or lavatory taps. When properly safeguarded, however, a comparatively impure water may with considerable advantage be used for flushing drains and such purposes.

The necessity of a plentiful supply of pure water being admitted, the first question that arises is, what can be considered a plentiful supply? It appears to have been assumed that the quantity of water required by a household should be about twenty-five gallons per head

of the population. This is perhaps true in the towns where personal cleanliness is not carried to a very great length by a large number of the poorer and perhaps by some of the well-to-do members of the community; but where daily or even weekly baths are indulged in—as would be the case in a large or small country house—twenty-five gallons is not enough, and thirty or even forty gallons may be provided. It may also be useful when dealing with country houses to remember that each horse will require a daily supply of about sixteen gallons, each cow ten gallons, and that there will be other demands, such as carriage washing, and that any overplus will come in handy for use in the gardens. We will now consider a few of the means adopted to obtain the supply of the necessary quantity. The first which suggests itself is the collection of rain-water.

Rain-Water Supply.

Rain-water is always more or less charged with impurities derived from the atmosphere and from the surfaces on which it falls. These impurities are contained in much greater quantities in the first portion of a shower, owing to the washing of the roof and gutter surfaces, and it is therefore desirable that a self-acting arrangement should be used to allow the first part of a shower to pass off direct into the drains.

Even with this precaution it will be necessary to filter or rather screen the water before it passes into the storage tank. This filter or screen should, if possible, be above ground, but whether over or under ground ample means of access should be provided for examination, flushing, and cleansing. A simple down-and-up gravel filter with not too fine sand will serve the purpose admirably if frequently emptied of sediment. Of course the water is not filtered in the strict meaning of the term; it is merely screened and cannot be considered fit for dietetic purposes; but from its peculiar sooty taste and smell it is not likely to be so used. Rain-water when properly collected and stored is peculiarly suited for washing purposes on account of its "softness." Soft water has, however, the property of acting on and dissolving metals, particularly lead and zinc, if left in contact with them for any length of time.

The storage tank should therefore be made of slate or concrete. Concrete lined with asphalt makes a good tank. It should be covered but well ventilated, and fixed in such a position (preferably over ground or partly above ground) as to be easily accessible for inspection. It should be regularly examined and cleaned out at short intervals, and it is in this connection that the advantage of having the tank above ground, or, at least, over the level of some drain, is apparent. The simple opening of a scour valve for a few moments gets rid of most of the impurities. Even where the bottom of the tank cannot be constructed above the surface of the ground, or above the drains, a scour pipe should be taken from the bottom and carried up the necessary height. In this way if the tank is constructed with a fall towards the outlet a great deal of the objectionable sediment will be got rid of when the scour valve is opened.

To calculate the quantity of rain-water which it is possible to collect, we must ascertain the average yearly rainfall for the district, and allow at least 20 per cent. for loss from evaporation and other sources, and then multiply this by the horizontal area of the roof surface. In this connection it is well to remember that one inch of rain represents 4·68 gallons of water per super. yard, or very nearly half a gallon per super. foot. Probably the roof surfaces will be calculated in feet. Working out the calculation for a rainfall of 30in. per annum (which is about the average in Dublin), and allowing 60 super. feet of roof surface per head, we see that not more than two gallons per head per day can be stored. And this assumes that your tanks are large enough to store and prevent waste of all the rain which falls at irregular intervals. It is needless to say that this is very often impracticable. We must therefore

look to some other source of supply, such as a well, a spring, a stream, or a lake.

Wells.

The selection of a site for a well is a subject which deserves a great deal more attention than it usually receives, especially if water is known to exist close to the surface. The object being to obtain a water supply as pure and as uncontaminated with surface or other impurities as possible, the convenience of the position should be a secondary consideration; but this is very often the important element in determining the site, the object being to keep the cost as low as possible by reducing the length of pipe required. A common practice is to dig two holes in a convenient position; the deeper of the two is sunk below the water line of a water-bearing strata and is the "well," while the other hole is the "cess-pool," and into it is discharged all the house sewage. The contents of the cesspool gradually soak away through the surrounding soil and mingle with the waters below.

As the contents of the well are pumped out they are replenished from the surrounding mixture, and it is not therefore very surprising that such a well does not become dry even in summer; in fact, in some cases which I have investigated there appeared to be very little liquid lost during the process of circulation. Unfortunately excrementitious liquids, after soaking through a few feet of porous soil, often do not impair the appearance or palatableness of the waters with which they mingle; and this polluted liquid is consumed year after year until the cesspool, and therefore the well, receives some infected sewage, and then an outbreak of epidemic disease compels attention to the source of the pollution. What has been said here applies with even greater force to large country houses than to cottages. In the large house the well is frequently placed close to or under the scullery or yard, the reasons being economy in erecting the pump and pipes. When the well is more than, say, 30ft. deep, the cylinder of the pump must be placed in the well with the gearing either directly over it or nearly so. If the well was sunk at some distance from the house there would, therefore, be some additional expense incurred in protecting the pump and providing additional pipes, and the position would not be so convenient for working. Enough has been said, however, to impress on the designer the importance of not making cost the sole or principal consideration in determining the site for a well.

In selecting a site it should be remembered that the underground water slowly but surely moves in a certain direction, towards its natural outlet, which can generally be ascertained by observing the contour of the surface of the surrounding country, by noting the relative positions and levels of springs and streams, or by examining other wells in the district. When the direction of the current is ascertained a well should be sunk in such a position as regards possible sources of pollution that the underground water flows from and not towards the well.

It is not easy to say within what distance from a possible source of pollution it is safe to sink a well, but it should be borne in mind that even if the source of pollution is below the well, and that, therefore, the polluted water ordinarily flows away from the well, yet that when the level of the water in the well is lowered by pumping, the conditions may be altered; and if pumping is continued for any considerable length of time the current will be reversed, and the well may be polluted.

Certainly no well should be sunk nearer to any possible source of pollution than from 100 to 150 times the greatest possible depression of the water in the well likely to be produced by pumping. This distance will, of course, vary with the nature of the soil. The mouth of the well should be closed over and fitted with a manhole cover to give access for examination and repairs to pumps, and care should be taken by making the walls of the well near the surface and the roof water-tight to prevent any possibility of surface water reaching the well.

If unfortunately by any chance drains have to be placed near a well, it would seem to

* A paper read before the Architectural Association of Ireland on March 20th, 1900.

be hardly necessary to say that they should be absolutely air- and water-tight and constructed, preferably of iron, in such a way as to minimise the risk of possible injury; yet it is an everyday experience to find drains of the most faulty construction laid within a few feet of a well, and laid by men who ought to know better. The danger of contamination is of course much greater in the case of a well sunk in a porous soil, or technically a "shallow" well, than in the case of a "deep" well sunk through a superficial porous bed and an underlying impermeable stratum to reach a water-bearing strata below.

It will be observed that the term "shallow" and "deep" are not used to mean actual depth, as a "shallow" well may be actually sunk to a greater depth than a "deep" well. Where it is likely that the well will have to be sunk to a considerable depth, it is very usual to use boring tools and bore a hole, say, 4in., 5in., or 8in. in diameter.

These bored wells are usually lined with metal tubing, and are therefore very free from surface contamination. Frequently deep wells are dug in the ordinary way for a certain depth and a bore hole is continued from the bottom down to the water-bearing stratum. In this case the upper portion should be carefully steined with brickwork in cement, concrete, or cast iron, as far down as the impermeable strata, so as to exclude any possibility of surface pollution.

In some districts it is possible to drive a tube from the surface into a water-bearing strata. The tube is then called an Abyssinian well. The tube is of wrought iron or steel, generally about 1½ in. diameter; it is in different lengths according to the depth at which the water is expected to be found. The bottom length is finished with a steel point shouldered out so as to be a little larger than the tube. This shoulder reduces the friction on the tube and facilitates the driving. The tube for about 2ft. up from the point is perforated with a number of holes, usually about ¼ in. in diameter, which allow the water to enter.

The tubes are driven into the ground by means of a monkey and tripod. From time to time a pump is screwed on to the tube, and the well is tested for water. In all tube wells, the tube itself being small, the condition upon which it can be effective is that there is a free flow of water to it—in fact, the tube is really only the suction pipe. The continued working of the pump has a tendency to clear out and open the passage in the soil, and in some cases to form a bulb or reservoir round the bottom of the well in which the water accumulates while the pump is not at work. Two or more tubes may be driven close together and coupled up to one pump, and thus increase the yield.

In all cases the yield of a well can only be ascertained by pumping down to a certain level, measuring the quantity of water taken out, noting the depression of the water in the well, and the time it takes to regain its original level. An examination of the contour of the surrounding country may often suggest the possibility of a

Gravitation Supply.

Where this is possible, other conditions being the same, it is the most desirable. It enables the supply to be constant, less storage is required on the premises, and the annual or daily cost and trouble of pumping is saved.

The question in each case must, however, be considered on its merits. The quality of the water, whether it will be necessary to filter it, and if it is necessary, what will be the cost of these filters, the cost of the extra length of pipe, the cost of pumps, and the cost of pumping, if necessary, must all be taken into account, and a balance struck. In some cases where a well is situated in high ground it may be possible to draw the water off by a syphon. This is to all intents and purposes a gravitation scheme, the well forming the tank or reservoir. Great care will, however, have to be taken in making the joints of the pipes forming the syphon air-tight, as even a very small defect which would only cause an insignificant leak in an ordinary gravitation supply will very soon completely stop a syphon

by the admission of air. It may here be opportune to say a few words about filters.

A filter should be of the very simplest construction, and it should be fixed at or near the source of supply, so that impure water may not enter the mains. The water should be first strained and admitted into a settling tank so as to allow as much as possible of the grosser impurities to subside. It should then be passed through a layer of sand and gravel. The sand should not be too fine, but should be clean, sharp, and angular, and the water should not be forced through it too fast.

The filters may consist of about 3ft. of fine sand lying upon layers of gravel at least 2ft. thick, graduated from fine to coarse. The average rate of filtration per superficial foot of filter bed should not exceed about fifty to sixty gallons per twenty-four hours. The effect of a filter such as this on both suspended and dissolved impurities is very satisfactory, as is clearly proved by the effect of similar filters on the water taken from the Thames and supplied by the London water companies to the citizens of London; there being no doubt that a very large proportion of the water so treated has previously passed through the drains and sewers of the towns and residences along the Thames Valley.

The filter should be constructed in duplicate so as to give facilities for rest and cleaning, and at intervals the top layer of sand should be scraped off and washed. It is not, however, desirable to disturb the body of the filter too often, as a filter properly treated rather improves than deteriorates by use, unless, of course, it becomes choked by the accumulation of foreign matter, which is indicated by the reduced flow of water. In no case should it be attempted to make up for this decreased yield by increasing the head of water—in other words by forcing the water through.

Pumps and Pumping.

Having arranged the source of supply it will be necessary, unless a gravitation scheme is practicable, to devise some machine to raise the water to the point of distribution; in other words the water must be pumped, a pump must be provided and means must be found to work it.

A pump to be satisfactory should satisfy two conditions: first, it should be fairly efficient, and second, it should be simple in construction, strong, and not likely to get out of order.

Generally speaking, pumps are not very satisfactory mechanical appliances, but there are on the market some good pumps which can be made to fulfil fairly well both conditions, although several pumps are freely advertised which can scarcely be described as "simple in construction."

The greatest difficulty to be overcome is to provide means for working the pump. For small supplies manual labour may be employed. It must, however, be borne in mind that manual labour when applied to pumping is very expensive and unsatisfactory. This is the case altogether apart from the energy or want of energy of the man working the pump. It arises from several causes. The first is that a manual pump is rarely or never constructed to meet the particular case; the length of stroke, the diameter of the cylinder, and the length of the lever are not designed to lift the maximum quantity of water to the given height in a given time; and consequently the manual pump seldom or never gives anything like satisfactory results. The conditions under which a man, or for that matter any animal, works at a pump almost precludes the possibility of his being an efficient or economical motive power.

To illustrate this, let us assume that a pump has been carefully designed to give satisfactory results in raising water from a well to a cistern 50ft. above the ground, and that the water is at a constant level of 10ft. below the surface, the total lift being thus 60ft. The man will, in an hour, raise a certain quantity of water into the cistern. Let us now suppose that it is desired to fill a cistern placed only 20ft. from the ground, or a total lift of 30ft., the same man and the same pump being employed. We would naturally suppose that in an hour he would raise double the quantity,

as the lift is only half, but, as a matter of fact, he will do nothing of the kind; he will raise little, if any, more water. The reason is that he will not work the handle any faster, and the usual twenty to twenty-five strokes per minute is all he can do.

In the case of a horse or other animal walking round in a circle the same remark applies, be the lift large or small; he jogs along at the orthodox two or two-and-a-half miles per hour, and the cost to the owner per 1,000 gallons raised is the same whether the water is pumped into the cistern of the mansion 60ft. above the level of the ground or into the trough which supplies the yard. Of course the man or horse does less work, but he does not pump more water in a given time, and the cost per gallon remains the same.

In the case of, say, a gas or oil motor, on the other hand, there is a difference. When the load is lessened the machine goes faster, or the supply of fuel is reduced in proportion to the decreased load, and the cost is proportionately less.

This adaptability to varying conditions, as well as the more careful consideration on the part of the designer of the work which the machine has to do, makes mechanical as compared with animal labour more economical. It is not easy to obtain data from which to calculate the cost of pumping a given quantity of water as the conditions vary so greatly, but there is no doubt that hand pumping is the most expensive means, and even assuming that a horse or other animal is not kept specially for pumping, but is employed for other purposes, this method comes second.

Unless steam is required for other purposes, such as in a public institution where cooking, &c., is done by steam, it is not to be recommended. The waste of time and fuel getting up and letting down steam is considerable.

Gas, if available, is a suitable and economical source of power, the cost of attendance being reduced to a minimum. The oil engine is now nearly as efficient and simple as the gas engine, and it forms a valuable addition to our list of motors. It is now universally applicable, and no doubt will be very largely used.

Then we have the hot-air engine, an excellent motor, but one which requires more attention than the gas or oil engine, and it will scarcely be able to compete with them for efficiency and economy.

Where electricity can be obtained it is, of course, eminently suited for driving a pump. The advantages of the cleanliness, adaptability to position, and practically self-acting properties of the electric motor are unquestioned.

Relative Cost of Hand, Animal and Mechanical Power.

In a valuable paper read before the Society of Engineers in London last year, Mr. Gordon Harris, Assoc. M. Inst. C.E., gives the following table of comparative costs of pumping 1,000 gallons of water to a height of 100ft:—

1st. Hand labour at 18s. per week	265d.
2nd. Horse power	42d.
3rd. Gas engine with gas 4s. per 1,000 cubic feet	144d.
4th. Small steam engine and boiler, coal 20s. per ton	075d.
5th. Oil engine, oil 7d. per gallon	070d.
6th. Electric motor in connection with large plant	045d.

Mr. Harris adds: "The cost of attendance is excluded from Nos. 3, 4, 5 and 6, as in some instances it may be neglected, although in No. 4 an allowance should be made varying in amount with the total daily supply and other conditions, and an addition must be made for coal used in getting up steam."

It will be observed that there is a good deal of uncertainty and indefiniteness about these figures, but I think that they will generally be found to give very fairly the order in which the several motors will stand as regards cost. The cost of hand labour is certainly not too low at the rate charged, 18s. per week = 4d. per hour; the time occupied in pumping would be about 6½ hours, or say 153 gallons per hour = 255 gallons per minute raised 100ft. = 255 gallons raised one foot per minute. This I believe to be too much for a man working for 6½ hours, and I consider that he will not raise

more than 200 gallons per minute, if, indeed, the average man will do so much.

In this connection it may be noted that a horse walking in a circle is supposed to raise from 1,600 to 1,000 gallons one foot high per minute, a man 250 to 150 gallons one foot high per minute, and a steam or other motor 3,000 gallons one foot high per minute per nominal horse power. In the case of the horse or man the amount varies in accordance with the duration of the work, as of course an animal can work harder for a short time, while an engine is not influenced by the duration of the work.

Water Power.

Where a stream with a fall of even a few inches is available, this fall can be utilised to raise the water required to any given height or distance. Where a sufficiency of suitable water can be obtained, with a fall of, say, from 2ft. to 10ft., the hydraulic ram is at once the cheapest and the best machine that we know of. It is simple and effective, and is not liable to get out of order. The results obtained are very satisfactory, and I have known rams to work practically day and night for years without any outlay for repairs and practically none for attendance.

The ram is, however, not so satisfactory where the head or the lift fluctuates. In cases where a large supply of water is required it is better to couple up two rams than to use one large one, as they can work together or separately into the same main, and in the event of repairs, or if the quantity of available water lessens, the supply is not altogether stopped. If the water which works the ram is impure the machine can be constructed to raise pure water from a well or other source, but the arrangement is more or less complicated and is not so satisfactory or efficient as when part of the water used to work the ram is raised. In this case it is well to consider whether it will not be better and cheaper to filter all the water before it passes through the ram, or filter the water raised and use an ordinary ram. The former for preference. Where the conditions are not satisfactory for a ram, such as when a larger supply is required than a ram will afford, or where the head varies, or where it is not practicable to filter the water and pure water has to be drawn from a distance, a water wheel and pump may be used.

Water wheels are of various forms, such as an undershot wheel, a breast wheel an overshot wheel, or a turbine wheel. "Undershot wheels" are wheels where the water is delivered at the bottom of the wheel and where the water arrives with a velocity due to a height nearly equal to that of the fall. "Breast wheels" are wheels where the water is delivered between the horizontal plane passing through the centre and the bottom of the wheel. "Overshot wheels" are wheels where the water is delivered at the top, or at a point situated above the horizontal plane passing through the centre.

These wheels all work on a horizontal axle, while turbine wheels may work on a horizontal or vertical axle and are divided into wheels which receive the water at the centre and discharge it at the circumference, and wheels which receive the water at the circumference and discharge it at the centre.

Roughly speaking, it may be said that undershot wheels are most suitable for very low falls, breast wheels for intermediate falls, overshot wheels for higher falls up to the diameter of the wheel, and turbines for practically any fall, no matter how high or how low.

Windmills.

Where water power is not available a windmill may be used. Until recent years windmills have not been very much used in this country to pump water, as there seems to have been a prejudice against them, which the author admits he shared; but of late years some very excellent and cheap windmills have been introduced, and where an exposed position can be found and sufficient storage, say, a week's supply, can be provided, there is no doubt that a windmill forms a very efficient and economical motor, and if an auxiliary power, such as a horse gear, is attached so as to be

used in case of emergency, there is a great deal to be said in favour of a windmill.

A few years ago the author erected a windmill for the supply of water to some villas, and since then extra houses have been built, until now fourteen houses are supplied from the one windmill and pump. A cast-iron storage tank containing about 1,000 gallons is provided for each house, and each house is also provided with a separate hand pump, to be used in case of a stoppage of the main supply. The arrangement has now been in use for some years and has proved perfectly satisfactory.

The tendency, however, is to make the windmills too light, and care must be taken to keep the parts well painted and looked after, as there is no margin left for corrosion or waste of material.

If a sufficient supply of water can be obtained either by pumping or by gravitation, at a high pressure, a water motor may be used to raise water to any required height. The water raised may be a portion of the water used to work the motor, or it may be drawn from a well or other source. In a case in which the author was concerned within the past few months, a water motor was used to raise hard water from a well into a tank fixed a few feet above the ground. The water then gravitated through a water-softening apparatus into an underground tank, and the softened water was pumped by another motor into the house cistern. In this case the water which worked the motors was supplied from a storage tank some 150ft. above the motors. It was first pumped into the tank by a turbine and pumps and was not suitable for dietetic purposes. If there is any great variation in the head or lift of the water, a motor is not an economical machine, as from the want of elasticity of the water the ratio between the quantity of water raised and the quantity required to raise it in any given machine is constant, no matter what variations of pressure take place. For this reason motors are best suited for high pressures, and where such are available these machines form a clean, compact, and reliable power.

In the case that I have referred to, as the impure water was available, and therefore the original cost of pumping had not to be seriously considered, the arrangement proved quite satisfactory.

I think I have now exhausted all practical sources of power for obtaining a supply of water, but it may be of interest to recall a scheme which was laid before me in all seriousness some years ago. A man had taken out protection for a "See-saw" to be worked in conjunction with a pump, the idea being that the children and ladies of the family while amusing themselves would, without labour, supply the house with water. I have always regretted that I did not keep a note of the name and address of this genius.

Lately I have seen in the papers another bright idea. The proposal was to attach a pump to the entrance gates so that all persons passing in or out of the premises would unconsciously raise a certain quantity of water and supply the house. I am not aware that either scheme has brought money or fame to the ingenious inventors.

West Ham Housing Scheme Rejected.

By the result of a poll of the burgesses on the West Ham Parliamentary Bill, the £1,000,000 housing scheme has been rejected, as was also the scheme for acquiring certain land and building municipal lodging-houses upon it. The West Ham Board of Guardians has received the sanction of the Local Government Board to the expenditure of £225,000 for the erection of an infirmary.

City School Re-opened.—The Freeman's Orphan School at Brixton has been re-opened after a lapse of several weeks, owing to a serious outbreak of diphtheria among the children. The source of the infection was believed to be due to faulty sanitary fittings, which have now been thoroughly overhauled, together with other parts of the drainage system, the work being carried out under the direction of the medical officer of health for Lambeth.

Keystones.

The alterations at the Cookridge Street Baths, Leeds, have cost between £7,000 and £8,000.

A new Organ at the Diocesan Training College, York, has been built by Messrs. Hopkins, of Skeldergate, York.

Mr. Sydney Cooper, who is approaching his 97th birthday, will have four large canvases at the Academy this year.

A new Roman Catholic Chapel at Alyth, Perthshire, has been built from plans by Messrs. Spiers and Co., of Edinburgh.

A new Home for the City of Dublin Hospital Nurses is being erected from the designs of Mr. Albert E. Murray, F.R.I.B.A.

A Lych Gate at Radyr Church, Cardiff, has been erected from designs by Mr. G. E. Halliday, F.R.I.B.A., of Cardiff. The framework is of oak.

Mr. John Duncan, a well-known Dundee artist, has been appointed to take over the direction of the Arts Department of the Chicago Institute.

Hastings' New Workhouse, in course of erection opposite the old building, has been designed by Messrs. Jeffrey and Skiller, architects. The builders are the executors of the late Mr. Peter Jenkins.

The death is announced of the Rev. Francis Haslewood, F.S.A., of Ipswich. He was best known for his ardent interest in matters of antiquarian and historical research, and was secretary to the Suffolk Institute of Archaeology and Natural History.

Result of Competition.—The award of the assessor in the open competition for an orphanage to be erected at Bontnewydd, near Carnarvon, has been given, and the plans of Mr. T. Taliesin Rees, F.R.I.B.A., of Birkenhead, are placed first. Mr. Rees will carry out the work.

New Police Station and Court House for Grimsby.—Plans have been accepted for a new police station and court house at Grimsby, which is estimated to cost about £7,242. The plans will be submitted to the Home Office for approval, and tenders will then be advertised.

The Guildhall Art Exhibition.—On April 9th the Lord Mayor formally opened the exhibition of works of living British artists which has been organised at the Guildhall Art Gallery under the auspices of the Corporation. The exhibition will be open daily until July 10th. On Sundays admission will be between the hours of 3 and 6 p.m.

The Stevenson Memorial Church, Glasgow, is being erected at Belmont Bridge from designs by Mr. John J. Stevenson, of London, and is in the Scottish variety of the late Gothic style of architecture. Messrs. W. and J. Taylor, of Glasgow, are the contractors for the mason work, and Messrs. J. and G. Findlay, of Glasgow, for the joiner work.

Decoration of the Houses of Parliament.—Lord Balcarras recently asked the First Commissioner of Works whether it was proposed to continue the decoration of the Central Lobby, and, if so, what designs had been submitted for that purpose. Mr. Akers-Douglas said: "I regret I have not seen my way to ask for funds for proceeding with the decoration of the Central Lobby this year, and consequently I have not obtained designs for the remaining panels."

Whitechapel Art Gallery.—There will be no picture exhibition in Whitechapel this Easter, as it is hoped that the permanent collection may be opened at the new gallery early in the autumn. The art gallery, which adjoins the Whitechapel Public Library in the High Street, is now out of the builders' hands, and the walls are drying before being made ready to take pictures. It will accommodate about 500 works in two main galleries, one above the other. Mr. Harrison Townsend is the architect. The bottom gallery, which is to be occasionally used for lectures, will seat about 550 people.

ITALIAN ORNAMENTAL ALABASTERS.*

ANYONE who visits the Duomo of Siena must feel a deep admiration not only for the elegance and the richness of its pure Gothic style, for the incomparable pavement, for the frescoes, the statues and the missals of the famous library, but also for another speciality of the noblest decorative art.

Twelve big columns (more than four meters in axis) of the beautiful "noble" or "oriental" alabaster (calcic alabaster, alabastrite) stand two by two at the sides of the six altars in the lateral aisles, together with the pilasters, pedestals, capitals, friezes, polished slabs and other accessories, all of the same superb ornamental stone. And there, in that charming and celebrated town, where every common man of the people speaks the purest Italian language with harmonious pronunciation and where everything recalls the chivalrous and bold customs of the Middle Ages, in the midst of the highest manifestations of art and poetry, other churches and monuments make a show of the magnificent stone. Sixteen similar columns are to be admired at the seven altars of the Madonna di Provenzano; others of smaller size in the church of San Vigilio; and out of Siena, in Rome, in Naples, in Arezzo, in Orvieto, and everywhere, Roman munificence extended itself; temples, palaces, thermae, are ornamented with the richest and most beautiful varieties of alabasters, in which the harmony of colour, the singularity of natural designs and the high polish are quite remarkable. The excavations of Roman ruins have already brought to light innumerable blocks of such marbles, which are collected either in archaeological museums or institutes of geology and mineralogy applied to mining industries.

The alabaster called "oriental," though found in Italian, or, rather, in Siennese quarries, is unique of its kind in the large family of marbles. The monochrome marbles, ancient and modern, the black and the white; the breccias, the brocatellos, the lumachellas or shell marbles, the Africans, the cipollini, &c., are very different from each other in hardness, brightness of colour, fitness for polish, variety of specklings and spottings; but they are all microcrystalline, or compact forms more or less metamorphosed or transformed in solid aggregates of geometrically regular elements. They have become such by means of internal molecular movements which took place in their initial condition of mud deposited in layers in the depth of the sea during the remotest ages of the primitive history of our globe.

On the contrary, true alabaster, here referred to, is a rock of chemical formation in fresh water; it was originated in more recent geological periods, and could even be produced in the present one; it is more or less translucent or transparent if observed in slabs of medium thickness, and is largely crystalline, i.e., composed of big crystalline elements. Some of its rarer kinds, namely, those of a beautiful amber or yellow colour (var. called "pece greca"), are very often as diaphanous as these resins and show beautiful reflections of light, due to flat facets of crystallization placed in different directions; and if we move a lamp round a slab of this variety, thinly cut and highly polished, so that it be more and more translucent, we can see sudden flashes of luminous reflections producing a splendid effect of *chatoyment*. Generally the most abundant varieties, which are found in magnificent blocks and colossal monoliths, show alternating stripes of golden, of honey yellow, pink and red, pearl grey, milky white, and blue colour; all these tints mellowing into each other with an infinite variety of shades and contrasts, and with a marvellous combination of curves and waves and loops, fringes and meanders. In some of the clearest and most transparent varieties

we very often find the radiated or fan-shaped crystallization, and even the masses originated in contact with those rough calcic marbles called "travertins," of which they included fragments or received filtrations, are beautiful to look at, and fit to be used for their brightness of colour and peculiarity of structure.

This alabaster marble may be considered as the classic type of a powerful crystallization of carbonate of lime; but it is at the same time a material and tangible indication of the progressive and not yet accomplished exhaustion of the eruptive activity in the neighbouring ancient volcanoes.

The volcanic cone of Monte Amiata or of Santa Fiora, surrounded by mountains rich in mines, is about 15 kilometres distant from the alabaster quarries, and its last eruptions of trachytic crystalline lavas took place towards the end of the tertiary period, that is to say, during relatively recent times.

The quarries are in the province of Siena, and on the steep north-western slope of the hill on which the picturesque village of Castelnuovo dell'Abate is situated. They are consequently very near the railway station of Monte Amiata on the Siena-Asciano-Grosseto line. The traveller who from this station ascends the winding path leading to the village, and stopping at the group of houses modestly called *Basso Mondo*, looks south-west at the declivity leading to the river Orcia, and will directly be aware of a sudden depression in the ground partly hidden by a thick wood; he will easily guess that an enormous landlip must have happened there, such as to form an excavation of an area of about nine hectares, in full contrast with the low hills and the undulated country all around. And if from the *Basso Mondo* he were inclined to descend the path towards that area, he would soon face a scene not unworthy of a poet's pen or of an artist's pencil. Passing amid those rocks, climbing and jumping from one to another of those enormous and magnificent crystallized calcic masses, which are shining with unknown beauties in their inner multifarious substance, he would stop before unusual landscapes, horrid and charming at the same time because of the contrast between the extraordinary confusion of blocks and crevices and caverns, the outcroppings of stratifications *in situ*, and the groups of oaks, evergreen oaks, elms, and other forest trees; and he would at once understand that some powerful commotion of the ground must have upset all that area after a very ancient and very long period of submersion in stagnant or lacustrine waters, during which phase the sources of the same waters having become calcareous the area was covered all over with calcic incrustations of porous structure, penetrated with argillaceous and ferruginous earth (typical travertins); and afterwards, at the beginning of the upheaval of the ground, the strata of marbles already formed must have been cracked, broken, and thrown out of place according to the increasing declivities and a number of crevices must have been formed through which the thermal and mineral sources, so rich in carbonate of lime, could find their way from the underground to the surface; and there, shut in by the same travertins they had formed, allowing the deposition and the crystallization of their mineral contents, which instead of forming the rough and porous layers and banks of travertine, produced the large incrustations and connections between the disjointed masses and the subsequent levelling stratifications on the pre-existent ground. But while this same ground, here as in the valleys of the Tiber, the Aniene, in the Ascolan region, and elsewhere, was becoming more and more covered and incrustated with such layers, it was also being gradually and continually upheaved until it was much too steep to preserve its equilibrium, and thus it happened that its stratified banks were bent and broken at the top and formed a crest with very steep opposite declivities; then broke again everywhere, and especially towards the bed of the Orcia, sinking into hollows and dales or standing up perpendicularly, always preserving a recognisable parallelism in the projecting parts.

But the blocks in this way detached from the original mass rolled upon and mutually supported each other in a strange equilibrium; and while presenting a chaotic but most picturesque scene to the eye, brought also in view and at hand the best qualities of marble, making others accessible through their large open crevices; so that nowadays the choice would be easy to anyone who intended to use such varieties for the adornment of cathedrals, theatres, palaces, cemeteries, squares and public gardens with columns, slabs and monuments, and even smaller artistic objects for villas, museums and galleries.

One can thus but heartily wish that in honour of Italian art and industry the ornamental Italian alabaster may become again the fashion, as it was in the periods of highest æsthetic and productive architectural magnificence, and that it will be recognised as the most ornamental and most useful among the marbles due to pure carbonate of lime of volcanic hydrothermal formation.

Our Monthly Review.

WITH this issue we are starting a new feature—a monthly review of the art, professional, and trade journals likely to interest readers of *THE BUILDERS' JOURNAL*. We hope to make this review of some interest to readers of this journal who may not have the chance of seeing the periodicals we refer to, apart from any value it may have as a catalogue of modern literature and a record of progress in the arts, crafts and trades we have to deal with. Publishers are cordially invited to send us any of their publications affecting the interests catered for by *THE BUILDERS' JOURNAL*, and may rest assured that they will have fair consideration.

The Scientific American: Building Edition (New York) for March contains a number of interesting articles, but the majority of the buildings illustrated are not worthy of a place in its pages. American architects produce some very fine works when on a large scale, but the average of the domestic architecture is very low indeed. Three erections, of which Mr. E. E. Holman is the architect, are worthy of notice: "Buena Vista," a residence treated rather picturesquely in the Spanish and Italian style of architecture, at Hillcrest Manor, Greenwich, Conn.; "Cliff Eyrie," a log house; and "Cosycote," a log cabin, at Greenwich, Conn. It is somewhat strange that his other buildings illustrated should be so mediocre. It is interesting to have particulars of the ten buildings considered the most beautiful in the United States, selected by readers of the "Brochure Series." The list is as follows, in the order of votes received:—The Capitol at Washington, Messrs. Hallett, Thornton, Hadfield, Hoban, Latrobe, Bulfinch, Walter and Clark, architects; Boston Public Library, Messrs. McKim, Mead and White, architects; Trinity Church, Boston, Messrs. Gambrill and Richardson, architects; Congressional Library at Washington, Messrs. Smithmeyer, Peltz and Edward P. Casey, architects; Library of Columbia University, New York City, Messrs. McKim, Mead and White, architects; Trinity Church, New York City, Richard Upjohn, architect; Madison Square Garden, New York City; St. Patrick's Cathedral, New York City, James Renwick, architect; Biltmore House, at Biltmore, N.C., Richard M. Hunt, architect; and the City Hall, New York City, Messrs. Mangin and McComb, architects. The April number is again overloaded with all that is bad in domestic architecture, but this bad taste by no means extends in a like proportion to the letterpress, which is, on the whole, of a most interesting character. In the March number appeared a review of the fifteenth annual exhibition of the Architectural League of New York, opened on Feb. 10th. This is supplemented in the April number by two photographic views of the galleries, showing some of the exhibits. These are clearly of high character, and are evidence of the great advance American taste has made recently.

* Translation of Professor Comm. Luigi Bombicci's report on the famous quarries of onyx, alabastrite and ornamental marbles situated in Castelnuovo dell'Abate Amiata, Province of Siena, Tuscany; recently reopened by the firm of Miller and Co., Leghorn, after a lapse of four centuries.

We referred some time ago to the good this exhibition has accomplished, and suggested the institution of a similar one in this country. It is surely time something were done in this direction; perhaps the best thing would be to have it in connection with the Congress of Architects held by the Royal Institute of British Architects. Besides these two views of the exhibition there are four photographs of some very beautiful old missions of California on the Old King's Highway.

The Clayworker (Indianapolis) for March contains articles on brick paving for roads, Kaolin, standard paving brick tests, the New York brick market, and many other practical articles. It is this keeping to the practical side in trade journals that is wanted, but we fail to see the good sense in putting in an illustrated stock joke from "Judge" about a nigger stealing fowls.

The American Architect (Boston, Mass.) for March 3rd contains nothing much of interest. The illustrations are well produced as usual, but that is not saying anything for the subjects. The Cauliflower Public House at Ilford is one of our meretricious bits of work that should have been ignored, if not condemned. There is also an illustration of "Minley Manor," Fleet, Hants, by the late George Devey—an attempt in a style the architect did not understand and in which he cannot have exercised his full judgment; the roofs are absolutely hideous. The new Science Building at St. John's College, Annapolis, Md., is a staid classical building, greatly preferable to any attempt at novelty. The number for March 10 contains a useful paper by Herr Max Junghaendel on "Axioms and Principles of Modern Hospital Construction." The illustrations, too, are most interesting. The blocks of the Linen and Woollen Drapers' Institution Cottage Homes at Mill Hill, Middlesex, by George Hornblower, F.R.I.B.A., are snug, picturesque little buildings, but in the administration block there is a striving after effect which renders it more like a district council's offices of the meretricious type. The St. John's Chapel at Matlock, Derbyshire, by E. Guy Dawber is a lovely little piece of work that seems to form part of the simple country side. It is often urged by the practitioners of modern architecture that the beauty of past architecture is due to its age, and that no modern building should be compared with the old without careful consideration of this point. That is all very well, but the instance of this chapel is sufficient to prove that a new building can be quite as beautiful as the old, and harmonise with the surroundings without the aid of the mellowing hand of Time. In the same number is also illustrated the Troy Orphan Asylum, Troy, N.Y., by H. Langford Warren. This is a worthy endeavour in the Gothic style and we are pleased to see that the Yankees are not altogether taken up with the classic of the French school, but Mr. Warren in this building has fallen into the errors which the early exponents of the Gothic Revival in this country fell into. These errors are a too free use of patterns in brick in the endeavour to gain colour variations, the use of conventional forms without due regard to their origin, meaning and utility, and inharmonious with the surroundings. For instance, this building seems plumped down on the site like a cartload of rubbish, the bell-tower or ventilator—which ever it is—would have been better left out and the towers already there used instead for the bells and the ventilators hidden; the traceried windows and the openings in the towers look out of place in a building of this character and without any carving near to relieve their moulded baldness, and would have been better left plain; the square heads to the other windows look out of place in this style, as do the flat roofs of the bay windows; the stepped gables look too finical, and the main entrance porch is a square, dumpy horror; the patterns in coloured bricks are too many and the hollow brick pattern in the gable behind the entrance is quite meretricious; generally a better effect would have been obtained by overhanging eaves and the use of tiles instead of bricks. The number for March 17 gives illustrations of two neat pieces of work by

Bruce Price. We think a great deal better design could have been made of the ten-storey building for the F. L. Ames Estate, Boylston Street, Boston, Mass., although necessarily false. The design for the proposed public library at Dumfries and Maxwelltown, N.B., is another specimen of our horrible municipal architecture. When shall we get a municipal building satisfactory to good taste? Who says that the use of classical styles is prohibitive to invention? The illustration of the highly pleasing house of W. R. Harrison at Tuxedo Park, N.Y., by W. A. Bates in the number for March 24th is a wonderful novelty in the application of classic forms. In this same number are also the original and final designs for the United States Custom House at New York by Cass Gilbert—a truly fine classic work in the best French School Style.

Architecture (Forbes and Co. Limited, 160, Fifth Avenue, New York) is a welcome newcomer into the field of technical journalism. It is a monthly journal costing four dollars per annum post free to any foreign address, and is produced in an excellent style on good paper, the illustrations being reproduced in a style that is above criticism. We are informed that the journal is under the management of a consulting board of five prominent architects, but the illustrations in this third number for March do not say much for their taste. Here we are given the purely meretricious modern designs of French architects. The French school has become well-known for its study of mass and proportion, and we could find much to praise in this and could ignore the bad detail, but of late things have become bad all round, and we are sorry to see our cousins across the Atlantic have not exercised their judgment in selecting the best, but simply followed the bell-wether of French taste wherever it might lead. The designs in this issue of "Architecture" show this, for there is absolutely nothing to recommend in these examples, being neither good in mass, proportion, detail or plan. The residence in the Rue Thery, Paris, is a perfectly ludicrous medley of a supposed classic treatment of Gothic. As tall buildings seem to be insisted upon in America, it is quite right for architects to endeavour to treat them in some architectural manner, and certainly the sedate design for the Batchelor Apartments, Thirty-sixth Street, New York, Mr. Frederick R. Comstock, architect, and Battery Park Building, New York, Messrs. Clinton and Russell, architects, are not altogether displeasing, and reflect considerable credit upon the architects.

The Architectural Review (Boston, Mass.) for March is not quite such a good number as former numbers of this superbly printed and illustrated magazine. It practically contains but one article, but this certainly covers a wide enough range to afford much variety in itself. This is on "American Architecture from a Foreign Point of View: New York City," by Jean Schopfer. The author gives some homely hints and criticisms that are generally sound, and draws the conclusion that for some years to come French influence will augment with the ever-increasing number of American students graduating at the Ecole des Beaux-Arts, but is wisely silent as to the possible future outcome. The plates in this number are of designs for the Graphic Arts, Horticulture and Forestry Buildings at the Pan-American Exposition, Buffalo, N.Y.—a horrible medley of jottings from various styles.

Carpentry and Building (New York) for April contains a number of useful articles on construction, and it would be better if it kept to these, rather than gave an illustration and description of such an ugly house as that at Cranford, N.J., which hardly could have been worse if designed by a jerry-builder here. In this number the first part is given of a useful article by F. E. Kidder on trusses for wooden roofs.

The Brickbuilder (Boston, Mass.) for March is fully up to the level of previous numbers of this sumptuously got-up magazine. It contains, among other interesting articles,

the second part of a highly entertaining series of articles on minor brickwork of the Apennines, with some grand illustrations, and a useful article on heating and ventilating schools. Among the illustrations are several of the new Museum of Science and Art at the University of Pennsylvania, Philadelphia, Pa. (Cope and Stewardson, Frank Miles, Day and Bro., Wilson Eyre, junr., associated architects), a truly beautiful building, with a peculiarly American character. The detail is particularly interesting. The only things against the building are, perhaps, the brick columns and the absence of any features suggestive of an art museum. The building for the Massachusetts Historical Society, Fenway, Boston, Mass., by Wheelwright and Haven, is a nice sedate piece of Classic, but the dormitory for the University of the City of New York, University Heights, New York City (McKim, Mead and White, architects), is strangely unsatisfactory in comparison with the architects' other work.

La Revue de l'Art Ancien et Moderne for April contains illustrated articles on the architecture of the Paris Exhibition; the Chapel of Charity in the Rue Jean Goujon, Paris; Maurice Potter, a painter explorer; the painter, Lampi, second part; Meissen Porcelain and its History; and recent acquisitions of the Louvre Museum. We need not allude to these at length. The Paris Exhibition buildings are, as is now well known, very unsatisfactory, no attempt being made to secure proportion and uniformity in the whole; the permanent erections are better than the others, which are purely panoramic scenery, but even these show the grave faults of modern French work. The Chapel of Charity by M. A. Guilbert is, however, much in advance of other modern French work, and is, on the whole, satisfactory, although the use of stone in unconstructive forms is evident, and that bugbear of classic, viz., the excrescent garland in stone hung from nowhere, is in great profusion. This chapel contains some good decorative paintings by A. Maignan. "Le Bulletin de l'Art Ancien et Moderne," a weekly supplement, sent free to subscribers to the "Revue de l'Art" contains a large amount of entertaining news.

The Berliner Architekturwelt for April shows the want of taste so evident in modern German work. The chief articles are on architecture and art work at the Paris Exhibition, this being the second part of a series; and the new royal stables at Berlin. These stables are built in a most grandiose fashion in the classic style, but are more like a palace, and in no way suggestive of stables. The building is certainly impressive, and good as a reproduction of classic models.

Die Kunst (Munich) for April is somewhat better than recent numbers. The chief article is on Giovanni Segantini, a remarkable artist working somewhat in the style of our pre-Raphaelites. Articles also deal with the sculpture of Max Kruse-Lietzenburg; the "Secession" in Japan, a movement that ought to be discontinued, as apt to ruin the still-lingering tradition that has continued for centuries without a break; the new National Museum in Munich, is a purely frivolous piece of architecture, not worthy of consideration. German arts and crafts are evidently in a desperate state from the illustrations in this magazine, the whole effort being apparently to achieve something novel.

The Master Builders' Associations Journal for this month is full of useful and interesting notes to the trade, but contains nothing of especial interest.

The Pottery Gazette for April has articles on some pottery exhibits for Paris; answers to the City and Guilds of London Institute examination question in pottery and porcelain; pottery at the Furnishing Exhibition, and several other features of interest.

The Quarry for April has articles on the Kilsyth Whinstone quarries, cranes and other lifting and transporting machinery, and the mineral industry in Yorkshire—all of a practical nature. There is also the usual number of useful notes and news of the stone, marble, lime, clay and cement trades.

The Scottish Local Government Gazette is a new penny weekly paper, the first number making its appearance on March 31st, for which there seems a distinct opening. The first number is a bright one and contains much interesting matter for persons connected with county, parish and town councils, school boards and public authorities.

The Engineering Times for April has some interesting articles on the "Halford" gradient railway, by which it is stated to be possible to obtain a speed of 200 miles per hour. Modern methods of saving labour in gas-works, mechanical stokers, the history and development of motor cars, and modern locomotive practice of the world are also treated of. A word of praise is due to the excellent illustrations in this magazine.

The Magazine of Art this month is more than ordinarily interesting. First there is a most entertaining article on John Ruskin, by M. H. Spielmann, followed by an article entitled "Is Ruskin out of Date?" by Robert de la Sizeranne. These two articles are superbly illustrated by reproductions of drawings by Ruskin, one being in colours. Many persons are inclined to consider Ruskin simply as an author, criticising others, but failing in his own attempts. The selection in this issue will show them his versatility and high standard of his artistic achievements. In this same number is a criticism of the New Gallery, by W. H. James Weale; a further contribution to the series illustrating and descriptive of recent acquisitions of our national museums and galleries; an illustrated article on the great bas-relief by Jef Lambeaux, "The Passions of Man;" and an article on Pastel and its value and present position, by A. L. Baldry. There are also the regular monthly chronicle of Art, and several reviews.

The Studio for April is "full of good things." Harriet Ford deals with the work of that highly gifted artist Mrs. Adrian Stokes, the article being well illustrated, one illustration being in colours. There is a most suggestive article on the improvement of sporting cups and trophies, illustrated with examples by C. R. Ashbee, W. Hardiman and W. Reynolds-Stephens. Gabriel Mourey, writes on Paul Renouard, whom he calls a master draughtsman. The illustrations of a bedroom decorated by Frank Brangwyn are typical of the modern rage for "arty-crafty" design. This is, no doubt, a wholesome innovation in moderation, and this room contains much that is good, but it is extreme. Fernando de Arteaga Y. Pereira writes on Alijandro de Riquer, a Spanish painter of considerable merit, and there are the usual monthly jottings from art centres, illustrated by representative but mostly bad pieces of work. It seems a pity that the efforts of Mr. G. A. Reid should have been expended upon the decoration of such a poor piece of architecture as the City Hall, Toronto.

The Art Journal for April contains an appreciative article on the decoration of the choir of St. Paul's Cathedral carried out by Sir William Richmond, written by Miss Minna Gray and illustrated with drawings by Miss Edith James, several being in colours. We were, of course, prepared to see some persons praise the mosaics, but hardly expected the windows to be treated with anything but contempt. Still, whatever may be the merit of the decorations (sic), the article is none the less interesting. Other articles deal with the work of James Maris, the pictorial possibilities of the stage, the potteries at Watcombe and Aller Vale, and a number of illustrated reviews and notes of current matters make up a good number.

International Art Notes is a bright little magazine that makes its first appearance with the March number. It is intended primarily as the journal of the Paris Club, an international association of women artists and others, but the magazine will appeal to everyone interested in modern art. We wish it all success in the character of an art newspaper and not a magazine of ancient and modern curiosities. The first number contains several excellent illustrations, with notes on the various art centres and several short articles. It is

published by Crowdy and Loud, of 7, Pall Mall, S.W., price 6d.

The Home Counties Magazine for April contains several articles of antiquarian interest, illustrated by reproductions of old documents and plates. The articles of chief interest to our readers are those on church plate in the Diocese of London; Westbourne Green, in which an illustration of Isaac Ware, an architect who purchased Westbourne Place, is given with letterpress referring to him; the parish history of Littlebourne, Kent; the church and rectory of St. Michael Bassishaw; Kew, its palaces and associations; Cowper's House at Olney; and the Manor and parish of Littlebury.

The Ruskin Union Journal has made its first appearance with the March number. This issue contains reports of the inaugural meeting and other business done, with the address by the Rev. J. B. Booth, M.A., on "The Life and Work of John Ruskin." The journal is not sold, its issue being limited to members, to whom it is sent free. The cover, designed by Walter Severn, is scarcely worthy the magazine and its objects.

The Antiquary for April contains articles on King Alfred as a man of letters; aboriginal American writing, with illustrations; the old English handicraft of making weapons; the Ivernians; and curiosities of and in our ancient churches, which contains an illustration of the curious seven-sacrament Walsingham font. There are, of course, the usual copious notes on antiquarian subjects.

Feilden's Magazine this month provides us with a mass of interesting and useful matter. The chief articles are on compound and four-cylinder locomotives in England and France, carburetted water gas, modern appliances in gas manufacture, pneumatic tools and appliances, the building of the Great Central Railway, with a number of shorter notes of current interest. There are also practical articles on workshop practice and pattern-making and moulding in the engineering shop. The illustrations are reproduced in the best style.

The Genealogical Magazine this month contains articles on the Armorial Bearings of Leigh, co. Lancaster; the Kirkbys of Kirkby Ireleth, a Cavalier family; the Lords and Marquises of Raineval in Picardy; notes on extinct Irish Baronetries; the Royal descent of James Cecil Coldham Fussell; and others. There is an illustrated article on the Brasses of Margaret, Lady Camoys, and Sir John Leventhorpe. The magazine is most interesting to students of heraldry.

The Reliquary for January is a good quarterly number. Mr. W. Heneage Legge contributes a well illustrated article on Delves House, Ringmer. Mr. John Ward writes on Cinery Urns recently discovered on Stanton Moor, Derbyshire. Mr. Richard Quick, Curator of the Horniman Museum, contributes an illustrated article on old bed-wagons and bed-warmers, a subject seldom heard of. There are also articles on Pigmy Flint Implements, the Biddenden Maids, the Church of St. Ewan at Barévan, Nairnshire, and various other antiquarian matters.

The Journal of the Clerks of Works Association of Great Britain, dated March 26th, prints a paper read before the Association by Mr. J. Watson on "Injector Fire Hydrants." There are also articles on Ruskin, Steel Joists in Cement Concrete, Automatic and Mechanical Ventilation, and other notes of interest.

The British Clayworker for March continues its series of articles on Brick Earths of Great Britain, and on brick drying. There are also articles on the manufacture of glazed terra cotta, the manufacture of majolica dust tiles, with many other shorter ones of a most practical character.

Home Art Work for April contains many chatty paragraphs. The magazine is doing good work in reforming taste in needlework. Architects have of late been paying much more attention to the tapestries and altar cloths in their churches, and we are happy to see that the natural feminine aptitude has

ably seconded their efforts, so that we are in this branch of art work in advance of the mediæval work.

The Artist has articles this month of considerable interest on Jef Lambeaux, Martin Bruce, Church Art, Viareggio as a winter sketching ground, hints to amateur photographers, design for embroidery, with a large number of illustrated notes on current art work. In the article on church art are reproduced several specimens of work at the Clergy and Artists' Association, but the two designs by Reginald Hallward are quite mediocre, and the horn lantern by W. B. Reynolds and the processional cross by A. H. Skipworth are perfectly ugly.

The Irish Builder for April 1st continues the series of articles on Classic details and their application, and on artificial heating. A special plate is given of a parochial hall at Dublin, a simple little Gothic structure by Carroll and Batchelor that is very satisfactory.

The Journal of the Society of Arts for March 23rd contains a paper on English furniture by Mr. Lazenby Libety. In the number for March 30th, Mr. Douglas Cockerell gives a paper on leather for bookbinding, and in that of April 6th there is given a paper on the cultivation, manufacture and uses of indigo, by Mr. Christopher Rawson, F.I.C., and Sir George Birdwood, K.C.I.E., C.S.I., also writes on the etymology and discrimination of vermilion and other ritualistic reds of the Greeks, Romans and Hindus.

The Architectural Review for April is one of the best numbers we have seen of this magazine. Again we have as a special plate a photogravure from a drawing by F. L. Emanuel. Mr. Percy Fitzgerald, M.A., F.S.A., contributes the first part of an article on the life and work of Robert Adam, illustrated by good photographs. The series of opinions by eminent architects on the new L.C.C. street from Holborn to the Strand is continued by T. G. Jackson, R.A., John Belcher, A.R.A., W. R. Lethaby, R. Weir Schultz and Ernest Newton. Mr. J. P. Cooper writes on the town and castle of Annecy, a truly delightful old town from an architectural point of view. More mottoes for decorative treatment are given by Mr. Charles Godfrey Leland, and the Rev. J. Malet Lambert, LL.D., writes on "Early English Craft Guilds." Messrs. Barclay's new bank in Fleet Street is described and illustrated, and a number of reviews and notes on interesting topics concludes the number.

Shakespeare's Church.—In continuation of the restoration and improvement of the Church of the Holy Trinity, Stratford-on-Avon, new stalls for the clergy and choir have lately been erected at the east end of the nave, at a cost of £300.

The Sheffield Society of Architects and Surveyors held its annual meeting last week, when Mr. J. Smith, the president, occupied the chair. The secretary read the thirteenth annual report of the Council, which stated that the present membership of 110 was four less than at the corresponding period of last year. After a reference to the meetings held during the year, the Council dwelt on the correspondence between the Society and the Master Builders' Association on the question of an open arbitration clause. At present no definite decision had been arrived at. The president said the suggestions made by the Council to the Parliamentary Committee of the Corporation with regard to the Corporation Bill had for their object not the diminution, but rather the increase of public advantage, with the least possible hardship and inconvenience to building owners, and they were also made in order to facilitate the co-operation of the architects and the Corporation officials. The following officers were elected for the ensuing twelve months:—Mr. J. Smith (president), Mr. P. Marshall (vice-president), Mr. F. Fowler (treasurer), Mr. Fenton (hon. secretary). Council: Messrs. R. W. Fowler, C. Hadfield, C. J. Innocent, E. M. Gibbs, J. R. Wigfull, J. B. Mitchell-Withers and T. Winder.

Enquiries Answered.

Three-Quarter Brick Facing.

BRADFORD.—F. B. writes: "Can you tell me what is meant by three-quarter brick facing? The bricks are local bricks and the walls are built in old English bond, 3ft. thick."

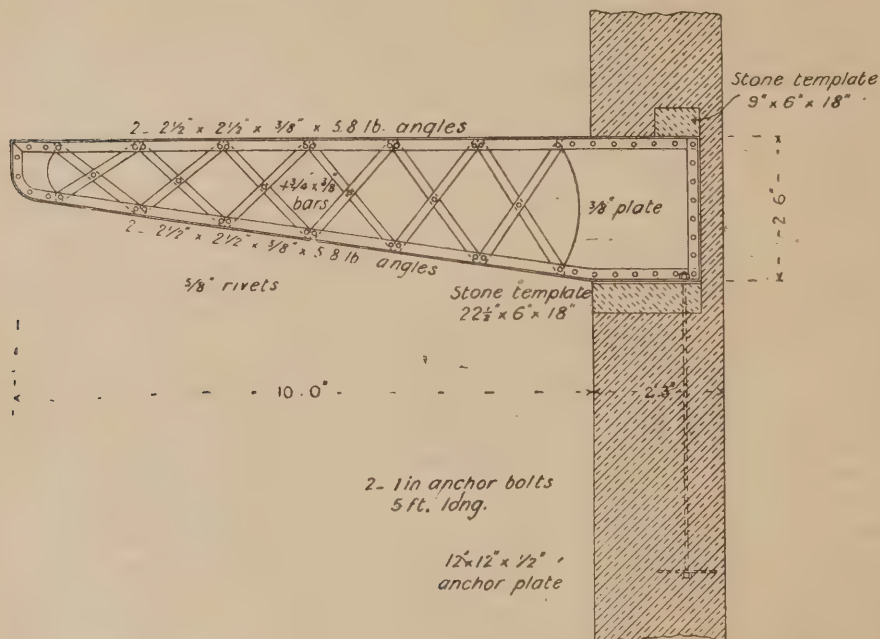
Three-quarter brick facing is not a usual term; it may mean an average of three-quarter brick, i.e., the facing bricks bonded at such intervals as will make the total quantity of facing equivalent to three-quarter brick thick. This would occur in old English bond when all the facing bricks were whole ones, no bats being allowed.

HENRY ADAMS.

Steel Cantilevers.

DUBLIN.—J. J. McA. writes: "I shall be glad to have a solution of the following problem:—Draw to a scale of 1in. to the foot a riveted steel cantilever which is not to exceed 2ft. 6in. deep and is to project 10ft. from a three-brick wall; the cantilever is to carry a distributed safe load of six tons, and is one of a series to take a wooden gallery round a public hall. Mark on the various parts the weights and sizes of the steel."

The accompanying design shows this cantilever. The weight given for angles applies to



3in. thickness, but usually they would be specified by weight and not thickness, as $2\frac{1}{2} \times 2\frac{1}{2} \times 5\text{lb.}$ steel angles, or 6lb. as the case may be. A $\frac{3}{4}\text{in.}$ or $\frac{1}{2}\text{in.}$ bearing plate 6in. wide might be riveted on the back.

HENRY ADAMS.

Sun-Prints.

LONDON, N.W.—M. A. writes: "I should be glad to have a description of the general principles of making so-called 'sun-copies' from tracings. Also, what intermediate step is involved when the original is on drawing-paper or thin cardboard?"

The method of making sun-prints from tracings was fully described on page 133 of the BUILDERS' JOURNAL for April 5th, 1899. In the issue for March 28th last we reviewed a recently-published book on this subject, entitled "Ferric and Heliographic Processes" (Dawbarn and Ward, Ltd., Farrington Avenue, E.C. Price 2s. net.), which should be useful to our correspondent.

Fixing Tiles.

A. O. AND CO. write: "In fixing tiles on washstands with plaster the plaster swells and the wood is caused to warp. How can this be prevented? Which is the best way to fix tiles?"

The addition of five per cent. of lime putty

to plaster of Paris will prevent the plaster from swelling. The mixture should be gauged stiff; if gauged soft the excessive moisture will cause the wood to swell or warp. Add a few drops of size water to the water used for gauging, to retard the setting of the plaster and allow sufficient time for fixing the tiles. Keen's cement or Parian cement is sometimes used for fixing tiles, but they are both too expensive for general work. White lead, used neat, and mixed with plaster, is also used for this purpose; but great care is required in using, as being of a sticky nature the tiles and woodwork are liable to be soiled by it. "Petrura Putty" is the cleanest, safest, and most satisfactory material for fixing tiles on any surface, as it will adhere to brick, stone, wood, plaster, or iron with immediate and permanent tenacity. With the aid of Petrura putty tiles can be as easily and quickly fixed on overhead and perpendicular surfaces—such as ceilings and walls—as on floors or similar flat surfaces. No special preparation or wetting of tiles or fixing surfaces is necessary, so that the fixing is a simple, rapid, and cleanly process.

W. MILLAR.

Party Walls and Adjoining Owners.

NORTHAMPTON.—INDIAN INK writes: "(1) My client in building requires his end wall (which is a party wall) 14in. thick in basement and ground

adjoining owners, if they can agree. If they cannot agree, our correspondent's client may build a wall entirely on his own land, and prevent his neighbour from using it, thus throwing on the latter the whole expense of a wall of whatever thickness the by-laws prescribe for non-party walls. Neither owner has a right (independent of statute, custom, or contract) to build a wall which shall partly stand on the property of the other (*Barlow v. Norman*, 2 Wm. Blachot 959). There is not any foundation, so far as we know, for the notion that where the wall is to be 14in. thick at the basement one of the adjoining owners is to bear the expense of one half of a 9in. wall only. (2) Yes. *Sangster v. Noy*, 16 L. T. 157. The Sunday Observance Act, 1877, 29 Chas. 2, c. 7, s. 6, makes only writs, &c., void.

H. P. B.

Builders' Notes.

London County Council.—At last week's meeting of the Council a discussion arose on the report of the Improvements Committee recommending that eight architects should be invited to send in designs for frontages in connection with the new street from Holborn to the Strand, at a cost of £2,000. (This report is given on page 42 of our issue for Feb. 21st last.) The report was eventually agreed to. A spirited discussion then followed on the instructions to be given to the competing architects, some of the members seeing in a clause in the report a hidden intention of erecting a new county hall for the Council on the site to be cleared facing the Strand. Ultimately the report of the committee, directing the architects, in preparing their designs, to have regard to the indefinite "possibility of the erection of a public building" on the central position of the site, was adopted. Upon the recommendation of the Theatres Committee it was agreed to approve plans for a new theatre in Shaftesbury Avenue. The Council also agreed that the ten acres of Lambeth Palace grounds, to be maintained by the Council, should be named "The Archbishop's Park."

A Painting Case under the Workmen's Compensation Act.—The recent case of *Pearce v. London and South Western Railway Company* was an appeal from the award of the Southwark County Court judge in proceedings to assess compensation under the Workmen's Compensation Act, 1897. The appellant was a painter in the employment of Messrs. Perry and Co., who were builders and contractors and who had entered into a contract with the respondents to do such work in the way of altering, repairing, and painting the respondents' stations in the London district as they might be directed to do by the district engineer at a fixed schedule of prices. Messrs. Perry and Co. were engaged under this contract in reconstructing Hampton Court Station, and the appellant was employed by them on the work. While so employed the appellant was injured by an engine belonging to the respondents. The appellant contended that the respondents, though not his employers, were liable under section 4 of the Workmen's Compensation Act, 1897, to pay compensation. The County Court judge held that the respondents were not liable to pay compensation, because the operation of section 4 was excluded by the clause at the end, the building of a station being "no part of or process in the trade or business carried on by" the railway company, but being "merely ancillary or incidental" thereto. He therefore made an award in favour of the respondents. He also found that the accident arose "in the course of" the appellant's employment, but did not arise "out of" his employment. Upon the ground also he decided in favour of the respondents. The Court dismissed the appeal. Lord Justice Collins said that, in his opinion, the learned County Court judge was right. Lord Justice Vaughan Williams and Lord Justice Romer concurred.

floor, and 9in. thick above. This is necessary according to the local by-law. The adjoining owner now builds, and under the same conditions requires the party wall to be of the same thickness for his building. Can I make him pay for 7in. in basement and ground floor, or is he right in stating that he only pays for 4½in. all the height (the 14in. is half on his land and half on mine)? Can you give me any cases on this matter? (2) Can a landlord give notice to quit if he writes on a Saturday and the tenant receives it on a Sunday? Sunday being quarter day, Monday would be too late. Would the tenant be bound to have it on the Saturday?"

(1) There is, apart from statute, or custom, or contract, no obligation on an adjoining owner to contribute anything to the expense of building a party wall such as that referred to in our correspondent's query. The London Building Act, 1894, section 87, provides for the contribution to be made by each owner when the wall is built partly on the land of each and with their mutual consent. A custom to contribute to the expense of erecting a party wall was set up and proved in *Robinson v. Thompson* (1890, 89 T.T.J., page 137, cited in "Hudson on Building Contracts," 2nd edition, p. 144). If there is neither a statute nor a custom regulating the matter in the particular locality, it will have to be determined by contract between the

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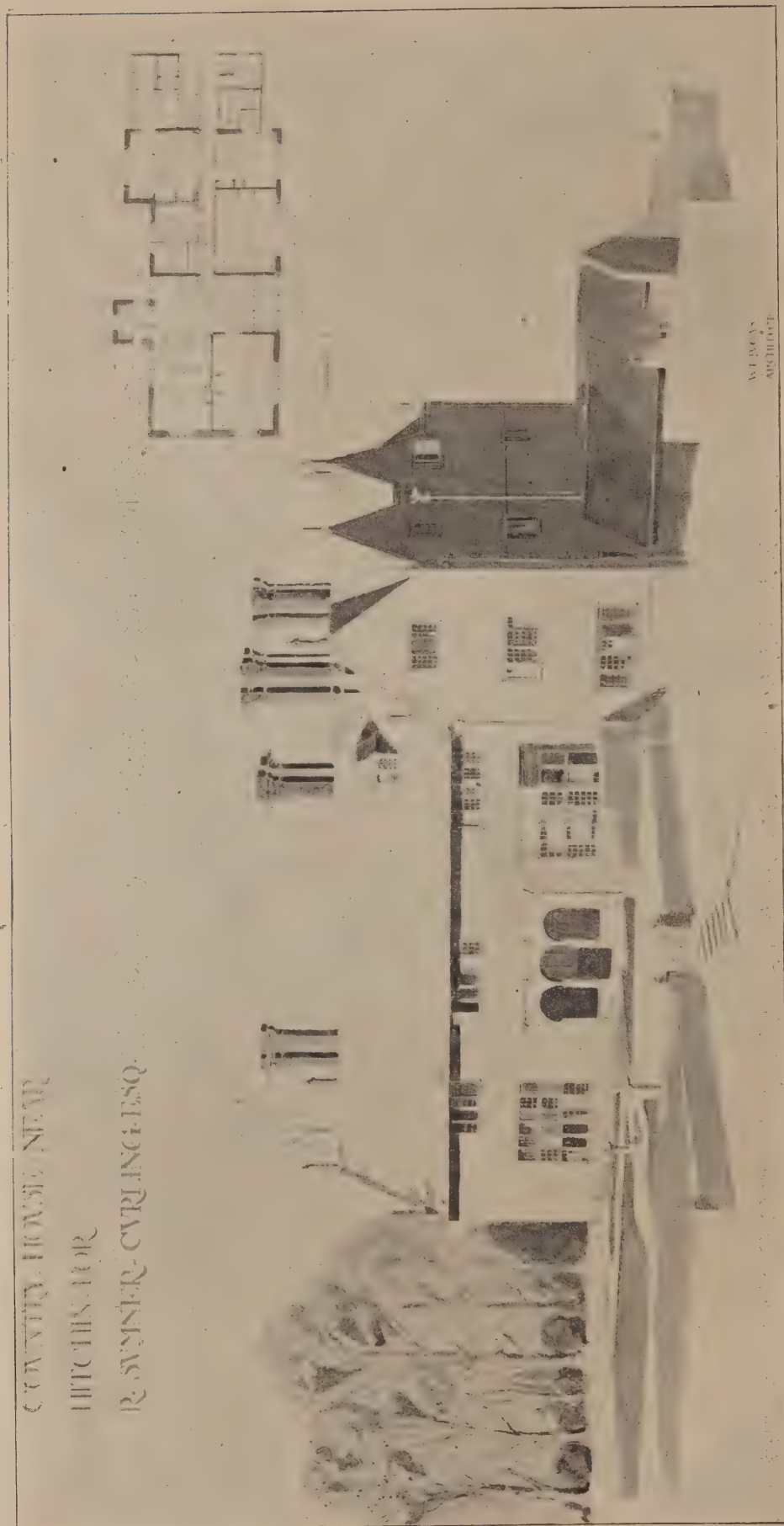
CALDECOTT HOUSE, ABINGDON. W. L. LUCAS, ARCHITECT.

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COUNTRY HOUSE NEAR

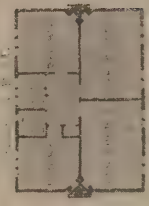
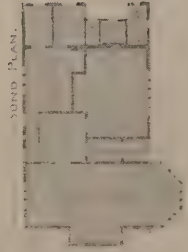
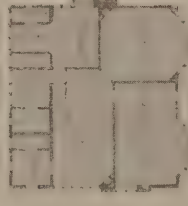
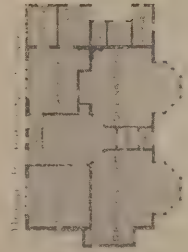
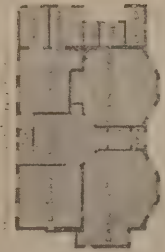
HITCHIN, FOR

RE-SIGNER CYRIL GILES



W. L. LUCAS
 ARCHT.

"OFFLEY HOLES," HITCHIN. W. L. LUCAS, ARCHT.



House D.

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PROPOSED HOUSE AT WINDERMERE. C. F. A. VOYSEY, ARCHITECT.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

"And if, indeed, there be any profit in our knowledge of the past, or any joy in being remembered hereafter, which can give strength to present exertion, or patience to present endurance, there are two duties respecting national architecture whose importance it is impossible to overrate: the first, to render the architecture of the day historical; and, the second, to preserve, as the most precious of inheritances, that of past ages."—JOHN RUSKIN.

Our Inset Sheets.

THE illustrations of Caldecott House, Abingdon, show the present appearance of what, in the year 1730, was a small

farmhouse. This, though partly spoilt in recent years by additions which have now been mostly removed, was possessed of considerable charm, and the endeavour has therefore been made, in designing the new house, to follow as far as possible the characteristics of the original building. The materials used were: for the walls, local stone with thin red-brick dressings; for the roofs, old sand-faced tiles. Mr. W. L. Lucas was the architect, and the whole of the works were executed by Messrs. Prestige and Co., of London. The house for H. Richards, Esq., at Windermere, is proposed to be built in local stone, cement rough-cast, and local green slate roofing. The garden on the south-west side of the house was to look over a steep and thickly-wooded incline, with the lake below; the entrance being kept on the north-east side for protection from the weather. Mr. Voysey is the architect. The designs for four developments of one plan for a house costing £1,000 are by Mr. James Ransome, of London, and are based on some smaller houses of his planning at Wimbledon, Broadstairs, and Haslemere, &c. The sketches illustrate some possibilities of very varied treatment applicable to a plan in itself plain and square, while the arrangement of the rooms is interesting as showing the amount of accommodation that may be contrived within a very limited space. As such the sheet is suggestive.

Clayton Hall.

THE Manchester City Council has decided to restore Clayton Hall, near Droylesden. It is

one of the oldest of Lancashire mansions and was bought by the Corporation so long ago as 1896. Long ago the Hall relapsed into a state of ruin, and with the Parks Committee it was a serious question what should be done with this new possession. For a time the suggestion held that it should be pulled down, and that the space so cleared, with the acre and more of land around it, should be used for a recreation ground. But it was a suggestion that held for a short time only. The members of the Lancashire and Cheshire Antiquarian Society, and many others who were neither antiquarians nor archaeologists, felt that it would be an act savouring far too much of vandalism to destroy a house which for so many years was the home of Humphrey Chetham, the "chapman" (as in old deeds he is called) who has left a greater impression than any other man on the life and being of Manchester. The committee decided first of all that they would have a report from an architect, and it was natural that Mr. Alfred Darbyshire (Messrs. Darbyshire and Smith) should be asked to undertake the duty. Mr. Darbyshire, it will be remembered, was the architect of "Old Manchester and Salford" at the Jubilee Exhibition held in 1887 at Old Trafford. That was one of the most delightful sections of the show, and it was especially remarkable on account of the Humphrey Chetham memorials which were brought together under a common roof. Mr. Darbyshire reported that he could give to the Hall much of the look of old days, and could so stay it and preserve it that for generations to come it would remind citizens of that older Manchester which has passed away. The report has now been adopted.

The Building as it is To-Day.

As it now remains Clayton Hall is surrounded by a moat—more complete and perfect than any other which remains to Lancashire ancestral residences—from 30ft. to 70ft. wide and 10ft. deep. Mr. Darbyshire proposes to fill the deep ditch with water from the mains which connect Manchester with Thirlmere Lake, and so enhance the appearance. The bridge over the moat is of masonry and consists of two beautiful arches, with triangular embrasures on each side of the parapet. When we reach the Hall this relic is found to consist of a wing occupying the north-eastern side of the moat. It represents English domestic architecture of three distinct periods. The earliest portion is first approached on the moat side and may be considered as belonging to the timber-framed work of the late fourteenth or early fifteenth century. It is similar to and coeval with the earliest portions of Ordsal Hall in Salford. Against the gable end is a fine example of a characteristic chimney stack in ashlar masonry of red sandstone. Both this and the gable end have been much mutilated; but enough remains to point the way to a complete restoration. Alongside this oldest portion a strip has been added on the south-west side containing a timber gable and bell turret, with entrance doorway and corridor from which the old portion is entered. This addition is of such a character as to point to the fact that it was added in Humphrey Chetham's time—that is, in the seventeenth century. Built against the northern end of this block (composed of the early and later timber-framed architecture), and in continuation of the garden front, is the last block of the more modern architecture of the Georgian era. This is built of bricks, with the main angles strengthened by red quoins stones. The window openings are poor in character and in degraded contrast to the beautiful wood-framed mullioned and transomed lights of the older portion of the building. The bald, uninteresting brick front of this Georgian portion is covered and rendered picturesque with ivy growth, which it is hoped may be retained without injury during the work of restoration. There can be no doubt that Clayton Hall as it now stands represents one wing only of a quadrilateral plan; indeed, foundations have been traced which clearly prove this to have been the case. The general plan was similar to that of Ordsal Hall, where during the work of building the new church of St. Cyprian, the whole of the foundations of the third side, or missing wing, were laid bare.

"Offley Holes," Hitchin.

"This house, which is illustrated on one of our inset sheets this week, occupies a site high up on hilly ground, and in considering the design and the laying out of the grounds the problem to be faced lay in the fact that the land fell steeply from south to north. The illustration shows the south side of the house, where a garden, sheltered from the prevalent winds, has been cut out of the slope of the hill, advantage being taken of the rise of the ground to form a series of terraces. The site falling also from west to east suggested the planning of three floors to the office wing, kept balanced with the best part of the house, which is only two storeys high. The ground floor plan shows the internal arrangement, the object of which was to protect the reception rooms as much as possible from the north. A solid oak screen across the whole width of the south end of the hall divides it from the loggia, which gives access to the garden and affords a sheltered sitting place for enjoyment of sun and air. The doors from dining room and drawing room to loggia, as well as the various doors to hall, together with the main staircase, are in oak, fumed and waxed, with specially designed wrought-iron furniture. The chimney pieces in the drawing room and hall are of Ham Hill stone, with open brick fireplaces; both these rooms have open timbered ceilings. The house is built of thin red bricks from the contractor's own brickyard; the loggia is in blue Bath stone. Mr. W. L. Lucas, of London, was the

architect. The whole of the works, including lead rain-water heads, were specially designed and executed by the contractor, Mr. J. A. Hunt, of Hoddesdon, Herts.

The Statues on St. Paul's Cathedral.

THE work of replacing the old statues of the Apostles on St. Paul's Cathedral is making good progress. The statues have been in position for 200 years, and those of St. Philip, St. Andrew, and St. Bartholomew, on the south pediment, are the first three to receive attention, for the disintegrating elements of the city's atmosphere have so eaten into certain portions of them that they have become positively dangerous, while for years their features have been altogether unrecognisable. Their successors have been modelled exactly on the lines of the existing statues, the only difference being that they have been built in three sections instead of five. The new effigies have been executed by Messrs. Farmer and Brindle, of Westminster Bridge Road, and when it is realised that they weigh something like seven tons apiece it will be understood that the works department of the Cathedral, under the direction of Mr. E. J. Harding, has a task of no little magnitude to accomplish.

Rebuilding of Khartoum.

SOME interesting particulars of the rebuilding of Khartoum were given in the "Times" for Wednesday last by their special correspondent in the Soudan, who says:—"Another considerable work undertaken by the Government has been the rebuilding of the cities which the Dervishes had destroyed or had allowed to decay. Of these by far the most important was, of course, the rebuilding of Khartoum, involving as it did the transference of the seat of government from the Dervish city of Omdurman. . . . The whole city has been laid out on a metropolitan scale. The river front along the banks of the Blue Nile is more than three miles long; the depth inland is nearly a mile and a half. The public buildings lie along the river bank. At the extreme south-east the Gordon Memorial College, a large red-brick structure with shady galleries and porticoes, covering three sides of a square, has far outstripped its scholars, and in a few months it will be ready for work. In the centre of the lines, on the exact site of Gordon's palace, rises the palace of the Governor-General, now practically completed. It is a handsome Venetian-looking red-brick edifice, with white stone arcadings; the façade overlooks the river; the open court, flanked by two wings, looks out over the city across a spacious garden in which there still flourish a few of the old palms and lemon trees of Gordon's day. Further north-west are other large buildings which will soon be finished—the Government offices and the supply and ordnance stores. The road in front of them will be flanked throughout by a stone river-wall. Parallel with this imposing river front run several long avenues—Sirdar's Avenue, Victoria Avenue, Shasia Cromer. These are regularly crossed by main streets not less than 90ft. wide. The blocks thus formed are further intersected by diagonals, the cross-roads forming the key-points of the city for purposes of defence in such a way that four Maxim guns could control the whole interior of the city. Near the north-east corner of the river front there is being rapidly built by British capital the hotel which at the end of their long desert journey will receive the weary visitors to the capital of the Soudan. Nearer the centre of the town are the shops, restricted to the quarter round the 'sook' or bazaar, and close at hand a covered market on Indian models is about to be built in 'Abbas Square.' A mosque and an English church are also to be erected at Government expense, and the Christian cemetery of the Austrian mission, which had been utterly wrecked by the fury of the Dervishes, has been restored and the gravestones replaced by Colonel Drage's care. Outside all these buildings on the desert front a line of defensible barracks with redoubts will be drawn along the narrow arc from Nile to Nile."

Sir William Richmond on Art and Artists.

SOME interesting remarks were made by Sir William Richmond at the opening of the West Ham picture exhibition last week.

"I wonder whether," he said, "it strikes everyone in this room what an artist is, and what art means, what the life of an artist is, and what his aspirations are?" Sir William described the artist, in the first place, as gifted with keen perception for all that is beautiful in nature, and not only all that is beautiful in nature, but also for all that is beautiful in thought. "I hold," he added, "that besides being the exponent of nature from the point of view of painting, he is also the exponent of nature from the ethical side. Think of what powers he has! Think of the illustrations that he can put before the mind's eye and the mind!"

The artist, Sir William went on, noted the leading episodes in literature, poetry, music, and art. He illustrated the events passing under our own eyes. He was the great exponent of history. "I do not think that is quite understood. I think people are apt to think an artist is a flipperty-jipperty gentleman who amuses himself from dawn to dark by putting pretty colours on the canvas. But to be a real artist means very serious business indeed. It must be begun when you are quite a child, and you must go on learning until you are old. The most touching illustration of that is when that greatest of all artists, to my thinking, Michael Angelo, was an old man. Some one said to him, 'what is your motto?' and he replied—he was then nearly ninety—'Well, I am still learning.'"

From a consideration of the barren waste which the world would be without artists, without literature, without music and painting, all which tended to the refinement of our sensibilities, the ennobling of our ideas, the raising of us above the commonplace, Sir William passed on to talk about the arts of peace and the arts of war.

Now what were the arts of peace? They ennobled us by presenting the most beautiful features of God's work in pigment. A painter found himself in a country and sat down before a beautiful subject and recorded it for ever. It might be but a passing, fleeting thing that he had seen—nothing but a cloud passing over the distance—but this impressed his mind so definitely and entirely that he felt bound to record his impression. That was an ennobling occupation. And, to take a broader view of art still, let them regard it, not only as to statues, buildings, pictures, but as to handicrafts. The London County Council were doing admirable work in their technical schools, and the artisans had now the opportunity, never before enjoyed, of cultivating what he believed to be the underlying talent in almost everybody—the talent for cultivating the arts of peace.

On the subject of this latent talent for art, Sir William proceeded to make an interesting statement. He prefaced it by the remark that, as the result of a good deal of experience with young children, teaching them drawing and other things, he had come to the conclusion that almost everyone had hidden away somewhere an artistic faculty. He gave next a striking illustration in support of that belief. When he was asked to begin designs for decorations at St. Paul's, he said he would employ English labour only, and that he would not employ foreign labour. He was laughed at. He persisted, and said he would go to the English artisan and get him to do the mosaics. He was told he would have to go to Italy for his workmen, to Venice, where there was a firm supplying mosaics who had been engaged in the work ever since the sixteenth century. Well, what happened? He got together some five or six men who had never drawn a line in their lives. These men had had a simple, ordinary education; reading and writing, and so on; and did not show the slightest artistic faculty when he started them to work under his instructions. He told them what to do and they did it. The result was

that the 15,000 to 18,000 sq. ft. of mosaics in St. Paul's were the handiwork of these men, who had never had a single half-hour's teaching in the arts at all. "I did not pick these men," he added, "I took them haphazard, and the result is a proof of my belief that *we* are the most artistic nation. I believe that in another fifty years time we shall be the foremost artistic nation in the world, speaking generally. Our technical schools have not been at work so long as the German. Qua workmanship, the German worker may be better in some respects in consequence, but qua design, the German is a long way behind our artisans."

Among other things, and in illustration of the artistic talent sometimes found under the most discouraging circumstances, Sir William told the following story about an artisan's son. "I know a boy," he said, "about fifteen years of age. He works in a factory for eight or ten hours daily. He draws or paints in his meal times, at night, during his holidays. If he has a herring for lunch he will draw it before he eats it. So with an apple or anything else. His perception is so quick, and he must put his impression down at once. That boy comes to my studio about every third or fourth Sunday. I am then amazed at what that boy has done in his spare time. He does most extraordinary work." Sir William added that he would not yet encourage the lad to throw up his work, but as soon as he could earn by painting as much as he was earning at his trade he should say, "Yes, be an artist." That boy's name should get its place on the roll of fame.

Sir William concluded with a few remarks on the dignity of labour. He always thought that one of the wisest texts of the Bible was: "Whatever thy hand findeth to do, do with all thy might." There was to-day a tendency, from which artists were not free, to scamp things. There was such an enormous demand for instantaneous and rapid supply. That was a danger. He thought we should always keep before our minds the fact that labour was dignified. If a man could find pleasure in his work he was the happiest creature it was possible to imagine.

New Patents.

These patents are open to opposition until May 21st.

1899.—Ventilating Rooms.—5,566. A. HINTERBERGER, Vienna. According to this invention perforated pipes are arranged around the room and connected by branch pipes with a suitable supply of fresh air under slight pressure, produced by fans or other means. It is claimed that the air is thus admitted freely and without draught.

Artificial Stone.—5,603. E. COULON, Blaton, Belgium. Sand and lime are mixed in certain proportions and then crushed thoroughly. The mixture is placed in moulds, which are themselves placed in digesters. Here they remain under great heat for six hours at least, and an electric current is passed through the mass for the purpose of producing chemical action. The moulds are then withdrawn, and when the stone has cooled it is said to be extremely durable.

Spirit Levels.—7,134. J. R. WOOD, Glasgow. The tube is filled with a fluorescent liquid (such as eosine or fluoresceine dissolved in alcohol or water) in combination with a mirror, white, black, or coloured background. In this way the bubble does not receive the light which the surrounding surface of the liquid receives, and can therefore be seen well in dark or foggy weather.

Brickmaking Machines.—7,746. J. KAY, Accrington, J. LOBLEY, Ramshotton, and H. BUNKALL, Baxenden. The object of this invention is to automatically spray each brick with oil or other lubricant whilst passing from the shaping mould to the pressing mould. The device consists of a supply cistern with pipes leading to a point where the brick is to be sprayed, and pipes through which cold or hot

air or steam is forced to effect the spraying. The spray is automatically cut off by a slide plate controlled by the crank of the machine.

Portland Cement.—8,210. W. E. HOPPS, Scarborough. The following cement is claimed to be harder setting and more durable than the ordinary article: Pure chalk, dried and ground to fine powder, 123lbs.; pure silica (such as clean sand, flints, or a very sandy clay or mud), ground to a fine powder, 26lbs.; carbonate of soda similarly ground, 5lbs.; sulphate of lime (gypsum) similarly ground, 4lbs. The mixture is made into bricks, burnt, and ground in the usual way.

Gas Lighting.—10,506. W. T. SUGG, London, S.W. Between the end of the gas supply pipe and the burner a sealing device is placed, by means of which the gas supply pipe is automatically sealed when the gas is turned off at the main. The service pipes are thus kept full of gas, so that when a burner is lighted there is no preliminary outrush of gas, which is deleterious in incandescent lighting.

Walling, Flooring and Roofing.—22,511. G. E. CLARE, Chelmsford. The object of this invention is to cheapen and facilitate the construction of concrete walls, floors and roofs by inserting timber framework, made fireproof and damp-proof, so as to comply with the Local Government by-laws. After the framework has been erected, the spaces are filled with coke breeze, clinker, or other concrete by means of sectional removable battering.

The following specifications were published on Saturday last, and are open to opposition until May 28th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—4,360, VEDOVELLI and PRIESTLY, apparatus for use in electric traction on the conduit system. 6,884, WOOD, fireplaces and furnaces. 6,919, DUNCAN and NEW INCANDESCENT (SUNLIGHT PATENT) GAS LIGHTING CO., LTD., incandescent bodies for gas lighting. 7,374, KINSEY, apparatus used for generating and storing acetylene gas. 7,468, BAYLES, DE SAUSSURE, and HERRON, pipe pliers. 8,084, BAKER, moulds for making concrete paving or blocks. 8,128, MALONEY, manufacture of cements. 8,317, VAUGHAN-SHERRIN, manufacture of varnishes, drying oils, enamel paints, and wool washes. 8,402, PLANET, apparatus for the production of acetylene gas. 8,407, SPOONER (*Beaufils*) shop-front and other shutters. 8,468, BOHLE, BOHLE and PHILLIPS, arc lamps. 8,599, MACDONALD, acetylene gas lighting torch. 9,434, STOCKWELL, electric arc lamps. 9,634, KEITH, hydraulic rams. 9,836, BENTON and BENTON, locks, fitted with both locking and latching bolts. 9,923, MANTLE, sleepers for portable and other railways and tramways. 10,353, LIVERSEDGE and BEAMAN and DEAS, LTD., refuse-destructor, furnaces. 10,364, BRIGHAM, appliances for the prevention of down draught in chimneys. 10,460, GREEN, construction of wrought metal brackets. 11,270, GRAYSON and SPATLY, brick for building and other purposes. 11,312, MACKAY, ventilators. 12,967, WEATHERILL, catches or fasteners for windows, shutters, and doors. 23,863, JOHN ELRICK, JOHN WILLIAM WHITE, WILLIAM FERGUSON, ERNEST HERRON, WILLIAM BATES, WILLIAM DODD, and WILLIAM ADAM FAIRBAIRN, joint for clay, stoneware, cast-iron, and brass pipes. 25,171, ABERCROMBIE and SYMINGTON, machines and apparatus for manufacturing incandescent lighting mantles. 25,768, ROWNTREE, electric lifts or elevators.

1900.—916, BOULT (*Kiebbé*), apparatus for use in opening and closing hinged windows, frames, &c. 982, DEIDRICK, attachments for printing presses for decorating pottery ware, glass ware, &c. 1,205, SEVERIN, manufacture of hollow glass articles. 1,633, HEERDT, mould for use in glass blowing. 1,931, WERNER, ceramic material. 3,268, LAWSON, knobs for doors. 3,334, LACHMAN, frames for containing pulleys. 3,349, DYMOND (*Vereinigte Pinselfabriken*), method of making paint brushes. 3,372, FERGUSSON, locks. 3,374, FERGUSSON, locks. 3,375, FERGUSSON, padlocks. 3,580, JANZ, incandescent bodies for illuminating purposes.

Professional Practice.

Anstruther, N.B.—A new school for the school board of Anstruther Easter is shortly to be erected here from designs by Messrs. Williamson and Inglis, architects, of Kirkealdy and Edinburgh, which were submitted in open competition and placed first in order of merit by Mr. Wilson, architect to the Edinburgh School Board. The school will accommodate 320 pupils and the plans show a corridor running from end to end from which five classrooms are entered, two or three of these being divided by movable partitions; the corridor also gives access to teachers' rooms and cloak rooms. The cost is estimated at about £3,000.

Arncliffe, Headingley.—The stables for J. E. Bedford, Esq., of which a perspective and a plan are given on this page, were designed by Mr. Francis W. Bedford, of Leeds, and

both on a layer of cement concrete. The cattle pens, capable of holding about 500 beasts, are of wrought-iron rails fitted to strong cast-iron posts, eight of the pens being roofed in for store beasts. They are all paved with blue brick on edge, and the roads and gangways with granite setts. There are weigh offices, a public room for salesmen, and lavatory accommodation to add to the general scheme for assuring convenience. The plans were prepared by Messrs. Cossins, Peacock and Bewlay, and the contract has been carried out by Messrs. T. Lowe and Son, of Burton-on-Trent, whose tender worked out at £1,523.

Bristol.—A new chancel and organ chamber have been erected at Holy Trinity Church, Kingswood, from designs by Mr. E. H. Lingen-Barker, of London, Bristol and Hereford. Messrs. Cowlin and Son, the contractors, were able to utilise a part of the east-end walls, from which a new building has been extended for a distance of 12ft. A large new east-end

power) are other features of the renovation, as well as new choir stalls and prayer desks. The total outlay is £2,200.

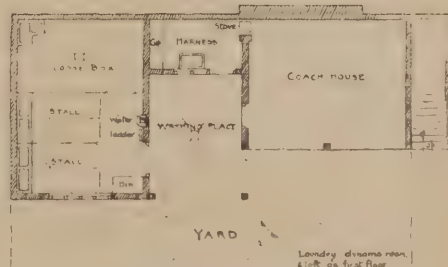
Knowle, Birmingham.—A new organ-chamber, new clergy and choir vestries and a new lectern have been provided at the parish church of Knowle. Messrs. Collins and Godfrey, of Tewkesbury, were the builders, and Mr. J. A. Chatwin, of Birmingham, was the architect. The organ and choir have been transferred to the chancel, and the north chapel, with its beautiful traceried window, has been opened out to the church. The fine old stalls, which were originally in the nave, but of late had been fixed at the end of the south aisle, have been removed to a more convenient place. The work of restoration has revealed the existence of a piscina and ambry, which tend to show that long ago there was a chapel in connection with the Knowle Guild in the south aisle. The new vestries are commodious, and well lighted with traceried



were built in 1893. The lower part is of brick, and the roof is covered with stone slates, which are of a very beautiful colour.

Birmingham.—The new cattle market which the Corporation has provided in Montague Street will be ready for the cattle-slesmen by the end of this month. Originally the site had the disadvantage of being divided into two parts by the course of the River Rea. This objection has been overcome by covering the channel of the river with an arched brick and concrete floor carried by steel girders, the space thus covered in being utilised for market purposes. The extreme length of the land is 390ft., the extreme width 212ft., and the area 6,179 square yards. The sheep and calf pens, which are arranged close to the boundary wall of Montague Street, are covered by roofs carried by cast-iron columns, being low-pitched and covered with slate towards the south, and of steep pitch and glazed towards the north—an advantage of construction which ensures light and affords at the same time a protection from the heat of the sun. The sheep pens are laid with granolithic paving and the road and gangways with granite setts,

window has been provided which, it is hoped, may eventually be filled with stained glass, and similar windows have been erected on each side of the choir stalls. The vestry has been extended in height, so as to be uniform with the new organ chamber, and in the latter building a suitable instrument has been placed, which will be replaced later by a new instrument at a cost of £400. Wide arches have been erected on each side of the chancel and the whole east-end arrangement has been dealt with very liberally. The nave has been floored with wood blocks and the old inconvenient pews taken out and replaced by modern seating arrangements. The old flat roof has also disappeared and in its stead a new conical roof has been substituted. The old inconvenient north entrance has been done away with, and the porch recess has been formed into a baptistery, to where the font has been removed. By removing the partition in front of the gallery, and providing extra seating accommodation at the west end, the interior has been given a much more uniform appearance, and in the belfry end the main entrance is provided. New heating apparatus and new lighting by Welsbach lights (100 candle-



STABLES, ARNCLIFFE, HEADINGLEY, LEEDS.
FRANCIS W. BEDFORD, ARCHITECT.

windows. The cost of the restorative work has been between £900 and £1,000. The lectern is of the eagle type and of brass.

A New Methodist Church at Whitehead, Belfast, is being built from the designs of Mr. H. Sykes, M.S.A., of Belfast. Mr. D. Barbour, of Whitehead, is the contractor.

Views and Reviews.

STAIRBUILDING AND HAND-RAILING.

This is a thoroughly practical work, not written to put forward any particular theory, but combining the good points of all its fore-runners and presenting a clear and connected course of instruction for the artisan as well as for the architect in all that pertains to the designing or construction of wood and stone stairs and handrailing. The three parts into which the work is divided deal respectively with wooden staircases, handrailing, and stone stairs, and there is an appendix of thirty-eight pages containing useful problems in practical plane and solid geometry. A novel but important addition to the first part consists of instruction in setting out ship stairs. While this information is useful to the artisan who aims at being proficient in all branches, it is quite useless to the architect, who would doubtless have preferred to find a section on iron staircases. The first chapter opens with a glossary of technical terms, with descriptive definition of each, and illustrations where necessary. This is followed by a classification of the various forms of stairs; first we have the two main divisions of straight stairs and turning stairs; then the division of the latter class into quarter-turn, half-turn, three-quarter-turn, and one-turn stairs, according as the whole change in direction between the first and last riser is one, two, three, or four right angles. They may be classed also as newel stairs and geometrical stairs, the former subdivided again into dog-legged and open-newelled stairs, and the latter into turning stairs, circular and elliptical stairs. The general principles to be kept in view in designing and planning stairs are then enunciated and several practical points are discussed, such, for instance, as the best width of flight, the number of steps in a flight, the pitch of the stairs, the position of winders, the proportion of tread and rise, the headway, the kind of wood used and the strength, the lighting of the staircase, &c. A simple straight stair with close string is taken as the first example of construction, and every detail is carefully explained and illustrated, including the templates and scribe lines required by the joiner in setting out the work. The same method is followed with a quarter-turn newelled stair, with winders at starting, and the advantages of balanced steps are pointed out. This example introduces various difficulties to the tyro, such as the connection of the treads and risers to a cut string, and the method of forming the easings or curves in the strings where the winders come. In Fig. 71 the balusters are shown dovetailed into end of tread in the ordinary way, but a screw is added to each; this screw is not usually put in, is not wanted, and, being in the end grain of the wood, is of little value. It is rather difficult to describe upon paper the putting together and fixing of a stair with winders, but this is made clear by the authors, who have evidently had workshop experience besides being able to express themselves clearly. Dog-legged and open-newel stairs come in for similar treatment, and the framing of supports at the landings. Chapter VI. brings us to the consideration of geometrical stairs, which are more difficult to set out and also to execute, some of the parts being necessarily of double curvature. A very good illustration of the use of balanced steps is given in the plan of a half-turn geometrical stair with winders in the half space. Different methods are given for graduating the ends of the steps in "balancing," and the advantage over radial winders is very evident. Various modes are shown for the construction of wreathed strings, and the preparation of the moulds is fully described. The two chapters on ship stairs show some of the difficulties of planning stairs in confined spaces, and furnish admirable illustrations of graceful curved work in this connection. Part II., on handrailing, requires a preliminary acquaintance with practical geometry before it can be turned to account. What is known as

the cylindrical system is described both by the method of bevel-cut and square-cut, and the operation of preparing wreaths and scrolls of all kinds is elaborately shown. In Part III. the construction of stone stairs is dealt with, including steps built in the walls at both ends; built in one end and supported at the other, as open newel stairs carried on arches and columns; and built in one end and free at the other, or ordinary geometrical stairs. The use of moulds in working the individual steps is shown, but the authors are evidently more at home in joinery. The artisan who wishes to make use of the book will do well to study the appendix first. This contains many useful problems in practical geometry, simple plane geometry, and the more difficult descriptive geometry, where the mysteries of traces and intersecting planes are dealt with. In conclusion, a word of praise is due to the publishers for the paper and style in which the book is issued. H. A.

"A Treatise on Stairbuilding and Handrailing." By William Mowat, M.A., and Alexander Mowat, M.A. London: George Bell and Sons.

Keystones.

At Winchester Cathedral a new altar cross has been erected from Mr. Bodley's designs.

A New Infirmary at Willesden, N.W., is being erected at a cost of nearly £100,000. Accommodation will be provided for 400 patients.

Mr. William Emerson, Pres. R.I.B.A., informs us that he was born in the year 1845, not 1855 as stated in our "Men who Build" article in the issue for April 4th last.

The Restoration of the Bloody Tower in the Tower of London is now completed, all but a few repairs to a turret; the repairs to the lieutenant's lodgings are also finished.

For stealing 314 slates, a plasterer named Chandler was recently sentenced at the Cardiff Quarter Sessions to three months' imprisonment with hard labour; he was also sentenced to a similar term of imprisonment for stealing a quantity of lead.

For a New Wesleyan Chapel and School near Wakefield the plans of Messrs. Garside and Pennington, architects, have been selected in competition. The buildings are in the late Gothic style, with a tower and spire to the Leeds and Wakefield main road.

Metropolitan Asylums Board.—At last week's meeting of this Board the plans for the erection of the proposed Southern Hospital were approved and adopted. Messrs. Treadwell and Martin, architects, were instructed to prepare plans and specifications for certain building works.

A Claim for Revolutionising British Sculpture.—In the South London Technical Art School's annual report, Mr. John Sparkes, the superintendent, claims that the school has done much towards revolutionising the art of sculpture in this country, and has contributed largely towards influencing the taste of France and Germany in their plastic ideals.

Church Crafts League.—The address of the newly-formed Church Crafts League, of which the Bishop of Rochester is president, is now at the Church House, Westminster. Lord Balcarras, M.P., has joined the committee. Mr. Ruskin had consented to become a patron of the League only a week or two before his death. Other patrons are the Archbishop of York, the Bishops of Bristol and Stepney, and Mr. G. F. Watts, R.A.

Restoration of Crediton Church.—The committee appointed for the completion of the restoration of Crediton Church, which work was commenced about eleven years ago, has recently accepted the tender of Mr. W. Dart, of the Ecclesiastical Art Works, Crediton, for the erection of new chancel stalls in English oak, at a cost of £350. The designs are by Messrs. Tait and Harvey, architects, of Exeter. Tenders were received from three other firms. The work which Mr. Dart has already done at the church has given every satisfaction.

The Lunatic Asylum at Blackadon, Plymouth, is to be extended at a cost of £32,500.

Profitable Electricity.—The St. Pancras Vestry made during the last year a profit of £6,841 on the electric light supply.

A Six-light Memorial Window at St. John's Church, Redland, Bristol, has been erected from designs by Mr. T. W. Camm, of The Studio, Smethwick, near Birmingham.

New School at Cwmaman, Aberdare.—A new boys' school has been built at Cwmaman by the Aberdare School Board at a cost of £2,918. The architect was Mr. T. Roderick, and the contractors were Messrs. J. Morgan and Sons.

Walsall's New Municipal Buildings.—Between eighty and a hundred plans have been sent in by architects in the competition for the erection of new municipal buildings. Mr. J. M. Anderson, a former president of the R.I.B.A., is the assessor.

New Board Schools for Birkenhead.—The Birkenhead School Board have purchased a site for the erection of new Board schools in Woodchurch Road to accommodate about 1,000 children. They have also appointed Mr. T. Taliesin Rees, F.R.I.B.A., of Birkenhead, to carry out the work.

Wanton Damage to a Church.—The Halifax police are making enquiries into a singular act of wilful damage committed at Heath Congregational Church on April 7th. About twenty panes of stained glass in the windows of the church were broken, and also the windows of the lamp outside.

New Church for Eastbourne.—It has been decided to erect a new permanent church for the Ocklynge district in the old parish of Eastbourne. Plans have been adopted, and it is intended to proceed with the building of a nave and aisles as soon as the necessary funds, about £7,000, are forthcoming.

In the Adam Smith and Beveridge Memorial Halls, Kirkcaldy, given by Mr. and Mrs. Andrew Carnegie, of Skibo Castle, an organ is to be erected by Mr. Hope Jones. The case, which is in three parts, is being designed by Messrs. Williamson and Inglis, architects, of Kirkcaldy, who are also superintending some slight structural alterations to the buildings. The cost will be £3,000.

Bristol Society of Architects.—The annual general meeting of this society was held last week, Mr. W. L. Bernard presiding. The report for the session was presented to the meeting and adopted. A satisfactory increase in membership has taken place during the past year. The voting for officers resulted in Mr. Frank Wills being elected president, Mr. G. H. Oatley and Mr. Joseph Wood (re-elected) vice-presidents, and Mr. H. Dare Bryan, hon. secretary and treasurer.

Additions to the Mint.—A new die and metal department is to be added to the Royal Mint, and the necessary excavations are now being made. The Mint stands on the site of the ancient abbey of St. Mary of Graces, or Eastminster, which, in its size and the extent of its precincts, is said to have rivalled that of Westminster. The excavations have disclosed what are supposed to have been part of the old chalk foundations of the "Eastminster," or "East Minster," and two moulded stone doorway jambs of Norman transitional work, but the latter not *in situ*.

The Bradford City Council, at its meeting last week, decided to accept tenders for the Cartwright Memorial Hall amounting to £51,470 9s. 7d. They are as follows:—William Farnish, excavator, mason, and bricklayer, £38,335; W. H. Pick, carpenter and joiner, £5,915; Braithewaite and Co., plumber and glazier, £1,320; J. Hankin, painter, £210; Hill and Nelson, slater, £179 15s.; T. Cordingley and Son, plasterer, £2,140; R. H. Dewhurst, iron founder and smith, £3,382. A recommendation that an additional wing, consisting of two blocks of buildings, should be erected on the north-east side of the Leeds Road Fever Hospital, to accommodate sixty or seventy beds, was adopted.

Trade and Craft.

Office Fitments.

An American roll-top desk is a very useful piece of furniture, and an American file cabinet is a laudable improvement on the old-fashioned dust-collecting letter bundles. All kinds of these office fitments can be obtained from Messrs. Thomas Turner, Ltd., of Leicester and 44, Holborn Viaduct, E.C., for whom they are manufactured by the Globe Company, of New York, Chicago, and Cincinnati. Any article will be sent on approval without charge, provided it is returned within a fortnight carriage paid and in good condition. The Globe "Ideal" file consists of a hardwood drawer with an open back containing an index that is held in place by an automatic spring compressor, which is the most important part of the device. The front of the drawer has rounded edges and a combined handle and label holder. Cabinets of these files can be obtained of various dimensions, from a small article to be placed on a desk to a great piece of furniture that would fill up one side of a room. The majority have vertical roll fronts and are made in quartered oak, walnut and cherry. Nests and cabinets of pigeon-hole cases, copying-press stands, and cabinets on the card-index system can also be obtained from Messrs. Turner; while the choice of office chairs, and roll-top desks is one that should satisfy the most exacting or fastidious purchaser.

Diener's Metal Cement.

It is claimed by the proprietors of this cement (Messrs. Michaelsen and Heine, 61 and 62, Gracechurch Street, E.C.) that it is six times as efficient as lead, hardens immediately after use, and does not need wedging, while it is consequently invaluable where lead and sulphur are used for embedding and similar work. It is very strong, has great binding power in its solid state, and great liquidity when molten. It offers perfect resistance against acids of any kind, and is quite unaffected by changes of temperature and climatic conditions, so that there is no danger of it loosening or cracking. As scrap and tailings can be used over and over again, the material is economical. In a recent test it was found that when an inch Lewis bolt was inserted in a block of Diener's metal cement, the bolt broke under a tensile force of 23 tons, but there was no sign of the cement having suffered any deterioration. A similar bolt was fixed in a cast-iron block, and lead was used to fasten it instead of the metal cement. The bolt broke under a weight of 21.96 tons. Manifestly it was drawn outside its block, and the lead fastening was likewise extended $\frac{1}{16}$ in. The compressive tests were equally satisfactory. A block measuring 3 in. by 3 in. by 2½ in., which was bedded in plaster of Paris before testing, was not crushed until a load of 20.2 tons was applied. As the area was 9 square inches, the compressive strength was found to be 2.24 tons per square inch.

Painters' Requisites.

Messrs. Hamilton and Co., of 116-118, Clerkenwell Road, E.C., send us a copy of their 1900 catalogue. The majority of the prices given are practically similar to those which have prevailed since September last, but others (such as the larger sizes of distemper, stock and ground brushes) are still further increased, following the advance (not yet arrested) in the price of the better-class bristles. The following alterations have been made:—The sizes of all dusters, ground and varnish brushes below 1 have been revised, and four new sizes instead of eight are now made, namely, Nos. 2, 4, 6, 8. Smaller sizes than 4oz. in tied and nailed stock and liner brushes are not stocked, and nickel-plated cases will be used in place of tin for some flat varnish brushes, fitches and lining tools as the old stocks are used up. The sizes of iron-bound glue brushes Nos. 78 and 78g have been altered, and seamless ferrules will be used as

the old stocks of brazed and riveted iron rings are exhausted. The firm is now able to make patent flat varnish brushes Nos. 0050, 0050a and 0100, lin. wide. Several catalogue numbers have been changed, and the following additions have been made:—1a, china bristle dusters; 22b, china bristle one-knot ground brushes; 050a, 50b, flat hog-hair bevelled varnish brushes 3 in. thick; 50d, flat hog-hair varnish brushes ½ in. thick; 55b, decorators' cut stencils; 073b, metal-bound German tools; 118d, camel-hair sword strippers; 149a, mat baskets, cane handles; 0153, fittings for paraffin blow lamps; 169, Day's patent safety paint-kettle hooks; 840, 870, Hamilton's patent self-locking shaving brushes; and 1550, Davison's patent ladder brackets. It may be mentioned that Messrs. Hamilton's works are at Wealdstone, R.S.O., Middlesex.

Ventilating Buildings.

We have already remarked in this column that the trade catalogue seems to be undergoing a change and is developing from a badly printed, unattractive pamphlet to the very opposite, some of the larger catalogues being excellent specimens of printing and arrangement. Though this improvement necessarily entails an extra expense to the producer, the money is well laid out, for the purchaser prefers to examine a catalogue attractively produced than one of the old school. The "Climax" Ventilating and Heating Company, Limited, of 41, Port Dundas Road, Glasgow, keeps well up with the times, and their catalogue has the praiseworthy qualities mentioned above. This firm has set itself a very commendable task, that of improving the appearance of the roof ventilator, which, occupying the position it does, must necessarily deserve the closest attention. Some of the ventilators illustrated in the catalogue now under review are most pleasing and show that great consideration has been exercised to make them as architectural as possible, while in no way detracting from their efficiency. It is claimed that "Cousland's Improved Climax" patent direct-acting ventilators will give an extraction speed of 350ft. to 400ft. per minute in a breeze of 7½ miles an hour; while when no wind is perceptible at a height of 40ft., with an excess of 10 degrees above the external temperature the same volume of air should be withdrawn. The system adopted by this firm consists of a turret ventilator on the roof with a main shaft (fitted with a regulating valve) from which branches are taken to the ceilings of the rooms to be ventilated. The rooms on the upper floor have a cone enlargement, covered by an ornamental grid in the ceiling, connected by a branch to the main shaft. Fresh air is admitted through "Cousland's Improved Climax" inlets at a height of 5ft. 9in. from the floor. The turret ventilators made by the firm are, under ordinary conditions, perfectly free from draught, and need no valve boxes below them, they are in strong gauges of best galvanised rolled steel, moderate in price, and well finished. The "Natural Exhaust" ventilator secures perfect freedom from draught in all positions without any valve arrangement, and is noiseless. "Cousland's Improved Climax" direct-acting invisible roof ventilator has been proved by exhaustive tests to be equal in extracting powers to any turret ventilator on the roof, and has an exit area double that of the pipe. The firm has supplied its ventilators to H.M. Board of Works, Local Government Board of Ireland, Imperial Court of Berlin, and to numerous hospitals, churches and other public buildings throughout the kingdom, and has obtained for them a wide reputation for efficiency, workmanship and fitness.

In Memory of the Brave.—The officers of the Manchester Regiment are desirous of decorating the new Victoria porch at Manchester Cathedral with memorials of officers and men who may fall in South Africa. It is proposed to erect stained-glass memorial windows and wall tablets.

Masters and Men.

The Ayr Joiners have struck against the masters proposed reduction of 1d. per hour in their wages.

Brickmakers in the Prittlewell and Wakering Districts have come out on strike because the masters will not agree to a 10 per cent. increase on the standard rate of wages.

The Southport Joiners have accepted a ½d. advance in wages in two instalments—in May and August—in place of the 1d. per hour they asked for. This brings the wage up to 9d. per hour.

The Lock-out of Liverpool Joiners has been ended by the men's circular being withdrawn. The point was whether joiners paid by time should be exclusively employed in laying wood flooring blocks.

Coatbridge Joiners' Strike.—Murray's men have joined the strikers at Coatbridge rather than submit to a reduction of ½d. which was threatened, and have joined the ranks of those who have been idle for five weeks.

No Employment at the Paris Exhibition should be expected, as the Employment Department of the London Chamber of Commerce states that all needed assistance has been already obtained by the exhibitors and others.

A Painters' Union at Brechin has been formed to secure the organisation of trade in the locality, and the following branch officials appointed: President, Mr. H. Ferrier; treasurer, Mr. Smart; secretary, Mr. Mitchell; trustees, Mr. Moody and Mr. Bain.

New Companies.

Wolverhampton and Suburban Houses Company, Limited.

This company was registered on April 3rd with a capital of £13,000 in £1 shares to acquire certain freehold lands, buildings, and hereditaments in and near the borough of Wolverhampton, Staffs., to adopt an agreement with W. H. C. Walker and C. Walker, and to carry on the business of builders, contractors, carpenters, &c. Registered office 44, Queen Square, Wolverhampton.

Collins and Morris, Limited.

This company was registered on April 3rd with a capital of £3,000 in £25 shares to acquire the business now carried on by T. Collins, W. Collins, and R. Morris at Brighthouse and Lightcliffe, Yorks., and to carry on the business of quarry owners, stone workers, colliery proprietors, &c. The first directors (to number not less than three nor more than seven) are J. W. Turner (chairman), T. Collins, W. Collins and R. Morris.

Lewis, Miller and Company, Limited.

This company was registered with a capital of £300,000 in £1 shares to adopt an agreement with the liquidator of the joint-stock company of the same name, and to carry on the business of timber merchants. Registered office: Ferntower Road, Crieff.

Mr. William Watson, borough surveyor of Maybole, has been appointed borough surveyor and sanitary inspector for St. Andrews.

Tiverton Sewerage Scheme.—The Local Government Board has sanctioned the application of the Tiverton County Council to borrow £5,500 for sewerage and sewage disposal works.

New Bridge near Ossett, Yorks.—The cost of the public bridge which is to be erected over the river Calder at H.aley is estimated at £2,400. The bridge will be 150ft. long and 12ft. wide.

Steam Rollers for the Pembrokeshire Roads.—After a good deal of agitation the Main Roads Committee of the Pembrokeshire County Council have decided to recommend to the Council the employment of steam rollers on the main roads of the county.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
April 20	Boston, Lines.—Alterations to Offices, &c.	Harbour and Docks Commissioners	Engineer, Market-place, Boston.
" 20	East Finchley, N.—Sorting Office	Commissioners of H.M. Works, &c.	J. Wager, H.M. Office of Works, &c., Storey's-gate, S.W.
" 20	Dunoon, Scotland—Court House and Police Station	General Purposes Committee	J. McKissack and Son, 68, West Regent-street, Glasgow.
" 20	Stockport—Park and Recreation Ground Works	G. F. Roberts	J. Atkinson, Borough Surveyor, St. Petersburg, Stockport.
" 21	Aberystwyth—Alterations, &c.	E. J. Williams	T. E. Morgan, Architect, Aberystwyth.
" 21	Birr, Ireland—Addition to Workhouse Hospital	School Board	H. Dooley, Clerk, Workhouse, Birr.
" 21	Cardiff—Alterations, &c., to Pendoylan House	Corporation	E. J. Williams, 31, High-street, Cardiff.
" 21	Seaton Delaval, Northumberland—School	Guardians	S. Gibson, 27, Church-row, Bates's Cottages, Seaton Delaval.
" 21	Norwood, Middlesex—School, &c.	Workhouse Guardians	G. E. T. Lawrence, 22, Buckingham-street, Adelphi, W.C.
" 23	Barnard Castle—Mission Hall, &c.	Urban District Council	F. H. Livesay, 107, Newgate-street, Bishop Auckland.
" 23	Barrow-in-Furness—Extensions to Electricity Works	Monmouth Rural District Council	Borough Engineer, Town Hall, Barrow-in-Furness.
" 23	Bradford—Buildings	Earl Gray	Empsall and Clarkson, 7, Exchange, Bradford.
" 23	Cork—Dwelling-house	Wesleyan Chapel Trustees	W. H. Hill and Son, 28, South Mall, Cork.
" 23	East Preston, Sussex—Walling, Fencing, &c.	Lancs. and Yorks. Railway Co.	H. Howard, Town Offices, Littlehampton.
" 23	Ilford—Shaft and Electric Light Station	Guardians	H. Shaw, 7, Cranbrook-road, Ilford.
" 23	L'antilio, Crossenny, Mon.—Bridge	Woolwich Union Guardians	— Prosser, The Hostry, Llantilio, Crossenny.
" 23	South Broomhill, Northumberland—Hotel	Guardians	G. Reavell, jun., Architect, Alnwick.
" 23	Stapleton—Rebuilding Inn	Whitechapel District Board of Works	Bernard & Pearson 4 St. Stephen's-chas., Baldwin-st, Bristol.
" 23	Dudley—Extensions, &c., to Chapel	Chief Surveyor	A. Ramsell, 187, Wolverhampton-street, Dudley.
" 24	Irlams-o'-th'-Height, near Manchester—Station, &c.	Islington Vestry	Engineer, Hunt's Bank, Manchester.
" 24	Kingston-on-Thames—Coal Store and Workshops	Corporation	W. H. Hope, Architect, Union Offices, Kingston-on-Thames.
" 24	Pellon, Halifax—Foundry	Llangueic School Board	Utey, Hebblethwaite & Utey, 10, Waterhouse-st., Halifax.
" 24	London, E.—Electricity Supply Station	Ystradgofwg School Board	N. W. Jameson, 15, Great Alie-street, Whitechapel, E.
" 25	Plumstead—Nurses' Home	Trinity House Corporation, Hull	C. W. Brooks, 63, Finsbury-pavement, E.C.
" 25	Woolwich—Cottage Homes	Joint Small Pox Hospital Board	Church, Quick & Whincop, Architects, William-st, Woolwich.
" 25	London, N.—Underground Conveniences	Corporation	Chief Surveyor, Vestry Hall, Upper-street, Islington, N.
" 25	Winchester—Public Baths	Essex and East Suffolk County Cncls.	Lansdell and Harrison, 38, Bow-lane, Chapside, E.C.
" 25	Rhiwflwr, near Cwmtyrech, Wales—School	Reynolds and Co.	W. W. Williams, Island Chambers, 63, Wind-st., Swansea.
" 26	Pentre, Glamorgan—Extensions to Schools	School Board	J. Rees, Architect, Hillside Cottage, Pentre.
" 26	Tibthorpe, near Driffield—Hind's House	School Board	Keys Hotel, Driffield.
" 26	Croydon—Small Pox Hospital, &c.	Joint Sewerage Committee	Chart, Son and Reading, Union Bank-chambers, Croydon.
" 27	Winchester—Public Baths	Corporation	Lansdell and Harrison, 38, Bow-lane, Chapside, E.C.
" 28	Dedham, near Colchester—Rebuilding Bridge	Gaslight Company	Widnell & Trollope, Broad Sanctuary-chambers, Westminster.
" 28	Notting Hill, W.—Church	Urban District Council	C. J. Mann, and Son, 29, Great George-street, Westminster.
" 28	Swindon—Addition to Factory	Vestry	W. H. Read, Corn Exchange, Swindon.
" 30	Blackpool—School		Anderson, Simon & Crawford, 16, Rutland-st., Edinburgh.
" 30	Herne Bay—Schools		E. Collard, 12, East-street, Herne Bay.
" 30	Chelmsford—Two Cottages		Surveyor, 16, London-rd, Chelmsford.
" 30	Edinburgh—Slater's Work		W. R. Herring, Gasworks, Edinburgh.
May 1	Gloicester—Brick Gasholder Tank		W. S. Morland, Company's Engineer, Gasworks, Hempsted.
" 3	West Bridgford, Nottingham—Bridge		W. Pare, Surveyor, George-road, West Bridgford.
" 4	Bernondsey, S.E.—Chimney Shaft		F. Ryall, Vestry Clerk, Town Hall, Spa-road, S.E.
ENGINEERING—			
April 20	Stonebridge, near Durham—Bacteria Beds, &c.	Durham Rural District Council	G. Gregson, Surveyor, Eastwood, Western Hill, Durham.
" 20	Portknockie, Scotland—Breakwater and Quays	Harbour Trust	D. and C. Stevenson, 84, George-street, Edinburgh.
" 23	Pollington, near South, Yorks.—Well, &c.	Goole Urban District Council	J. C. Melliss, 261, Gresham House, Old Broad-street, E.C.
" 23	Finedon, Northampton—Well	Urban District Council	Mosley and Scrivener, Engineers, Fish-st., Northampton.
" 24	Hertford—Tube Well	Corporation	J. H. Jevons, Borough Engineer, Hertford.
" 26	Stetchworth, Cambs.—Well	Newmarket Rural District Council	S. J. Ennion, Clerk, Newmarket.
" 26	Dublin—Boilers	Electric Light Committee	E. Hammond, 64, Victoria-street, Westminster, S.W.
" 30	Windsor—Gas Plant	Royal Gaslight Co.	J. Wadeson, 2, Victoria-street, Windsor.
" 30	Edinburgh—Bridge	County Council	Crouch and Hogg, 63, Bothwell-street, Glasgow.
" 30	Bollington—Borehole	Urban District Council	W. H. Radford, Angel-row, Nottingham.
" 30	Edinburgh—Steel Girder Bridge	Mid-Lothian County Council	Johnson and Rankine, 238, West George-street, Glasgow.
" 30	North Fambridge, Essex—Sea Wall	Maldon Rural District Council	H. G. Keywood, 6, Market hill, Maldon.
IRON AND STEEL—			
April 21	Clacton-on-Sea—Cast-iron Pipes	Gas and Water Committee	S. Francis, Town Hall, Clacton-on-Sea.
" 21	Newcastle-on-Tyne—Steel and Iron Work	Corporation	Oliver, Leeson & Wood, Bank-chambers, Mosley-st., Newcastle.
" 21	Glasgow—Various Stores	Corporation	T. Melvin, Sewage Works, Swan-ton-street, Glasgow.
" 23	London, N.—Gully Gratings, &c.	Hornsey Urban District Council	E. J. Lovegrove, Engineer, Southwood-lane, Highgate, N.
" 25	Burnley—Iron Escape Stairs	Guardians	S. Keighley, 27, Nicholas-street, Burnley.
" 25	Middleton, Lancs.—Gas Mains	Corporation	T. Duxbury, Gas Engineer, Town Hall, Middleton.
" 25	Newcastle-on-Tyne—Steel and Iron Work	Corporation	B. F. Simpson, 12, Gray-street, Newcastle-on-Tyne.
May 5	Wolverhampton—Rails, &c.	Corporation	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
ROADS AND CARTAGE—			
April 20	Worcester—Improvements	County Council	The Surveyor, Rural District Council Offices, Tenbury.
" 20	Bradford—Streets and Sewers		A. Sharp, Surveyor, Albany-bldgs., Market-st., Bradford.
" 20	Kettering—Forming, &c., Road		F. A. Palmer, Architect, Gold-street-chambers, Kettering.
" 21	Warminster, Wilts.—Pavement	Urban District Council	A. F. Long, Surveyor, Council Offices, Warminster.
" 21	Swindon—Works	Urban District Council	H. J. Hamp, Surveyor, Regent-circus, Swindon.
" 23	Hambleton, near Guildford—Materials	Rural District Council	G. Lintott, Surveyor to Council, Cranleigh.
" 23	Runcorn—Granite Macadam	Rural District Council	G. F. Ashton, Clerk, Workhouse, Dutton.
" 23	Thakeham, Sussex—Road Materials	Rural District Council	A. F. Mant, Clerk, Storrington.
" 23	Wivenhoe, Essex—Channelling, &c.	Urban District Council	E. H. Barrell, Surveyor to Council, Wivenhoe.
" 23	Stanley, Durham—Road	Urban District Council	J. Routledge, Surveyor, Council Offices, Stanley.
" 24	Croydon—Road Repair	Town Council	Borough Road Surveyor, Town Hall, Croydon.
" 24	Grelton, Uppingham—Granite	Rural District Council	J. E. Willford, Clerk, Uppingham.
" 24	Southampton—Street Works	Corporation	W. B. G. Bennett, Engineer, Municipal Offices, Southampton.
" 24	Uppingham—Granite	Rural District Council	J. E. Willford, Clerk, Uppingham.
" 25	Facit, near Rochdale—Materials	Urban District Council	T. Biker, Surveyor, Council Offices, Facit.
" 25	Hemel Hempstead—Works	Corporation	W. E. Locke, Surveyor, Town Hall, Hemel Hempstead.
" 26	Lanchester—Material	Rural District Council	W. Cumming, Surveyor's Office, Lanchester.
SANITARY—			
April 20	Bradford—Sewers	Urban District Council	A. Sharp, Surveyor, Albany-buildings, Market-st., Bradford.
" 21	Gildersome—Sewers	Joint Sewerage Board	J. Waugh, Engineer, Sun bridge-chambers, Bradford.
" 21	Huddersfield—Outfall Sewer	Corporation	Abbey and Hanson, Civil Engineers, Huddersfield.
" 23	Plymouth—Sewerage Works		Town Clerk, Municipal-buildings, Plymouth.
" 24	Glasgow—Laying Sewers, &c.		R. F. Miller, 109, Bath-street, Glasgow.
" 30	Aldershot—Sewers	Urban District Council	N. E. Dennis, 126, Victoria-road, Aldershot.
May 1	Mountain Ash—Sewage Farm, Straining Tanks, &c.	Urban District Council	J. Mansergh, 5, Victoria street, Westminster.
" 7	Armagh—Sewerage Works	Urban District Council	J. F. Peddie, 36, Scottish Provident-buildings, Belfast.
" 8	London, E.—Sewers	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
April 20	Buckie, Scotland—Bridge		J. A. Budge, Burgh Surveyor, Buckie, Scotland.
" 20	Pontefract—Adapting		The Clerk, Union Offices, Pontefract.
" 28	Leicester—Infirmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight—Buildings	£50, £50	W. H. Woodbridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne—Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhamsted—Gills' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamsted.
" 30	Riviera—Villa for Sir William Ingram	£78 15s. £28 5s., £5 5s.	"Architectural Review."

COMING EVENTS.

Thursday, April 19.

NATIONAL ASSOCIATION OF MANUAL TRAINING TEACHERS.—Conference at the Society of Arts.

Friday, April 20.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XIV.

Saturday, April 21.

DUNDEE INSTITUTE OF ARCHITECTURE, &c.—Visit to Messrs. Justice and Sons' Works, and to Kingoodie House. 1.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Dysart House, Ravenscraig Castle, and St. Serf's Tower.

Monday, April 23.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. Killingsworth Hedges, M.I.C.E., M.I.E.E., F.C.S., on "Protection of Public Buildings against Lightning." 8 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Anniversary Meeting at 2 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Eighth "James Forrest" Lecture. Sir William H. Preece, K.C.B., F.R.S., on "The Relations between Electricity and Engineering." 8 p.m.

Tuesday, April 24.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Quarterly Meeting and Excursions at Dublin.

INSTITUTION OF CIVIL ENGINEERS.—Sir William H. Preece on "The Relations between Electricity and Engineering," at 4 p.m. Annual General Meeting of (Corporate Members to receive Report of Council and to elect the Council and Auditors for the ensuing year at 8 p.m.

SOCIETY OF DESIGNERS.—Mr. Turbayne will show Book Decorations, and Mr. Lindsay Butterfield will show examples of his designs for Tapestry, Cretonne, Wall-papers, &c. 7 p.m.

Wednesday, April 25.

SOCIETY OF ARTS.—Ordinary meeting at 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Annual Dinner.

SURVEYORS' INSTITUTION.—Country Meeting at Leeds. First Day.

Thursday, April 26.

INSTITUTION OF MECHANICAL ENGINEERS.—Ordinary Meeting at 8 p.m.

SURVEYORS' INSTITUTION.—Country Meeting at Leeds. Second Day.

SOCIETY OF ARCHITECTS.—Meeting at 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

ROYAL INSTITUTION.—Prof. Dewar on "A Century of Chemistry in the London Institution."—I. 3 p.m.

Friday, April 27.

ARCHITECTURAL ASSOCIATION.—Mr. E. H. Bennett on "The Paris Exhibition." 7.30 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XV. 11.30 a.m.

Saturday, April 28.

ARCHITECTURAL ASSOCIATION.—Sixth Spring visit.

ROYAL INSTITUTION.—Prof. Stanley Lane Pole on "Egypt in the Middle Ages."—I. 3 p.m.

CURRENT PRICES.

FORAGE.

Hay, best ...	per load	2 s. d.	2 s. d.
Sainfoin mixture ...	do.	3 10 0	4 0 0
Clover, best ...	do.	3 15 0	4 5 0
Beans ...	per qr.	4 5 0	5 0 0
Straw ...	per load	1 7 0	—
		1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ...	per cwt.	1 8 0	1 9 9
Colza Oil, English ...	per cwt.	1 9 6	—
Copperas ...	per ton	3 0 0	—
Lard Oil ...	per cwt.	1 16 0	—
Linseed Oil ...	per cwt.	1 7 0	—
Petroleum, American ...	per gal.	0 0 7 1/2	0 0 7 1/2
Do., Russian ...	per gal.	0 0 7	—
Pitch ...	per barrel	0 9 0	—
Tallow, Town ...	per cwt.	1 6 6	1 10 0
Tar, Stockholm ...	per barrel	1 6 0	—
Turpentine ...	per cwt.	2 1 9	—
Lead, white, ground, carbonate per cwt.		1 2 10	—
Do. red ...	per cwt.	1 0 4 1/2	—
Soda crystals ...	per ton	2 17 6	—
Shellac, orange ...	per cwt.	3 0 0	—

METALS.

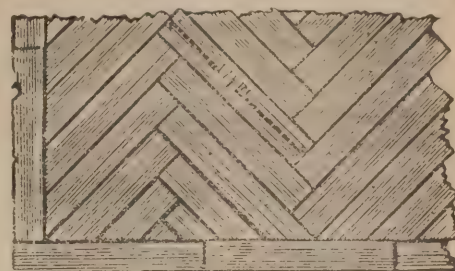
Copper, sheet, strong ...	per ton	87 10 0	89 10 0
Iron, shafts, bar ...	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet ...	do.	15 0 0	—
Lead, pig, Spanish ...	do.	16 16 8	—
Do. do. English common brands ...	do.	17 2 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards ...	do.	20 0 0	21 0 0
Do. pipe ...	do.	22 0 0	—
Nails, cut clasp, sin. to 6in. ...	do.	12 0 0	13 0 0
Do. floor brads ...	do.	11 15 0	12 15 0
Steel, shafts, Girders and Angles ...	do.	9 2 6	9 7 6
Do. Mild Bars ...	do.	9 12 6	10 0 0
Tin, Foreign ...	do.	139 10 0	140 0 0
Do. English ingots ...	do.	143 0 0	—
Zinc, sheets, English ...	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne ...	do.	27 7 6	—
Do. Spelter ...	do.	22 7 6	22 15 0

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SOFT WOODS.

Fir, Dantzic and Memel ...	per load	8 0 0	4 0 0
Pine, Quebec Yellow ...	per load	4 7 6	6 5 0
Do. Pitch ...	do.	8 14 0	4 4 0
Laths, log, Dantzic ...	per fath.	4 10 0	5 10 0
Do. Petersburg ...	per bundle.	0 1 4 1/2	0 1 5
Deals, Archangel 2nd & 1st per P. Std. ...		17 5 0	21 5 0
Do. do. 4th & 3rd. do. ...		12 10 0	14 5 0
Do. do. unsorted do. ...		12 5 0	12 10 0
Do. Riga ...	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do. ...		14 0 0	17 15 0
Do. do. 2nd do. ...		8 15 0	12 0 0
Do. do. Unsorted do. ...		10 15 0	11 0 0
Do. do. White do. ...		7 15 0	11 5 0
Do. Swedish ...	per P. Std.	14 5 0	15 0 0
Do. White Sea ...	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st do. ...		23 15 0	—
Do. do. 2nd do. ...		18 15 0	—
Do. do. 3rd &c. do. ...		8 0 0	10 15 0
Do. Canadian Spruce, 1st per P. Std. ...		10 10 0	11 15 0
Do. do. 3rd & 2nd do. ...		9 10 0	10 0 0
Do. New Brunswick do. ...		7 5 0	8 0 0
Battens, all kinds ...	do.	8 0 0	10 5 0
Flooring Boards, 1 in. prepared, 1st ...	per square	0 9 9	0 11 3
Do. 2nd ...	do.	0 10 6	—
Do. 3rd &c. ...	do.	0 9 0	0 9 8

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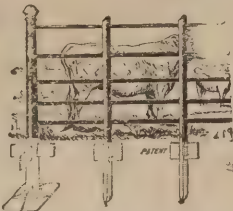
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TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

CARLTON.—For erecting new Baptist chapel and school, &c., Carlton, near Nottingham. Mr. Richard Whitbread, architect, Vine House, Carlton, Nottingham.—

	Chapel	School
Bell	£1,789 10	£1,350 0
Cuthbert	1,687 15	1,329 0
Green	1,859 0	1,380 0
Tegardine, Carlton*	1,603 0	1,263 0
Harper	1,595 0	1,223 0
Main	1,625 0	1,295 0

* Accepted.

ERITH (Kent).—For the erection of a pair of houses and shops, for the trustees of the Cottage Hospital. Mr. W. Egerton, architect, Erith. Quantities by the architect:—

Finney and Son	£1,838 15	2	Spencer and Son	£1,668 10	0
Geo. Miles	1,813 0	0	Enness Bros.*	1,668 0	0

* Accepted.

GOSPORT.—For the erection of Public Library and Technical Institute, for the Gosport Urban District Council. Mr. A. W. S. Cross, architect, 54, Conduit-street, Regent-street, W. Quantities by Mr. Arthur G. Cross, 6, Old Queen-street, Westminster:—

W. T. Dugan	£7,371	Middleton and Co.	£6,750
Lane and Son	7,280	Rashley and Son	7,250
C. F. E. Lear	7,250	Southampton*	6,693
C. M. Dash	7,179		

* Accepted.

ISLEWORTH.—For additions, &c., to Holme Court certified industrial (truant) school. Mr. W. H. Ward, architect, Paradise-street, Birmingham. Quantities by Mr. F. W. Miller, Westminster:—

Cutler	£1,179	Messon and Sons	£1,425
Nightingale	1,689	Dorey and Co.*	1,352
Wisdom	1,550		

* Accepted.

NEWPORT.—For the erection of schools in Bryngwyn-road, for the Newport, Mon., School Board. Messrs. Habershon, Fawcner and Groves, architects, 41, High-street, Newport, and Cardiff:—

W. Hughes	£5,649 4	J. Linton	£4,790 0
C. Shopland	5,360 0	C. Baglow	4,790 0
D. J. Davies	5,320 0	A. S. Morgan	4,750 0
E. C. Jordan	5,47 0	D. W. Richards	4,720 0
W. A. Linton	5,025 0	C. H. Reed	4,700 0
D. Davies	4,850 0	C. Lock*	4,349 0

* Accepted.

SLEAFORD.—For the erection of fire station for the Sleaford Urban District Council. Mr. Jesse Clare, architect, Sleaford. Quantities by the architect:—

Chantree and Benstead	£2,650 15	8	J. J. Banks	£2,620 0	0
F. Pattinson	634 12	0	G. Tapster	620 0	0
Rusington			Boots and Clay	615 10	0

* Accepted.

TAMWORTH.—For alterations and additions to "Castle Hotel," Tamworth, for Messrs. Worthington and Co., brewers, Burton-on-Trent. Mr. J. W. Godderidge, architect, Tamworth. Quantities by the architect:—

Musson and Son	£5,400	E. Williams, Tamworth*	£1,847
Watson and Son	5,350		
Clarson and Son	4,875		

* Accepted.

[Architect's estimate, £4,544.]

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Brick and Stonework.—Walker and Ward, Pontefract	£10,565 18
Joinery.—Chadwick and Sons, Staincliffe, Dewsbury	4,810 0
Slating.—Pickles Bros., Leeds	1,242 0
Plumbing.—E. Walker and Co., Heckmondwike	694 0
Plastering.—J. Shaw, Pontefract	1,650 8
Painting.—W. Lawrence, Castleford	838 0

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Sealed Tenders addressed to the chairman, endorsed "Infant Schools," must be delivered at my office on or before MONDAY, APRIL 30th, 1900.

The Board does not bind itself to accept the lowest or any Tender.

The Contractor will be called upon to find sureties for the proper execution of the work.

E. COLLARD,
Clerk to the Board.

COMPETITION.

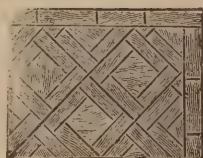
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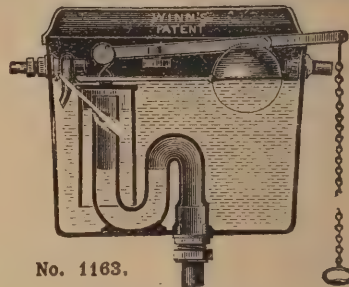
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APRIL 25, 1900.
No. CCLXXII.

EFFINGHAM HOUSE,
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An Architectural Causerie.

The Expressiveness of Architectural Details.

THERE is no doubt that the various forms of architecture in the main reflect not only the preferences of the various

races by which they have been employed and the character of the countries amid which they have been used, but also, to a considerable extent, the individual character of the craftsmen who have had to do with the erection and decoration of the buildings from which its principles have been deduced. The dumb stone and brick, wood and lead, have taken to themselves voices and a tongue, whereby they still speak to those who have ears attuned to their delicate harmonies, though these are often sadly spoilt and overlaid by the coarser arrangements of later times. And this expressiveness is not only to be found in general design, but also in the various parts which compose the whole and produce upon the mind of the spectator emotions of one kind or another according to the treatment which has been chosen by the designer to express his thought. It is too often the case at the present day that the design of the parts of a building is considered, principally, either from the point of view of magnificence of effect (in which vaulting ambition not unfrequently o'erleaps itself) or from that of pure utility, the architectural expressiveness of the details being quite lost sight of. Such parts as the doors, windows, roofs, staircases, porticoes, and chimneys may be made means of expression, and have, indeed, natural expressiveness if treated in a common-sense way. The wide and important doorway, for instance, may indicate hospitality and a certain magnificence of living, and certainly suggests it, especially when accompanied by a portico or flanked by colonnades which stretch out from the centre as though desiring to embrace all who approach. On the other hand, the door which is small and narrow seems to refuse entrance save to one or two, either reserving the interior of the house for a few intimate friends, or with niggardly hospitality admitting but two or three at a time; an example of this may be had from the great houses in the Canongate, Edinburgh, the entrances to which are more like openings into burrows which are made to be easily defended than doorways which give admission to houses in which cultivated men and women lived. They show in a high degree the feeling that the home is everything, once one is in it, and that the way to it matters nothing, nor is it the concern of any but intimates; or perhaps rather suggest quiet times and the fear of a forced entrance through the defences, while the larger and opener scheme, before referred to, speaks of security and crowds of guests. Windows, too, may be equally expressive. Those which are high in the wall and only of slight height suggest, first, that the concern of the dwellers in that house is solely with what passes within it, and, secondly, that they were so placed to ensure the safety of its inhabitants from chance missiles from outside, which would strike the ceiling

almost necessarily, instead of wounding the occupants of the room. The wide-windowed gallery, on the other hand, proclaims absolute security, much leisure for leaning on the sill and gazing at the landscape or at what passes without, and considerable interest in the concerns of one's neighbours—a life lived more or less in public, in fact; while the gallery is also not without the suggestion of frequent rainy weather and the need for cover under which to take exercise. And how closely suggestive is the great chimney stack of ancient times, from its mighty base, which encloses

against the over-decorated wall surfaces of the terra-cotta and moulded-brick period of a few years ago. As a means of contrast there is no doubt that a space of plain, unbroken wall may be very valuable and occasionally expressive, as in the case of a theatre set side to the street, or the outside wall of a brewery or of a great office building; but in most of these cases it is simply the bulk and extent of the wall which make it impressive, and it certainly suggests other conditions of life than those which now prevail. Thus it was that the military archi-



GLoucester Cathedral: South Walk of Cloisters. FROM A DRAWING BY JAMES M'LACHLAN.
(One of a set that won the R.I.B.A. Pugin Studentship, 1900.)

the ingle nook, up to the twisted tops, where the many flues collect and form a splendid cluster, separate yet interdependent, each one bearing its part in the general effect and speaking of warmth, comfort, and hospitality; while the modern chimney pot, poor and thin and without character, aptly reflects the meagreness and want of individuality in modern life, usually breaking out into pretentiousness and sham when the architect or builder has wished to be impressive, and thus giving another illustration of the likeness between man and the works of his hand. It has become the fashion of late years to speak with high appreciation of large spaces of plain walling—a re-action

fects of bygone times built their walls for defence, mountainous masses of materials strongly set together, and still most impressive to the beholder as they tower aloft, grey and weather-beaten with the storms of centuries, giving promise of security within their circuit from the fierce attacks of the marauder, defying fire and siege, and even not much affected by shocks of earthquake. But the conditions of life are now quite different; attacks upon our property are made at the present time in a different and less violent fashion, and it is an anachronism to make use of expedients which had their vogue in mediæval times but are not applicable to modern requirements. A. W.

The Pendant. It is the unhappy case of the inartistic that they must needs have a pair of everything. Perhaps not even those of us who arrogate the possession of culture are quite free from this obsession of balance and exact duplication, while it is quite certain that those who make no pretensions to taste are apt to be slaves to the pendant. There is, we should not forget, another side to this which has developed during the last few years and has, in the revolt against mathematical precision of duplicating parts, led us somewhat perilously near the slavish cultivation of the eccentric. These crusaders, in their campaign against the obvious would appear to have found salvation in others sins, and from exercises in the obvious to have proceeded in the direction of experiments in the undreamt-of. As in everything else under the sun, the situation is saved by adopting the happy mean. We have not far to look, nor very diligently to search, for examples of extremes in either vice. Of course the classic and homely instances are successfully to be sought in the privacy of the British domestic interior, where the cut-glass lustres in hateful pairs still flank the mantel-shelves of the dining and drawing rooms of many otherwise virtuous households. This, doubtless, is the doing of that lady of whom we hear so much—the British matron. The seed of immorality lies (to her way of thinking) in art of any sort, and so we need waste no more time in argument over her; but why, when the Briton buys the specious etching, or the photogravure of commerce, why does he generally buy them in pairs? Because he is haunted by this weird notion of the pendant.

It was this idea which led to the commission of a great crime in archaeology and architecture in the first quarter of the century which, with its enthusiasms and errors, is fast going to limbo. At that period there was an architect of the name of Austin in official charge of Canterbury Cathedral. There was also at that time an exceedingly valuable and interesting relic there in the shape of an early Norman tower at the north-west end of the cathedral. Archaeologists valued this, and in fact, it was unique. But, unhappily for archaeology and for the cathedral, the Dean and Chapter decided to demolish it and to build in its place a copy of the Perpendicular tower at the other angle. In this they were aided and abetted by the said Austin. It mattered not to those clerics or to that architect that the old tower dated back to the time of Anselm. They were determined that the two western towers should match, and that one should be a pendant to the other. They do not appear to have had any qualms of conscience about it; but were a little harassed by the thought that someone—either from the purely antiquarian point of view, or else for the mere sake of old associations—might question this proceeding, and so they gave out that the structure they were so light-heartedly to destroy was ruinous and incapable of repair, which it was not. Gone beyond chance of recall, this is an historic instance of what evil may be wrought by the otherwise well-meaning. For the sake of "neatness" and uniformity they razed to the ground that which another and a later generation would not willingly have seen disappear.

C. G. H.

On Reflection.

In Memory of Ruskin.

So long as the English language is written and spoken, John Ruskin will have in the books he has written a nobler memorial than any his friends could erect. Yet it is natural that those who honoured his memory should desire some visible emblem, not so much to keep his memory green as to express their own feelings and to demonstrate their loyal affection. Nothing could be more happily conceived than the scheme which has been set on foot for erecting a simple memorial to the Master in the beautiful Lakeland he loved so well. The spot chosen is Friars Cray on Derwentwater, a spot which made a deep impression on him as a child and of which he once said that to his mind the view from it was one of the three finest views in Europe. "The form of the memorial," says Canon Rawnsley, "has not yet been decided upon, but it is proposed that, as Ruskin was a religious teacher, and as this is Cymri-land, the memorial had better take the form of an early British Cross of native stone, so placed that it would not be a note of discord in the landscape, some simple inscription upon one side, and on the other a short passage from his writings might be inscribed. Possibly the wild rose will be introduced in the decoration, and it has been suggested that a bronze medallion portrait should be inserted, encircled by a crown of olive. All we wish for is some simple and durable memorial which shall recall the tourists who wander here in the summer to the memory of the man of our century who more than others has striven to make the love of nature a possession of the English-speaking race." Our contemporary, the "Builder," the other day sneered at "the childish worship of Ruskin," whom it stigmatised as a "sham prophet;" but we doubt whether there is any body of men by whom Ruskin's work is more deeply appreciated than it is by British architects, and probably some of our readers may wish to share in this beautiful and appropriate memorial. If so, we have no doubt Canon Rawnsley (Crosthwaite Vicarage, Keswick) will be pleased to receive their gifts.

Local Authorities and Advertisements.

A LETTER to the "Times" by Mr. Richardson Evans, hon. secretary of the National Society for Checking the Abuses of Public Advertising, raises the interesting and important question of the extent to which the London County Council should exercise control over methods of advertising. This special question suggests the larger and more far-reaching one: Should a local authority concern itself with purely æsthetic considerations, and if so to what extent? The practice of the London County Council in this respect has been somewhat peculiar. It has abolished sky-signs and—within certain limitations—search lights and lights which suddenly alter in intensity or colour. But the ostensible reason for its action is the physical danger which lurks in these forms of advertising. The sky-signs are removed lest they should fall on the heads of the citizens, and the twinkling illuminations lest they should frighten the horses; in neither case is the unsightliness of the things the acknowledged cause of their removal. The Council's attitude is no doubt determined by the fact that, whereas it is empowered to frame regulations in the interest of public safety, it would have to obtain fresh statutory powers to deal with displays that are merely vulgar and ugly without being actively injurious. Perhaps from fear of being thought unpractical or un-

businesslike, County Councillors generally seem averse from posing as the guardians of the beautiful and the picturesque. We should like to see the Council take its courage in both hands and seek from Parliament, as Edinburgh has already done, powers to control all kinds of advertising devices. There is nothing in the nature of things, so far as we know, why the local authority should not regard it as part of its duty to protect the community from the more aggressive forms of ugliness in public places.

Registration Demanded in 1835.

It is instructive to notice that the demand for the registration of architects, so far from being a modern idea, was advocated in the early days of the R.I.B.A. in order to cope with precisely the same evils as those against which the profession (or part of it) is struggling to-day. The "Journal of the Society of Architects" in its April number prints an article taken from "The Architectural Magazine" published in 1835, which, as regards the conditions of architectural practice with which it deals and the remedies it suggests, might have appeared in a professional journal of the present day. The author refers to the popular ignorance about architectural matters, to the execrable taste displayed in the erection of new buildings, and to the carpenters, ironmongers and cabinet-makers who practise as architects to the great detriment of the profession. "In my opinion," he says, "the most satisfactory consequences could only arise from the severest scrutiny being made in electing members for a society of architects; and I hope to see the days when the present Institute shall have been re-organised; the heads of the profession appointed its judges; and an Act obtained allowing no persons to be enrolled on its lists, or to practise as architects until they have passed the strictest examinations before them."

Architects and Painters' Materials. THERE is scarcely any calling in which such encyclopædic knowledge is required as in that of the architect. He is constantly being told that his education has been neglected in this particular or that. The artist tells him that he has not pursued his artistic studies far enough, the engineer points out the failures he makes through his ignorance of engineering, the craftsman in leaded glass finds that the architect's designs for stained glass windows are all wrong because he has never handled the actual material; and now we are told, by a writer in "Oils, Colours and Drysalteries," that the architect's great failing is his ignorance of the paint trade. He does not trouble about painters' materials; he will specify minutely all the work and materials to be employed in every department except the painting and decorating; here he is content with such a general clause as "All woodwork to be painted with four coats of good oil and lead paint;" to him paint is paint, and there's an end of it. The consequence of this is that the makers of painters' specialities appeal in vain to the consideration of the architect, and clients are the losers by his failure to interest himself in improved materials which are from time to time placed on the market. We have no doubt that there is much truth in these suggestions; but it must be remembered that the architect needs to give attention to so many practical details in connection with the building, that it is not surprising if matters of minor importance, such as the details of the painters' work, are apt to be neglected. Our contemporary's suggestion that a paper dealing with practical matters should be prepared and read before one of the architectural societies is a good one, which we hope will be carried out.



SOUTH-WESTERN CORNER OF SAMLESBURY HALL.

Ancient Halls of East Lancashire.

By W. H. B.

IN that sumptuous monograph "A History of the Ancient Hall of Samlesbury," Mr. Croston tells us that the county of Lancaster is remarkable, amongst other things, for the "many perfect and singularly interesting manorial residences it still possesses, the memorials of a social existence which has for ever passed away."

The whole may comprise the part, but never the part the whole; nevertheless, it is not an exaggeration to say that the portion of the County Palatine that is known as East Lancashire can boast of having within its boundaries the very "pick" of these ancient houses in Halls that are the crown and climax of those in the whole Palatinate. Let us name a few of them. They are Huntroyd, Hoghton Tower, Little Mytton Hall, Pleasington Old Hall, Samlesbury, Osbaldeston, Balderston, Hacking, Dinckley, Dunkenhagh, and many others. Some of these Halls are in excellent repair and are still occupied by families as ancient as those who originally held them; others are falling into decay; and others have been partly destroyed and their remaining parts transformed into farm houses. All are remarkable for the fact that they have mostly been built in the spacious times of Queen Elizabeth, or in the near reigns of the preceding or succeeding monarch. And here, again, we have an architectural and historical problem of the first interest. In a former paper on "Lancashire Church Architecture" (see issue for March 28th last) I attempted to demonstrate the fact that in the times immediately preceding the Tudor epoch there was a remarkable revival of church building, for which the historians of the county have hitherto in no way accounted. Now we find a similar problem, not in the ecclesiastic, but in the domestic sphere. The Halls which we are about to describe, many of

them of very considerable dimensions, were all built within a period comprised within little more than half a century of years. Whence the accession of wealth? Did it come from the dissolution of the monasteries, or was it the natural result of the increased activity in trade and commerce which we know characterised the earlier Tudor period? These are questions which would occupy considerable space in the answering. So we do not propose to deal with them, but merely in passing to furnish such data as may be useful in resolving them.

First as to the meaning of the term "Hall" itself, by which nearly all these buildings are designated. Webster tells us it is probably derived from a root meaning to hide, to conceal, or to cover. Whatever may have been its origin, we know it to be in use a most comprehensive term covering a wide variety of meaning. It is used to describe buildings devoted to public purposes, such as Guildhall, Town Hall, Market Hall. It is applied to public fanes of great national importance and stateliness, as Westminster Hall and Whitehall. It may be applied to the principal room of any large building, or to the chief room in a castle or manor house, and in early times to the only public room serving as a place of gathering for the family and retainers. Cooper contrasts it in this application with the *bower*, which was the name of the private or sleeping apartment, as Rosalind's bower. Chaucer says as to an ancient slattern:

"Full sooty was her bower and eke her hall."

It also designates a college, or a portion of a college at a university, and it has many other meanings. Old English country houses have many different designations, as hall, tower, mansion, manor house, grange, court, &c., but the term "Hall" is the one most in general use. Indeed, the term "manor house" seems in every case to cover not only the building itself but the occupant of it, "the lord of the manor." Throughout Lancashire, with but few exceptions, Hall is the word which is generally used for those country seats and residences which have more than an ephemeral duration and interest and have come down to us from ancient times redolent with the historic lore of a by-gone age.

I have been at some pains to discover the date at which the ancient Halls with which I propose to deal in this paper were built. In some cases they succeeded previous structures, but the remaining fabrics have in most instances on their door lintels or gables the figures of the year in which they were com-

pleted, and if these are not to be found on the buildings they may be ascertained from such books as Whitaker's Whalley, Baines' Lancashire, or the more local and parochial histories. The famous Samlesbury Hall gives its date on the Minstrels' Gallery in the large hall as 1532, though it was not completed as it now stands until 1545. Martholme, the ancient manor house of Great Harwood, dates from 1561; Hoghton Tower from 1565; Pleasington Old Hall from 1587; Osbaldeston gives 1593 on a lintel over one of the doorways; Hacking Hall was built in 1607; and Livesey Old Hall in 1608. We can find no date for the building of Little Mytton Hall, but Abram, in his history of Blackburn, gives the brief reign of Edward the Sixth as the period of its construction. In many respects it compared with Samlesbury in architectural features and style, and its principal hall was nearly as elaborate. The dates I have given range from 1532 to 1608, and the period enclosed by them is important from the fact that in it East Lancashire seems to have been studded, even in its more inaccessible parts with stately buildings fashioned in such style, from the architect's point of view, as to show that the taste and aptitude for good building survived through the Tudor times, and was only lost in the stormy and contentious epoch which followed them.

Let us consider these buildings in detail and try and discover what lessons they teach us. All are throughout well and solidly built, and all conform to the canon so rightly enforced by the late Mr. White, Fellow of the Royal Institute of British Architects, in being built of material supplied by their own localities. This is not remarkable, for in East Lancashire good building stone may anywhere be had in quantity, of the millstone grit and other varieties. The county has been denuded of the forests with which it was at one time covered, but in their day there was abundance of oak timber such as was laid under contri-



INTERIOR OF MYTTON HALL.

bution in the building of places like Little Mytton, Dinckley and Samlesbury. Only three of the buildings to which I have referred could boast of possessing the common hall with minstrel gallery of the feudal times; these were Mytton, Hoghton and Samlesbury. Of the Mytton Hall, as it existed early in the present century, I am enabled to give an illustration, for which I am indebted to that excellent work, "Views of the Old Halls of Lancashire and Cheshire," published by Henry Gray in 1893, and containing twenty-eight fine copperplate engravings drawn and mostly etched by W. G. Phillips in 1822-4. Whitaker in his "History of Whalley" says "the Hall with its embayed window, screen and gallery over it, is one of the finest 'Gothic' rooms he ever saw in a private house." But the term "Gothic" was loosely applied in his day. The ceiling of this fine interior is of oak, in wrought



CORBEL BELOW WINDOW AT SAMLESBURY.



MARTHOLME.

compartments, the principals being turned in the form of obtuse arches, their corbels, where they receive the capitals, enriched with carvings, the wall covered with wainscot, and the bay window adorned with armorial bearings in painted glass. The screen, Whitaker thinks, "is extremely rich, but evidently of a more modern style than the rest of the woodwork." Upon the panels of it are carved, in pretty bold relief two heads, male and female, within medallions, which have a rude kind of character and were evidently intended for portraits. Some of these carved heads are still on the screen, and the missing ones are now at Stanley House, near Clitheroe, where they form part of the sideboard. Phillips' fine drawing, which is that of an artist, not an architectural draughtsman, is not exactly correct in its details. The view in Whitaker's Whalley, which is of an earlier date, is more correct, and shows that on both sides of the arch in the screen the roof principals are supported by deeply fluted oak piers, which come down to the ground. On the west side one of these piers divides the carved heads or medallions, leaving four on the side nearest the centre and two on the other side, whilst Phillips' view omits these and only gives eight panels instead of ten. There are also other discrepancies on which I need not dwell at any length. We may see that in Samlesbury Hall some of these features are reproduced, as was likely to be the case in buildings erected at the same period and within a few miles of each other, on the margin, as it were, of the same fair stream, the River Ribble.

Of Samlesbury a view is given of the south-western corner, showing the quaint chimney stacks, which recall to mind one of the drawings of Mr. Railton in Mr. Hutton's "Hampton Court." They "curled their chimneys in those days, and twisted them," to use a phrase of Dickens, if they did not, like Mrs. Lirriper, "curl their smoke." These chimney stacks of the Tudor buildings have a peculiarity all their own, and are quite as pleasing and picturesque in their way as the finials of a former age, which were used to accentuate the battlements as these are to relieve the roof line and walls. One wonders why they are not more generally adopted by modern architects in an age in which our modellers can do anything in clay, and when the art of ornamental brick-making was never more thoroughly understood.

In Martholme we have quite a different style of building. Ornamental carpentry had gone out of date; half-timbered houses like Dinckley gave place to buildings wholly of stone as to their exterior portions. Instead of the one long building, with its flanking wing or wings, we have the many-gabled house, with its mullioned windows in plenty, and its more stately porch, its greater elevation, and its enclosing walls. Martholme stands amidst the meadows and pastures of its demesne near the left bank of the Calder, once a pure running stream, but now almost as polluted as the Mersey itself. It has been long deserted by the representatives of the ancient families which made it their home.

The fragmentary portions remaining serve but to suggest what the structure was like before age and wantonness had had their effect upon it. The house is reached by a by-road branching off to the east from the Accrington and Whalley highway. The approach is under a picturesque gateway, having a wide semi-circular arch in the centre. This gateway opens into an outer courtyard, which leads to a second circular-arched gateway in the middle of a two-storeyed structure. The inner view of the gate-house presents a massive splayed circular arch, with a mullioned and transomed window above. The house itself, at the north end of the inner courtyard, has suffered demolition of the whole of its west wing, and now only shows a projecting east wing, gabled, and lighted with mullioned windows; a recessed centre, gabled, with three ranges of window lights; a pointed arched doorway in the westerly termination of the remaining wall, with remains of a mullioned and transomed window over it. This arch has evidently been the main central entrance of the quadrangular block of the mansion as formerly planned. In the interior of the portion of the house yet intact the parlour has its broad low-arched fireplace. A similar arch encloses the kitchen fireplace. In the rear wall of the house are two small window lights of evident age, with trefoil heads, and one with a head of rude tracery. These are evidently older than the other portions of the buildings, which were formerly moated and walled all round; portions of the moat trenches running north and south are even yet traceable in a field to the west of the buildings. There are sculptured panels and shields about the buildings, but these do not call for any notice.

Hoghton Tower has often figured in picture and story, and in its interior it is one of the most dignified and stately of all our East Lancashire mansions. It hardly comes under the description of Hall, but in structure it is to be ranked as a castle, though of the smaller class, and is domestic in its arrangements, without either the powers of defence or offence such as the Norman castles show. Very striking and picturesque is the interior of the great hall, with its splendid ceiling, wainscotted walls and minstrel gallery.

Another hall well worthy of careful study is the domestic-looking building known as Pleasington Old Hall. There is little wonder that it should have been deserted by the descendants of the ancient families who held it and converted into a farmhouse, for its site is most unpromising, as we regard those things in the modern view, being limited in area and in a deep hollow from which there is little of a prospect, and that not by any means of an inviting character. The building itself has many quaint features which are all its own, and apart from its architectural merits, which are considerable, it cannot be denied that it makes a very pleasing picture. Pleasington New Hall stands near by on more elevated ground, but it is quite a modern structure and has recently been purchased by Sir W. H. Hornby, Bart., the popular senior M.P. for the neighbouring borough of Blackburn.

Osbaldeston Hall, for a long time the seat of the Osbaldestons, dates from 1593, and is situated near the south bank of the Ribble, to the west of the old Roman fort of Ribchester. The Hall was formerly surrounded by a moat, the remains of which are still partly traceable. At the south approach a bridge crosses the moat, leading to a gateway shaded by sepulchral yews, probably as ancient as the Hall itself, of which but a mere fragment remains. The existing building is used as a farmhouse and comprises a block parallel with the river behind it with a central projection to the south constructed of brick with stone dressings; in the gable of this portion are large and handsome windows, mullioned and transomed. Above the upper window of the gable is inserted a coat of arms, the emblazonment on which is almost effaced. In the interior, says "The History of Blackburn," there is an interesting chamber in the upper storey of the building projecting to the south. This room is handsomely panelled in oak in geometric designs. The mantelpiece is antique and, with the chimney breast above it, about 12ft. high, is covered with elaborate scroll carving. Above the family arms, carved in wood, which are placed in a panel in the centre of the ornamentation, appear the initials "E. O." and "M. O." and again above these the initials "E. O." are



HACKING HALL.

MURAL PAINTING IN RELATION
TO ARCHITECTURE.*

By WILLIAM HOLE, R.S.A.

MUCH has been written of late years and many papers have been read and discussed with animation about the relations of sculpture to architecture, and there has never been a meeting of the Art Congress at which this subject has not come under consideration. This is as it ought to be, but at the same time it is matter for surprise that no voice has been raised (with the notable exception of that of Professor Baldwin Brown) on the closely-related subject of mural painting. He indeed has spoken earnestly—and spoken well. His words have been a seed which has already borne a little fruit, and I trust that his able advocacy may yet be productive of an abundant harvest of good works. Starting with the presumption that sculpture, as well as ornamental carving, is welcome accepted for the enrichment of the elder art of building, my proposition is that pictorial art—no less than what is known as decorative painting—should be turned to similar purpose in the service of architecture.

Michael Angelo declared that he himself knew of but *one art*; recognising (and who indeed has been more capable of forming a judgment) that the Trinity of the arts, though capable of existing as separate units, is incomplete save in co-operation, and that the supreme achievement of art consists alone in the union of architecture, sculpture and painting. To adapt with all reverence the words of St. Paul: "As the body is one and hath many members, and all the members of that body, being many, are one body; so also is art. Sculpture cannot say to architecture, 'I have no need of thee'; nor, again, can architecture say to sculpture or to painting, 'I have no need of you.' There should be no schism in the body, but that the members should have the same care one for another."

We all, I think, readily admit the force of these words, as well as of the principle involved, especially when we remember that this is fully illustrated by the examples which remain to us of the art of former days, before the severance of the members of its Trinity had been effected, before the palmy days of the self-sufficing cabinet picture or isolated statue, and when colourless architecture was unthought of.

The Rift.

The dawn of the early Italian Renaissance marks the period whence we may date at once

*A paper read before the Edinburgh Architectural Association on April 4th, 1900.



SILK HALL AT TOCKHOLES.

repeated. These initials represent either the names of Edward Osbaldeston and his wife Maud, who held the estates from 1575 to 1590, or of Sir Edward Osbaldeston, Knight, who died in 1636. The wife of Sir Edward was named Mary. Probably these carvings and panels were prepared in Sir Edward's time and under his direction. No other curious feature is left at Osbaldeston Hall. On the north side of the house most of the windows are blocked up, and the general aspect of the place is unsightly. Neglect and age have done their best to destroy the fair features of this once venerable pile.

In Hacking Hall and Livesey we come to buildings of a later date, one of which has come down to us, at any rate in regard to its exterior, as it originally left the mason's hands. Hacking differs from the other Halls I have described in the fact that it is three storeys high throughout and is built entirely of dressed stone. It is described as the "house of many gables," and the description is not inaccurate, for it has five of these projections in the front elevation and four on the back. It is beautifully situated on the south bank of the Ribble where that stream is joined by its two tributaries, the Hodder and the Calder. Its interior has been wholly gutted of its ancient woodwork, and its main features have been modernised in a rude and clumsy fashion. Our illustration will give the practical reader the best idea of its plan, the accommodation it affords, and of its striking southern elevation.

With this description I must close this account of these ancient Halls of the Ribbleside. Let the thoughtful reader draw his own inferences from the imperfect sketches. It will be well for him to note also that all these Halls are on the southern side of the Ribble, and that (not to use too bold a metaphor) they have been built almost within a stone's throw of each other. We look in vain on the northern bank of the river for a similar wealth of ancient buildings. You may walk the river bank on the south side and within a mile of each other come across Hacking, Dinckley, New Salesbury, Balderston and Osbaldeston, and a mile inland will give you Lovely Hall, Old Salesbury, Samlesbury (Old and New), Pleasington, Livesey and Hoghton. The Tockholes Halls are a little further afield and are remarkable from the fact of their isolation, and the elevation of their sites, which cannot be less than 1,000ft. above the level of the sea.

The whole series of the Halls are interesting to the architect from the fact that they convey the lesson that buildings of considerable dignity and picturesqueness may be achieved by the use of great simplicity of plan and detail. A proportion and balance of parts is the one thing necessary. In the exteriors of such structures as I have examined, there is little evidence of the sculptor's art, except in the moulding and in some of the stone panels which bear the owners' arms or other insignia. The windows are all of the simplest played stonework on a rigid plan and scale, with the superincumbent plain dripstone or hood. The

gable is an essential element of relief where the horizontal lines of the architecture are unbroken alike by finial or spirelet. But the most remarkable thing about the buildings I have had under review is, as has already been stated, the fact that they show how in the time of Queen Elizabeth, in this portion of Lancashire, wealth abounded and was put to good and profitable use. We are not, however, concerned in economic or historical questions, which may someday be answered, but which up to the present have not received the consideration to which they are entitled. It is of more importance to us to know that when a country is prosperous and peaceful art flourishes and architecture ministers to the comfort and convenience of domestic life in buildings that are both stately and monumental.

A new Primitive Methodist Chapel at Mattishall, Dereham, is being built. Mr. Kerridge, of Messrs. Kerridge and Son, Wisbech, is the architect, and Mr. King, of Mattishall, is the builder.

An American Idol.—Forty thousand golden sovereigns is the amount of gold which has recently been put out of circulation by being cast into a statue of "The American Girl," which is to be the gold exhibit of the State of Colorado at the Paris Exhibition. The statue stands 5ft. 5in. in height, containing about 712lbs. of pure gold. The cost of making the statue and casting it is about £12,000, and it is the work of a woman, Miss Bessy Potter.



FIREPLACE IN SILK HALL, TOCKHOLES.

the increased vitality of each member of the body of art, and also that little rift between them which heralded their ultimate severance from, and independence of, each other. Knowledge was increased, and with it the pride of individual achievement, without the counterbalancing and restraining influence of wisdom to maintain the ancient bond of union so valuable to all alike. Until that time both sculpture and painting had been completely subordinated to the purpose of architecture, while at the same time buildings were conceived and planned with due consideration of the part to be played by the younger arts in the completed work, and there was recognition of their value in its service. We have but to cast our eyes upon the examples which still survive of Byzantine and Romanesque architecture to see that this is so; and while it is beyond dispute that since these early days architecture, sculpture and painting have recovered much of the lost glories of the Antium, that they have invented new methods, and made vast strides towards individual perfection, it is no less obvious that there is to be found in these ancient monuments, in spite of manifold imperfection of detail, a restful and satisfying sense of the harmony and completeness of the work as a whole, unattainable by the contemplation of any specialised production (no matter how supreme its accomplishment) which relies for its effect upon its own unaided merit.

Those who have been privileged to visit the basilicas of Rome, the cathedral of St. Mark, and the churches of Ravenna and Palermo, must, I think, acknowledge the truth of this. If we study the glories of these magnificent interiors, scintillating from floor to ceiling with waves of modulated, harmonious and subtle tint in marble and mosaic, and have noted how this wealth of colour is duly subordinated to the service of construction, we cannot but groan in spirit at the thought of our own grudging and niggardly decorations, and the lamentable contrast displayed by the bald and colourless, or discoloured, walls of our modern and British churches and public buildings. Gentlemen, we are enlisted in the service of Art, eager and anxious to further her advance, and if a sense of inferiority in respect of colour has ever taken hold of us, if we have experienced a longing to advance beyond the artificial limits hitherto imposed upon us by modern custom and recent tradition, let us not rest content with tacit acknowledgment of our need, but strive by co-operation of the arts to recover our lost inheritance and utilise for the common weal knowledge acquired in the several spheres during centuries of civilisation, recognising that in this direction lies our opportunity to break fresh ground, and that as pioneers we shall have that stimulus of novelty in our work which quickens vitality in art and indicates its advance. There is a wide field to be cultivated, open to the display of our energies, for by the term "public buildings" I mean not only churches and town halls but libraries, hotels, banks, hospitals, and music rooms—in short wherever people meet and act in common.

Difficulties which hinder Progress.

I am well aware of the difficulties which lie in the path of a new departure; but these are not insurmountable, as is evidenced by the partial success which has attended such tentative efforts as have already been made. In the first place we have to recognise the fact that art is not popular; we must ascertain the cause and find the remedy. Secondly, there is the very practical question of expense; and, thirdly, that of the lack which at present undoubtedly exists of necessary training on the part of artists themselves. To face and overcome the indifference and the apathetic attitude of the public towards art is no easy task. Wealth in combination with taste, generosity, and public spirit such as has been displayed in recent years by three distinguished citizens of Edinburgh is not common at all, and these brilliant exceptions to the prevailing spirit serve but to emphasise the apparent indifference of the community at large. Artists have still to rely upon individuals rather than upon communities for encouragement in their craft; but for the combined opportunity which we

now desire we have the public to look to and the public to persuade. For, whether in the form of government, vestries, municipalities, companies, or committees, the public is sooner or later the paymaster. The public, therefore, must be shown that beauty is useful, and that in the end money wisely expended on the embellishment of a building returns an excellent interest.

How strangely are we creatures of custom! We do not miss the faculties we have never possessed, and are content with imperfections to which we are born. What does the deaf man know of the delight of music, or he that was born blind of the glories of the sun? They are content, knowing no better. How else shall we account for the obvious fact that the average Briton, unaccustomed for centuries to associate the idea of colour with construction, when he steps beyond the limits of his own mansion, should feel no resentment at its omission, nor feel that anything is lacking. He apparently shares the sentiment of the lady who, on the suggestion that the church walls would be the better for a coat of white-wash, replied that she preferred the kirk "as God made it!" And yet I cannot believe that the faculty is wholly wanting. We certainly possess a sense of colour, and indulge it by the use of decoration in our private dwelling-rooms. There we would not tolerate for a day the barrack-room bareness or spiritless painting that distinguish the walls of places which we dedicate to the service of God and to the use of the community. Many of our homes are beautiful; thought, taste and skill have been expended on their decoration; furniture, painting and textiles contributing their quota to the sum total of rich, restful colour, and harmony of tone. And who can say how much we are indebted to these influences for comfort and for mental and bodily health in an age of strain, hurry and nerve-tension. Negation of colour in our surroundings would act on our nerves as if we lived in a world devoid of sound; strident, incongruous colour is irritating as perpetual discord and family jars; while a room furnished and adorned with taste is soothing and refreshing to the vexed spirit as a strain of music. We decorate our houses for our own personal comfort and pleasure. Is it too much to demand that as much should be done for the public benefit in buildings built for the public, and also to make the House of God more worthy of our offering and of His acceptance? We cannot measure the influence of beauty. We enlist music in the service of God, our churches are designed nobly and well, and shall we not use such influence as we possess that still more be done; that ordered and harmonious colour shall be added to graceful structure, and by computing the round of artistic unity not only make, as I said, an offering of the best we can do, but attract and retain to God's worship many who come, perhaps, merely to admire, but remain to pray?

Mr. Sedding's Opinion on "Things Amiss."

The late Mr. Sedding, the well-known architect, in an able paper upon "Things Amiss with our Arts and Industries," laid the burden of blame unsparingly upon the shoulders of artists themselves when he said: "Had you found the service of Vanity Fair less pleasant and lucrative—had you not succeeded so well in exhibition work as to observe your ideals—had you not exiled yourself from the service of religion, there had been another tale to tell. The pity is

In this world, who can do a thing will not,
And who would do it, cannot, I perceive.

And why are painting and sculpture so deficient in popular appeal, but for these two reasons? They are arts cultivated exclusively for the rich and they are not decorative! In both of these particulars they stand condemned by the art of all lands and all times. It isn't genius, it isn't skill or invention, that is wanted to fit them for popularity; it isn't even that the times are against the production of decorative design; it isn't that there are not hundreds of new churches to decorate, whose interiors are now as interesting as the walls of a coffin. It is that the arts require a new

direction; it is that the artist is too much engrossed with his own individual sphere of work to care to distribute art to the people by applying it to industry or to adorn places that are easily accessible to the people. No art can be popular which is not decorative. If the fine arts were more decorative they would be more popular, and if our painters, sculptors, and architects desire to make art more popular, love will track the way. One great hindrance to our progress is that selfish isolation of the arts which is at once the characteristic and the curse of modern British art life. We mourn over the unpopularity of art; we say, and say truly, that with half our technical power and imaginative range the art of old days had twice our power of appeal, twice the hold upon the attention and the affection of men. Yet, if the greater arts will minister to the lesser, if the master will be as he that serves, then the federation of the arts, which is so much needed, will follow upon this action as a natural consequence."

We now have to face the second difficulty, namely, that of money. We will leave out of sight for the present the question of the employment of mosaic, on account of its costliness, and still more, because in my opinion it is unsuited for the decoration of buildings constructed of stone, the material with which architects in this country have usually to deal. Mosaic can only be suitably employed, I think, in conjunction with polished and coloured marbles, alabaster and similar substances, as in the case of the examples already cited. We will be more modest in our requirements and remember for our encouragement that the vast proportion of works by great masters of the art of decoration, to which we turn for instruction in method, and as a basis from which to make our own excursions, have been executed in

Fresco,

or in its modern substitute, known as *spirit fresco*. This material combines the positive advantages of cheapness, durability, facility, rapidity of execution, and power of resistance to the damp and impure atmosphere of our northern cities—a quality which, as you are aware from the failures which have invariably attended attempts to use it in this country, is not shared by Italian or true fresco. A painter who has mastered the use of fresco and is conscious of the limitations imposed by it, and by the special requirements of pictorial art considered as decoration, is enabled to express his idea in this medium rapidly and easily, and can consequently afford to cover a larger surface for a remuneration which bears no comparison with that which he would justifiably claim for work of the easel-picture standard of size and finish of detail. Prices vary, of course, according to the accomplishment and reputation of the artist employed, but I have little hesitation in saying that an addition of 5 or 6 per cent., or the easy transition from pounds to guineas, on the estimated cost of a public building, to be devoted to its pictorial decoration, would go far to add to its attractiveness and beauty.

And upon the extremely delicate subject of remuneration, I think I may venture to say at least this much to all concerned. Let us not stand too rigidly upon the unstable pedestals of dignity, nor decline an opportunity of doing yeoman service to the people merely because it doesn't happen to pay well. It *will* pay in the end. A man who really loves his work for its own sake finds in the exercise of the talent entrusted to him, in the chance of doing service, a pleasure and reward that cannot be reckoned in terms of cash. Of course, to use a colloquial phrase, a man must earn his bread and butter. Quite so, but there is no necessity that it should also be spread with jam. The labourer is certainly worthy of his hire; but the labourer who trusted his master and obeyed his bidding without further question, knowing that he would be fairly treated, received in the end a wage equal to that of the cautious individual who was too shrewd to set to work before he had made a hard and fast bargain with his employer for his penny a day.

I now come to the consideration of the third difficulty, the lack that at present exists of

necessary training on the part of the artist; for if the results of the past are to be emulated the means which led to such results must also be taken. At present architects, sculptors and painters, as a rule, know little and, I fear, care little about any branch of art that lies beyond the limits of their own. The sculptor generally depends upon the architect to supply a pedestal for his statue. The architect in turn has but the most rudimentary or erroneous knowledge of colour; while it is rare to find a painter capable of regarding a mural space otherwise than as an opportunity for painting a picture in his customary style but on a larger scale, and without the formality of a frame. In former days an artist was a man thoroughly grounded and educated in all branches of art. He was competent to design a building, to decorate it with architectural sculpture, and adorn its walls with decoration painting; but in these times the knowledge required was limited to that of the style which prevailed at a particular period and in that particular country. Such is not the case nowadays. We have no definite style which prevails to the exclusion of all others; but buildings are designed, well or ill as the case may be, according to the taste and fancy of the client, and of every conceivable style and period, from that of the Parthenon to a Queen Anne mansion. Life itself seems too short for the architect of the present day to fully equip and familiarise himself with the practical knowledge of styles required, in order to meet the varied demands made upon his skill and experience. His department of art is, therefore, by the nature of things, specialised; and all that can reasonably be claimed from him in addition is that he should study colour in relation to construction, so that he may be enabled to make its introduction an inherent part of his architectural idea and design. As evidence that this method was followed out in the past, I may instance the case of the well-known Triforium—but in the Church of St. Apollinare at Ravenna, where the stately, white-robed figures of the processional mosaic form a constructive decoration, taking the place of pilasters or other device of decorative construction, which would otherwise have been architecturally necessary. It must be obvious, therefore, that when coloured design is merely added to architecture as an afterthought, instead of forming one of its inherent parts, it runs the risk of failure and of falling into the condemnation of intrusive ornament, concealing a bad building or spoiling a good one.

The painter has also much to learn before he is qualified to contribute his share of the work. It is not enough that he should be let loose, however skilful he may be in his own profession, to work his will in a hitherto uncultivated field. He should be conversant with the general principles of architectural design, so that if left to his own devices he may read the intention and idea of the architect, and bearing this in mind adapt his work to the exigencies of the case. To attempt decoration without this previous knowledge is, as it were, to try to illustrate a book written in an unknown tongue.

Advice to Students.

I therefore counsel all art students, no matter what their ultimate ambitions may be, to study simultaneously during their period of pupilage, architecture, painting and sculpture, and to specialise afterwards. At school they were taught at the same time reading, writing and arithmetic. A medical student studies both anatomy and medicine, whether he intends finally to become a surgeon or a physician; and in art the same principle of education must be applied and enforced if better and broader results are to be obtained than are possible under the present system. A longer period of apprenticeship will certainly be necessary, but what of that? It is surely better to spend time wisely and well at the outset of a career than to find it wasted in the end, and on the road to commit costly errors, palpable, enduring and irremediable.

In the concluding part of my remarks I shall try to indicate the special characteristics of mural painting, its principles of construction, its

limitations and its powers, so that in forming judgment we may the more readily distinguish right from wrong, withhold approbation from work (attractive it may be to uneducated perception but wrong in principle), and appreciate the merit of work which fulfils its first requirement, though lacking in less essential qualities.

It is most necessary in this, as in other matters, to establish firmly a correct standard of taste, for the confidently expressed opinion of critics and amateurs, the influence which it exercises over that of the public at large, has much to do with the advancement or discouragement of true art; while the reasons which can be urged as a basis for these opinions can commonly be reduced to nothing more definite than the words "I like."

To quote the words of the French critic, St. Beuve: "The first consideration is, not whether we are pleased with a work of art, nor is it whether we are touched by it—what we seek above all to learn is whether we are right in being pleased with it, and being moved by it, and in applauding it."

Judgment of Mural Decorations.

To begin with, we must not base our judgment of a mural decoration on the knowledge we may happen to possess of the essential qualities of the cabinet or easel picture, the characteristic production of a realistic age. Both alike are, or ought to be, a record of the artist's impression of fact, beautifully arranged and beautifully expressed; but the easel picture is a thing *per se*, whole and self-sufficing. It bears no relation whatever to anything else, not even to the frame, which is its architectural servant, contrived simply and solely to confine attention to the beauties of the picture itself, and to ward off the effect upon it of any other object in the neighbourhood.

A mural painting, on the other hand, is not an independent and isolated work of art like a cabinet picture, but part and parcel of an architectural scheme. It starts from an architectural basis, and its merits or demerits as decoration must be judged entirely with reference to its environment. To give an exact definition, I am indebted to the words of the American critic, Royal Cortissoz, who states that "Mural painting is that permanent addition of painted colour to a wall or other immovable portion of a building which falls into the effect of the whole structure as the lines of an arch fall into it on the purely architectural side of the design. Lay hold on that fundamental conception, and you have a touchstone for all the decoration ever painted. No matter what the form may be, pictured design or solid tint, the decoration must be an integral part of the architectural whole. And to be this, it must be brought into conformity with the general character of its surroundings. Now, this seems obvious enough; but ignorance of it, or indifference to it, has done more to disfigure noble buildings and retard the growth of a noble art than all the incompetency that ever expressed its dreary self through the medium of colour."

How Mural Decorations should be treated.

In accordance with the principle thus ably and clearly enunciated, illusion must not be attempted, neither should the facts of nature or various planes of distance be expressed, as naturalistic treatment would suggest, by modelling of form or by relative values of colour; in other words, by detachment of objects from their surroundings and gradations of colour force. To do this would be to deny or contradict the inherent structural flatness of the wall to be decorated. A landscape or an interior subject thus treated would at once, so to speak, open a window in the wall or suggest the existence of an adjoining apartment. The canvases of Tintoret and Veronese, designed to decorate the walls and ceilings of the ducal palace at Venice, are a notable instance of such erroneous method. They are masterpieces of painting, they are superb pictures, but false decoration. In mural painting comparatively conventional flatness of treatment must take the place of realistic modelling of form; linear rather than

aerial perspective is relied upon to suggest distance; and the separation of objects is effected by difference of local colour; while light and shade if not wholly wanting is merely indicated. Such is the method of Giotto, such is also the method of Puvis de Chavannes, masters of the art of decoration, who join hands in principle across the void of time which separates their practice.

While certain obligations and limitations are thus imposed upon the decorative painter from which his brethren are exempt, in all essential matters he enjoys a freedom which equals, nay, surpasses, theirs. His ideas have no limitation beyond that of his own originality and power of resource. The current of his thought is unhindered by the elaboration of inconsequent matter, and the rapidity of execution demanded by his material implies and necessitates a corresponding simplicity of technique.

Let no one be offended with the word "conventional," nor imagine for a moment that there is any inferiority on this account between a picture thus treated and a work of the most exhaustive realism. All art is conventional, and every artist adopts a certain convention wherewith to express his ideas. Art may be defined indeed as the conventional representation by means of ordered words, colour, sound, light and shade, or line, of ideas suggested by the facts of nature; and greatness in art consists in the nobility or beauty of the idea, coupled with skill in the selection of suitable material, and in the use of the convention adopted for its expression. Such a definition covers, I think, the whole realm of art, whether of music, literature, architecture, or the graphic and plastic arts. None of these is, *per se*, greater or less than another, none aims at the imitation of natural fact, while all alike depend for their effect, in varying degree, upon the imagination of those to whom they appeal.

So much is convention in art as in daily life a matter of habit, that we forget its very existence unless it appears in a new and unaccustomed form. Take the familiar instances of a pen drawing or of an etching, where strokes stand for shadows; where a circular line on the blank paper with, perhaps, a radiating scratch or two, is the readily accepted representation of the sun; and where colour is left wholly to the imagination. Yet for all that the whole thing, colourless and extremely conventional as it is, suggests the artist's idea and the existence of omitted facts quite as well as, and often rather better than, the most exhaustive treatment of a realistic picture.

Moreover, the conventionality, so to speak, of the particular convention now under consideration is less than would appear at first sight. I have already noticed a similarity between the works of Giotto and those of Chavannes, who represents the latest and best development of mural painting. The breadth and simplicity of the works of the former are doubtless owing to the fact that Giotto lived before that knowledge had been developed which subsequently enabled art to follow so closely on the heels of nature; and yet that very knowledge, acquired by the modern practice of study in the field and observation of the subtlest aspects of nature, has revealed the shadeless effect of diffused light, so that the work of Puvis de Chavannes, the nineteenth century master, who neglects nothing, yet has learned to omit much, bears a strange resemblance to the simplicity of a primitive fresco.

I must not at present enter, however, upon the discussion of details of this sort, but content myself with the statement of broad general principles. It is sufficient if, by reminding you of these, I have been able in any degree to arouse dormant interest in mural art, and to urge the claims which it makes upon your consideration for reinstatement in its former position as painting for the people.

I have heard it stated that the noble art of painting is degraded by being thus forced into service, and subordinated to any requirement other than its own. Such is not my opinion, nor will it be held, as I venture to believe, by anyone who has grasped the idea of the dignity of service. On the contrary, for this very

reason, if for no other, mural painting claims to take rank with the highest art. To earn the title "A Great Decorator" should be a painter's noblest ambition and his greatest claim to the respect of his own and succeeding generations.

"BUILDERS' JOURNAL" SHILLING FUND.

WE give below a further list of subscriptions received for our Shilling Fund for assisting in the erection of Homes of Rest for Discharged Soldiers. It is still the case that the majority of the lists sent in are made up of a number of small gifts collected by some energetic reader of the BUILDERS' JOURNAL from his employes or fellow workmen. This seems to suggest that there may yet be a great many would-be subscribers to our fund who are only waiting to be asked for their shilling. They will not, perhaps, take the trouble to send off a postal order on their own account, but let a friend or acquaintance present himself before them with a BUILDERS' JOURNAL collecting form in one hand and a lead pencil in the other, and the shillings will promptly be transferred to the Soldiers' Homes account. If more of our readers were willing to devote a little personal effort to the good cause, we feel sure the total receipts would be quickly and substantially increased. Here for instance is a letter received last week from a clerk of works at Birmingham, which shows the enthusiastic spirit in which some of our friends have responded to our appeal, and suggests what might be done if more helpers would come forward:—

"DEAR SIR,—I am sending herewith the first instalment of contributions, 27s., collected for the Homes of Rest, and I am hoping to forward another shortly. If ever there was an object for which I could be enthusiastic, it is the Homes, and the same enthusiasm prevails among the foreman and workmen whom I have asked for help. I have not yet met with a single refusal, and I believe could this district be thoroughly worked a large sum might be raised.—F. W. ANDERSON."

We will gladly forward collecting forms to any who will make good use of them, and as a slight acknowledgment of the efforts of our collectors we shall continue to send a copy of the last published issue of "Specification" to all who send 20s. and upwards to the fund.

The following subscriptions have been received since the publication of our last list:—

Previously acknowledged...	2,576½
Per W. Green; collected from employees of S. Megarity and Co., builders and Contractors, Steam Joinery Works, Harris Street, Strangeways, Manchester:—	
S. Megarity and Co.	5
W. Green... ..	1
F. McCullagh	1
P. Rafferty	1
—Campion	1
F. Williams	1
M. McMillan	1
W. Smith	1
J. Gregory	1
R. Kneale... ..	1
J. E. Walker	1
F. Green	1
A. Ward	1
—Hannay	1
—Nelson... ..	1
—Jones	1
—Rodgers	1
—Fincham	1
—Barnes	1
—Stanway	1
—Payne	1
—Parr	1
—English	1
N. Horne	1
—Anderson	1
—Rollinson	1

Per J. H. Perkins, foreman; collected from employees of Messrs. Matthews Brothers, builders, Winslow, Bucks:—	
W. T. Matthews	4
R. J. Matthews	4
J. H. Perkins	2
W. Keys	1
W. Roads	1
G. Stevens	1
A. Sirett	1
R. Benbow	1
II. Blake	1
A. Rodwell	1
H. Wise	1
G. Williams, W. White, } G. Smith, R. Turney, } H. Stevens, J. Holden }	3
Missenden Job	4

Per W. A. Warwick, Building Inspector, Birkenhead:—	
G. P. Snape	2½
Owen Williams	2½
Davis and Williams	2½
Thomas Hughes and Sons	2½
J. Wright	2½
T. T. Rees	2½
Jones and Bancroft	2½
Aaron Evans	2½
John Francis	2½
William Davis	2½
M. S. J.	2½
Richard Roberts	2
A. R. Stowell	2
C. J. Shaw	1
Joseph Davies	1
Hugh Griffiths	1

Per William E. Gauld, A.R.I.B.A., Aberdeen:—	
William E. Gauld	2
William A. Paper	1
A. B. R.	1
G. Merson	1
G. G. Robertson... ..	1
William Lindley	1
William Allan	1
James Wright	1
John O. Merson... ..	1
William McKensie	1
J. Leard, junr.	1
Ivor Hardie	1
William Laird	1
Allan Wilson	1
Thomas Mensies	1
David Mitchell	1
William Emslie... ..	1
James Laird	1
J. Ogg	1
E. W. Watt	1

Per F. W. Anderson, Highbridge Road, Wyde Green, Birmingham; collected from workmen at Birmingham Mutual Bakery:—	
A. T. Bomber	1
J. A. Bomber	1
A. Collins	1
J. Green	1
W. Bomber	1
E. W. W.	1
W. H. K.	1
F. P. B.	1
W. E. F.	1
H. S. F.	1
F. S. G.	1
—Billington	1
William Jones	1
Ben Roberts	1
I. James	1
W. Harley	1
Jesse Light	1
W. Barclay	1
M. Wragg	1
—Spencer	1
F. W. Anderson... ..	1
W. Eden	1
T. Purser	1
J. Newbold	1
H. Harper	1
—Carpenter	1
—Nickels	1
A. H. E.	1
E. M. W.	1

K. F. C.	1
H. B. B.	1
M. Rouen	1
Anonymous	1
Total	2,708

The building trades in Birmingham are making an organised effort in support of the Building Trades' Gift. At a meeting of representatives of employers and employed held on April 9th, the following resolutions were carried unanimously:—Proposed by Mr. J. Matthews, seconded by Mr. Vaughan: "That the representatives here present recommend to their several societies that they contribute to the Building Trades' Gift, and that the contributions should be at the rate of not less than 1s. 6d. per member from the tradesmen, and 1s. from labourers." Proposed by Mr. F. G. Whittall, seconded by Mr. S. Lakin: "That the collection of the fund for the Gift be left in the hands of the various societies, and that the amounts be collected during the month of May, 1900." Mr. F. G. Whittall (President, Birmingham Builders' Association) was unanimously elected president; Mr. Wm. Sapcote (President, National Association Master Builders), treasurer; and Mr. Ernest J. Bigwood, hon. secretary of the Building Trades' Gift in Birmingham.

The following subscriptions and contributions have been received by the executive of the Building Trades' Gift to the Nation:—

SUBSCRIPTIONS.	
Messrs. Malcolm, Marlesod and Co.	11 0 0
Mr. W. H. Pearce	10 8 7
Workmen of Mr. W. H. Pearce	10 8 7
Workmen of Messrs. George Jackson and Sons	8 3 3
Workmen of Messrs. Hall, Beddall and Co.	5 14 3
Messrs. James Blyth and Co.	5 8 0
The Builders' Materials Supply Stores	5 5 0
Workmen of Mr. George Green (Aylsbury, Bucks)	3 6 6
Mr. George Green (Aylesbury, Bucks.)	3 3 0
Messrs. William Titmas and Sons	3 3 0
Workmen of Messrs. James Blyth and Co.	3 0 0
Workmen of Mr. Ernest Ireland (Morecambe)	3 13 9
Workmen of Messrs. William Titmas and Sons	2 11 9
Workmen of Messrs. G. Aston and Sons	2 9 6
Workmen of Messrs. Poshel Brothers (Brighton)	2 4 6
Workmen of Messrs. H. Dakin and Co. (Putney)	2 1 6
Workmen of Mr. William H. Forde (Birkenhead)	1 16 0
Workmen of Mr. Fred Perron	1 15 0
Workmen of Mr. George Neal (Kilburn), Second Donation	1 14 3
Workmen of Messrs. R. B. Hilton and Sons (Deptford)	1 5 0
Workmen of Mr. T. F. Dolell (Stoke Newington)	1 2 0
Workmen of Mr. William Mousley (Bingley, Yorks.)	1 1 6
Mr. William Mousley (Bingley, Yorks.)	1 1 0
Workmen of Mr. R. Ridley	1 1 0
Messrs. H. F. Green and Co.	1 1 0
Mr. Ernest Ireland (Morecambe)	1 1 0
Mr. J. C. Base (Stratford)	1 1 0
Workmen of Messrs. H. F. Green and Co.	17 0
Workmen of Messrs. W. Reddish and Son	12 0
Workmen of Mr. P. Athey (South Norwood)	10 6
Workmen of Mr. James Hill (Barrow)	8 0

FOR INDIVIDUAL SECTIONS OF THE WORK.
The Patent Tile Works (Bridgwater).—1,000 Red Double Roman roofing tiles, with the necessary ridge tiles.
The Mosaic Manufacturing Co.—80 yards wool block flooring.
The Limmer Asphalt Paving Co.—200 yards super. asphalt for footways.
Mr. Charles W. Matthews.—The whole of the stone-work for one Home.
Messrs. Wiggins and Co.—Ridge tiles and flials for four Homes.
Mr. James Cann.—One ton of Whiting.
Mr. Thomas Crompton (Ashton, near Wigan).—Ironmongery to the value of £10.
Messrs. Minton and Co. (Stoke-on-Trent).—100 yards fancy tessellated tiles.

The new Orange Hall at Larnie will be 70ft. by 35ft., and the portion facing Curran Road will be two storeys high.

The Columns of Karnak.—While setting up a fallen column of the temple of Karnak, M. Legrani came upon a city gate, the first that has been found in Egypt. The gateway is of very great height, is made of large blocks of squared limestone, and is double, having one gate within another. Two chariots could easily have passed through it abreast. It was erected by Amenhotip the Second, of the eighteenth dynasty.



DENNINGTON CHURCH, LOOKING SOUTH-EAST.

DENNINGTON CHURCH, SUFFOLK.

By RAYMOND C. WRINCH.

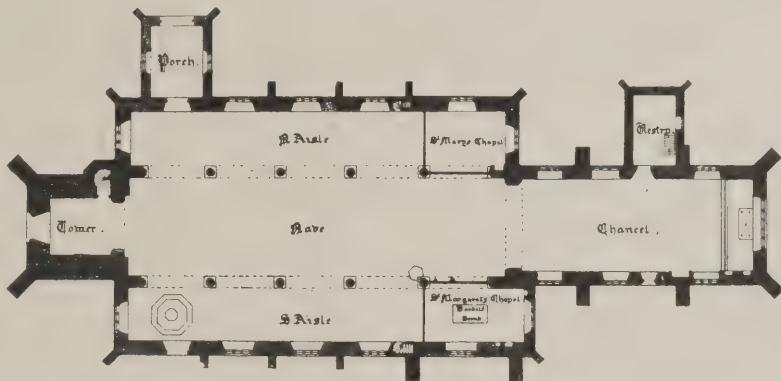
DENNINGTON is a picturesque village about three miles from Framlingham, Suffolk. The church is dedicated to St. Mary, and, as will be seen by the accompanying plan, consists of chancel, nave, north and south aisles, two chapels, tower, vestry and porch. It is a very large church for so small a village, the total interior length being 149ft. 6in. and width 47ft. The chancel is 49ft. 4in. long, and the height from the nave floor to the top soffit of the chancel arch is 29ft., to the top of the tower parapet 75ft., and to the summit of the beacon tower 82ft. The tower is of great strength, the walls being 5ft. thick. The screens which divide the two chapels from the rest of the buildings are of oak, but, unfortunately, have been painted in an atrocious manner by (I am told) the daughters of one of the late rectors.

The two bays of the screen to St. Margaret's Chapel, shown on one of the inset sheets this week are those marked on the sketch plan on this page. This chapel contains the tomb of Lord and Lady Bardolf, which is a remarkably fine piece of work in alabaster; but it is to be greatly regretted that so many persons have cut their initials all over the figures. Lord Bardolf fought in the battle of Agincourt, October 25th, 1415. His effigy is on the left, his lady taking the place of honour, as he was Lord Bardolf in her right.

Dennington Church in the fourteenth century consisted of the present decorated chancel; the corbels under the chancel arch are, however, remarkable, as they evidently belong to an earlier period than the rest of the chancel carving. The chancel contains on the south side two piscinas, a sedilia, and a priest's window-seat adjoining the sedilia.

The capitals of the chancel windows are varied and beautiful examples of their kind. There were originally two priests' chambers, one above the other, which are now used as vestry and lumber rooms. These were made extremely strong, the windows being fastened by bars of iron and guarded by massive shutters which could be securely fastened on

from the inside. The trap-door over the steps, which were constructed of triangular blocks of oak, was locked from below. The door is also very massive. The nave, clerestory, aisles, porch, vestry and tower are of the Perpendicular period, while the porch is on the north side, which is unusual. The church contains some beautifully-carved benches with tracery and poppy heads, &c., which are all of different treatment with the exception of two. It also contains a sand table on which the children of the old days were taught to write. This consists of a long narrow table with a raised edge all round to keep the sand in, and an instrument like the plasterer's trowel made of wood with which to smooth the sand. The writing was made on the sand with one's finger or by means of a piece of stick. There are also some very fine old chests. The pulpit is a poor specimen of Jacobean work and looks very out of place with the beautiful screens and benches. The western embattled tower con-



DENNINGTON CHURCH, SUFFOLK: SKETCH PLAN.

tains a fine peal of five bells. The walls are of rubble, faced externally with flint and inside with plaster. The register dates from the year 1559.

A new Fountain in Richmond Park has been erected for public use by Mr. Skewes-Cox, M.P. It is of red granite, and is situated near the Kingston entrance of the park. During the coming summer months it will meet a long-felt want.

Vicar as Architect.—The Rev. E. V. Stephens has acted as architect for the new chapel now being completed at Camelford Station. The building of edifices by the clergy is a growing passion—perhaps we are reverting to the old!

Under Discussion.

Vanishing London: The Blue Coat School.

At a recent meeting of the Farringdon Ward Club Mr. Archibald Dick, the honorary correspondent of the British Archaeological Society, read a paper on "Vanishing London." For initial treatment he appropriately chose Christ's Hospital, dealing with the subject in a very lucid and comprehensive manner. While regretting the pending removal of the school, he expressed a hope that members of the club would endeavour to visit the institution before its transference to Horsham. The north-east corner of the school had, he said, a good many interesting associations. Being situated near the river the earliest inhabitants naturally took up their abode in the vicinity, and this particular corner was occupied by the

meat market, one of the thoroughfares gaining the name of Stinking Lane, on account of the offal deposited there. At the time of the Franciscan movement there were two classes of monks in practice—the Dominicans, or preaching monks; and the monks of Grey Friars, whose doctrine was physical, rather than religious. The latter were received with acclamation, and had their first settlement in Cornhill. In the following year John Ewen presented them with a piece of land in Newgate, and the mayors provided a church, cloister, dormitory, and other buildings essential for a priory. Thus the school was established. Eighty years later the movement had so far progressed that Royal patronage was accorded, and the church now known as Christ Church, Newgate Street—one of the most beautiful which graced the City—was built. The preservation of the buildings, said the speaker, as a place of education was a magnificent example of what might have been done throughout the country, and he thought that to-day we suffered very much from the fact that many of these old structures were not retained for educational purposes. These magnificent buildings existed down to the time of the Great Fire, but they suffered considerably from the conflagration, and now almost nothing was left of the original school. The great hall was built in 1680 at a cost of £25,000, and at a later date the south front, which was a most beautiful example of brickwork, was rebuilt. The writing school was erected by Sir John Moore in 1694. In the court, called the garden playground, some fine arches were also to be seen. The other buildings were rebuilt in 1834. There was in the establishment a pulpit of ancient origin removed from one of the city churches, with some stained glass believed to have been rescued from the Great Fire. All those features, Mr. Dick presumed, would be placed in the new school at Horsham. In conclusion, he moved the following resolution:—"That, in the opinion of the Farringdon Ward Club, the loss of Sir Robert Clayton's building and the remains of the Greyfriars' Priory would be most regrettable, and therefore it would be desirable that an effort should be made to secure the preservation of the buildings in the event of the demolition of Christ's Hospital."—Mr. D. J.



BENCHES, DENNINGTON CHURCH, SUFFOLK.

Rees seconded, and the resolution was adopted unanimously.—Mr. Dick, in reply to a vote of thanks, suggested that whoever might buy the site of the school should allow the portions of the building above mentioned to stand in the same way as the Prudential Company permitted the old building to remain on Holborn Viaduct.

Liverpool and the Housing Problem.

"The Housing Problem: What it Involves, and How alone it can be Settled," was the title of a paper recently read before the Liverpool branch of the Society for the Taxation of Land Values by Mr. T. Burke, C.C. In the course of the lecture he remarked that in no city in the United Kingdom had the housing problem been treated in so trifling a fashion, and in no other was slumdom so supreme and its concomitant evils so rampant as in Liverpool. As to the question that might be asked, why people did not go further out from the heart of the city, Mr. Burke said that the overwhelming majority of those who lived in the areas referred to could not live any great distance from the docks, and the recent craze of transporting them to the outer areas was a sheer impossibility. The development of the city, the expenditure of public money on electric traction, the extension of the city boundaries, had so increased the value of land in St. Michaels, rural Texteth, and other districts during the past years that the builders could not possibly erect houses at the rents which the working-classes could afford to pay. From the very outset the Insanitary Property Committee had been faced with the difficulty of getting land, and how, then, were the 8,000 or 9,000 houses of an insanitary character to be swept away and proper provision made? It was abundantly clear that a tremendous burden must be laid upon the shoulders of the ratepayers if the requisite steps were to be taken under the existing laws, and they thus found themselves driven to the enquiry, "Where is the money to come from?" He answered in the words of Mr. Joseph Chamberlain, in his valuable evidence before the Royal Commission, that as "the ground landlord is benefited immensely by the general improvement to the place to which the improvement contributes, I do not see why he should escape scot free." Mr. Burke gave instances of the high prices demanded for land from which the slum property had been erased to show that the land monopoly was the cause of overcrowding, and it followed, therefore, that until the monopoly was broken in twain the problem of rehousing the toilers might be relegated to "the man in the moon." In conclusion he said, "Bring pressure on our public men to demand in their various councils the taxation of those ground values which are the creation of the community, and the problem of the housing of the people will settle itself automatically, without the setting in motion of Acts of Parliament which squander enormous sums of money on lawyers and landlords; and the earth will no more have to witness that sad blot on its fair face which is an insult to its Creator."

Students' Design Competitions.

At a meeting of the Edinburgh Architectural Society, held on April 11th, an address was given by the honorary president, Mr. R. S. Lorimer, A.R.I.B.A., and the prizes gained in the session's design competitions were presented. Mr. Lorimer, in his address, made some remarks upon students' design competitions. All were convinced, he said, that there was no better way for architectural students to supplement their office work than by these competitions. The subjects chosen for competition should not be too dull or commonplace, nor should they be too much "in the clouds." The object should be the ideal treatment of a really practical subject. In referring to the Street Front Competition, Mr. Lorimer thought that an elevation of this sort should be as smooth and simple as possible up to the height that people passing could reach, and should be of a good stone, granite by preference, having all the corners rounded. Too little was known about the proper uses of the different building

materials. The material should suggest the treatment. Stone orders should not be repeated in cast iron. All ornament was useless if it did not give pleasure, and many modern buildings were overcrowded with meaningless ornament. Mr. Lorimer referred to and criticised several buildings lately erected in Edinburgh to illustrate his remarks. The honorary president then presented the prizes as follows: Honorary president's prize of £10 for three designs—(a) Pulpit for a seventeenth century city church, (b) street front, and (c) chancel screen for a modern Gothic church—gained by Mr. Bailey S. Murphy, who had two firsts and one second. President's prize of three guineas for a design for a public school to accommodate 600 pupils—gained by Mr. W. S. A. Gordon; a second prize for this design was presented by Mr. Robert Wilson, and was won by Mr. W. H. Johnson. Vice-president's prize of two guineas for a design for an electric light lamp-post—gained by Mr. Andrew Muir.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Law About Professional Titles.

CARDIFF.—OLD READER writes: "Is there any law which forbids a man who has been laying house drains, &c., and has been connected with building in all its branches for a period of more than twenty years, but who has not passed any examination, to advertise himself for trade purposes as a 'sanitary engineer' or a 'sanitary expert'? If contrary to the law, what would be the course to adopt and would a South Kensington 'Advanced' Building Construction certificate cover the case?"

There is not any such law.

Architects and Sunday Work.

HALIFAX.—FAIRATION writes: "When work is necessitated that was not contemplated, such as foundation work requiring water in a dam to be drawn off at week ends, which needs day and night labour and the attendance of a clerk of works and the architect, can the architect charge for these additional services from Saturday afternoon to Monday breakfast time? A legal adviser informs me it is one thing to pay the clerk of works (as has been done by my clients) and another to remunerate the architect who is working by ordinary commission. It does not seem right to the latter, who never anticipated such work and has thus had to negotiate the terms and the drawing off of the water numerous times in carrying out the foundations by piecemeal, which consequently entailed extra meetings, correspondence and interviews."

The architect's commission includes the extra work done on Sundays. H. P. B.

Colouring for Stucco.

MANSFIELD.—VEXATUS writes: "Can you inform me of a reliable yellow colouring for stucco (composed of equal parts of lime and sand)? I have tried vegetable colourings, and find they do not stand."

Without knowing the class and nature of the lime used, or to be used, it is somewhat difficult to say with certainty which is the best colouring matter. Each variety of lime has its own individual nature and perversity. Saline matter and other impurities in the sand have also a disastrous effect on vegetable pigments. Lime newly slaked or used in a warm state is the principal cause of subsequent defect in the colour. Lime that has matured by age and thorough working may be used for vegetable pigments, especially if the colouring

matter is thoroughly incorporated by mixing twice or thrice, allowing the mass to stand two or three days in the air between each mixing. A good and permanent yellow colouring matter is obtained with citrate of iron dissolved in oxy-sulphate of iron, sulphate of cadmium, chromate of lithium, and yellow of antimony. Yellow oxide as used for colouring fine concrete is a good medium for colouring stucco work. Consult an intelligent local plasterer, such as Messrs. Wilson and Son in your district, as to the class and nature of the lime and sand that you propose to use; also have a few sample pots made to test the colour of the work when dry. W. MILLAR.

Correspondence.

Cost of Workhouses.

To the Editor of THE BUILDERS' JOURNAL.

LONDON.

SIR,—Having seen on page 173 of your issue for April 11th the enquiry by a student of the cost per cube of workhouses, and Professor Adams' reply, I must say I consider the reply very misleading, as I have found from personal experience, which is of no small extent, that a workhouse at the present time cannot be built for £50 or £60 per inmate in London. A workhouse building should not be cubed at less than 10d. per foot cube for the pavilions, and at 1s. for the administration buildings (in the provinces it may be taken a little lower), and this is exclusive of lighting and heating. The pavilions are cubed at a lower rate on account of there being so much open space. For instance, at the present time a workhouse in London costs about £200 per inmate, but in the provinces the same building could be built for £120 to £150 per inmate.—Yours faithfully, A. C. F.

Building Stones around Liverpool.

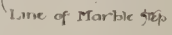
To the Editor of THE BUILDERS' JOURNAL.

WANDSWORTH, S.W.

SIR,—Referring to the article which appeared in your last issue on the above subject, I should like to correct a statement by Mr. A. W. Street, with regard to limestones. He says, "Portland stone is one of the finest limestones to be obtained for general building purposes; that is, if you happen to obtain the white-bed and not the basebed, for the weathering qualities of the latter are greatly inferior. Basebed is fit only for internal work, and great disappointment is caused when it is used, mistaking it for whitebed, in external work exposed to trying atmospheres." Now at the outset I may say for the benefit of your readers that white bed and base bed are undoubtedly known in the trade as one and the same. *Whit* bed is probably what Mr. Street intended to say. *White* and *whit* makes all the difference. It is not in my opinion sufficient for an architect to simply say *Portland stone*, but should specify *best whit-bed Portland stone*. And on a work of magnitude, to ensure this being carried out, I would advise that the whole of the stone should be selected and approved by a practical mason, who would understand its peculiarities. Certainly I would not leave such an important matter in the hands of a clerk of works who was by trade a carpenter, but would endeavour to obtain a clerk of works who was a proved practical mason.

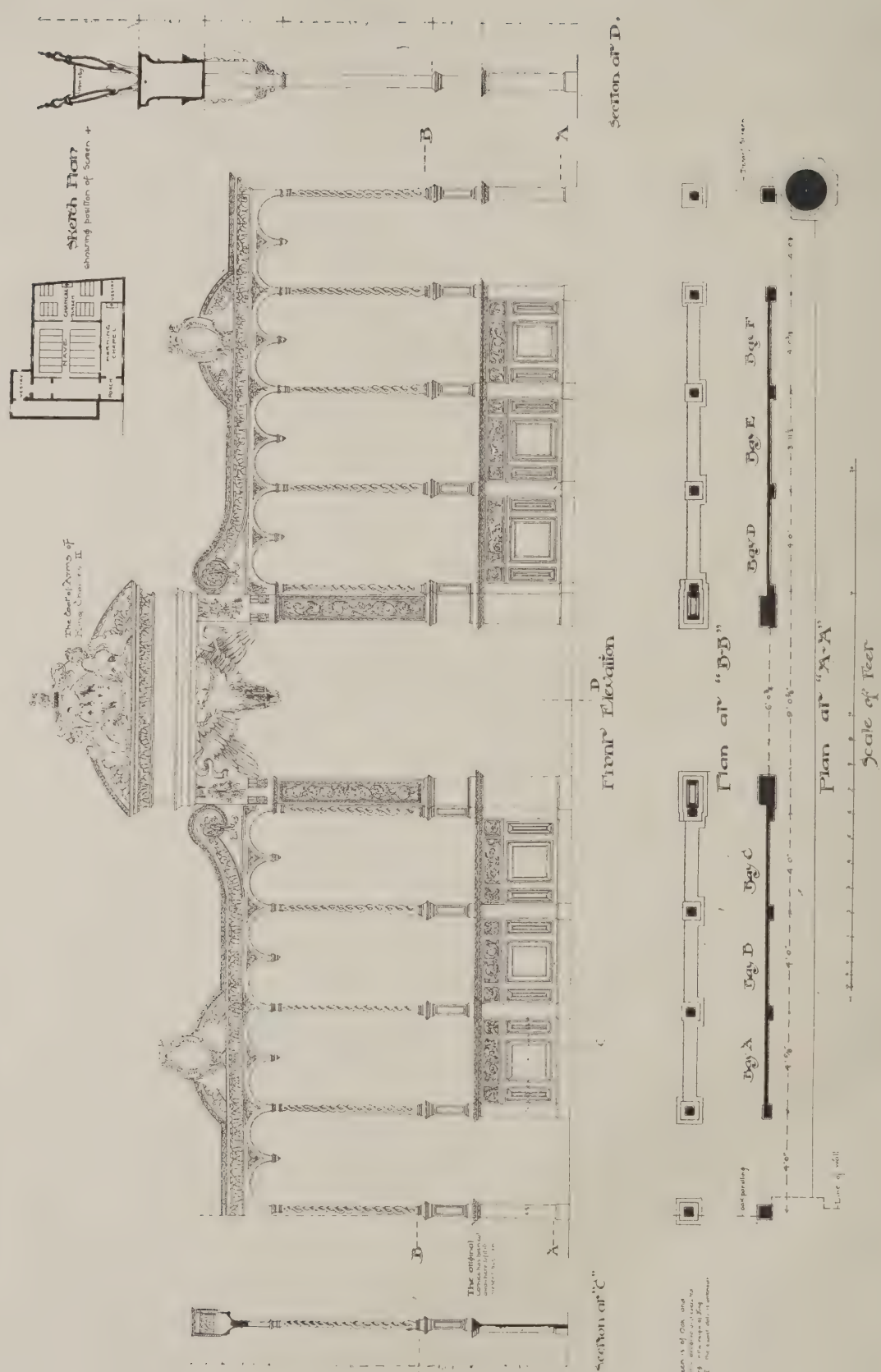
Mason clerks of works have proved themselves equal in every respect to carpenters and bricklayers—for instance at the Roman Catholic Cathedral at Westminster, and at many other buildings I could mention. Then the remark in Mr. Street's paper, "that is, if you happen to obtain the whitebed" (sic *whit*, for that is what he evidently meant) would be a doubt that need not exist, for certainly the whitbed is not selected in any way by chance by a practical man—whitbed would be whitbed, and basebed basebed, in his judgment. Unfortunately, basebed has been used in London on some important works externally, which I am quite certain the architects had intended to be best weather bed brown or whitbed Portland.—Yours truly, J. W.

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S: NICHOLSON'S CHURCH, LOTHBURY, E.C. - Chancel Screen
 Formerly in All-Hallows Church, Thames Street



S: Margaret's Church, Louthby: Chancel Screen

Sheet 2

Carving in Panels



Panel A

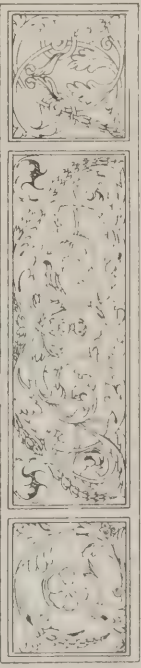
Panel A



Panel B



Panel C



Panel D



Panel E



Panel F

Panel F



Panel F



Panel F

Panel F



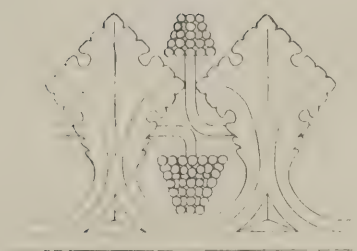
Panel F



Panel F

Panel F

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Detail at B

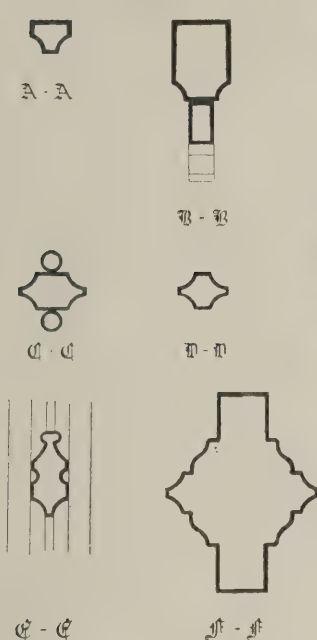
Dennington Church . Suffolk .

Part of Screen

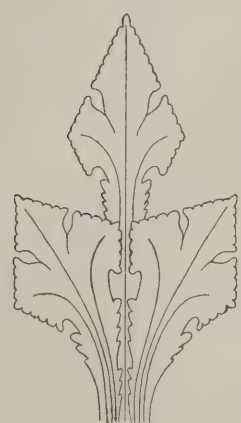


Detail at A

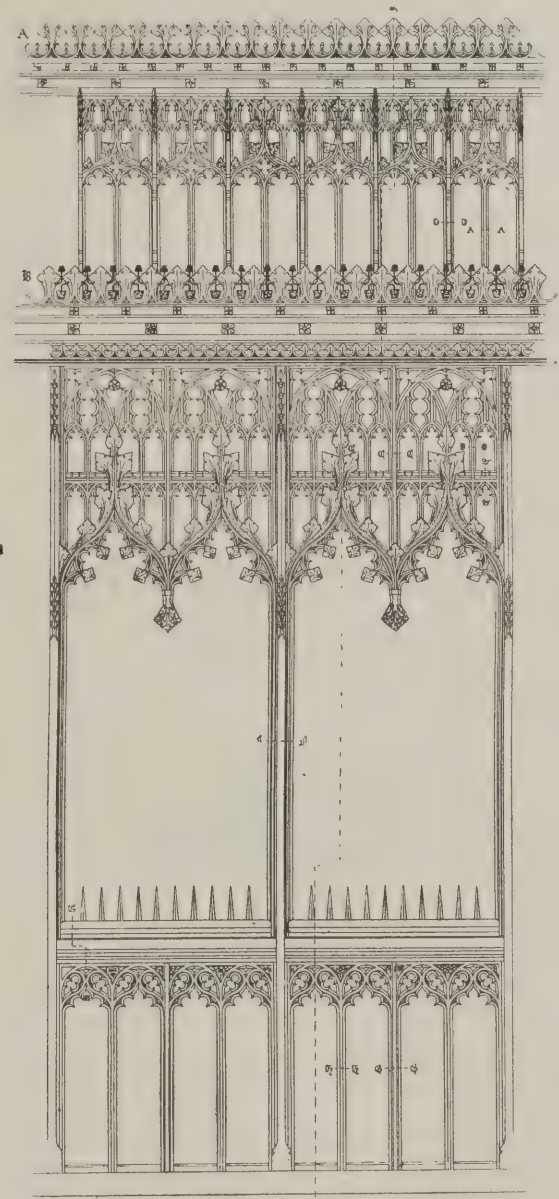
Sections .



Detail at C



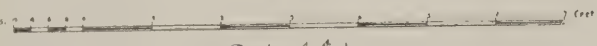
Ornament to Capping .



Elevation

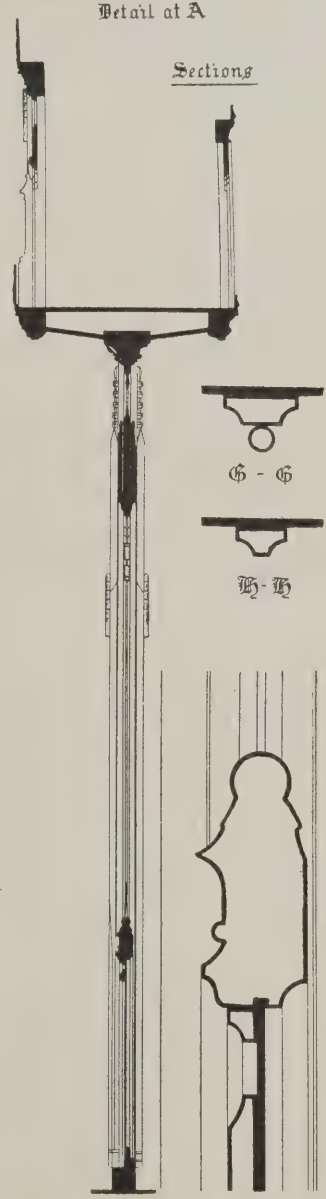


Plan



Scale of Feet

Sections



I - I . H - H

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R.I.B.A.

PROTECTING BUILDINGS AGAINST LIGHTNING.

A MEETING of the Royal Institute of British Architects was held on Monday evening last, when the president, Mr. William Emerson, occupied the chair. Mr. Alexander Graham regretted to announce the death of Mr. Benjamin Edmund Ferrey, F.S.A., who was elected an Associate of the Institute in 1868 and a Fellow in 1877. Mr. Graham then intimated that Mrs. Reynolds Rowe had presented a portrait of her husband, and a vote of thanks was passed for this gift. The secretary announced that Messrs. H. N. Kerr, W. H. Woodward and E. A. Young had been examined by the Institute and had been granted certificates of competency to act as district surveyors in London. Mr. Killingworth Hedges, M.Inst.C.E., M.Inst.E.E., F.C.S., then read his paper on "The Protection of Public Buildings Against Lightning."

Mr. Hedges began by a reference to points brought forward in his paper on "The Fire Risks of Electric Lighting," read before the Institute in 1884, and in Colonel Parnell's paper on "The Action of Lightning Strokes in Regard to the Metals and Chimneys of Buildings," read before the Institute in the same year. In the same connection were quoted opinions of Dr. Oliver Lodge, F.R.S., and Professor Kirchhoff, of Berlin. Since the report of the Lightning-Rod Conference in 1882 there had been no official report on the effect of lightning strokes on buildings protected by conductors, and he hoped his paper would elicit some expression of opinion from architects, who had more opportunities of observing such effects than engineers. Discussing the action of a lightning flash, the author called special attention to its surging effect, which had very destructive tendencies. Lightning conductors, as usually arranged, do not guard at all against what Dr. Lodge termed the "spitting" action. They may serve to discharge or pass off on to the atmosphere the induced electricity from the earth and from the buildings upon it; but as lightning protectors they are so arranged that should they be actually struck by a flash the building would probably be set on fire; there was a chance, too, that a portion of the electric current would be diverted into unearthed metal-work, and prove most destructive in its tortuous course to earth. For the sake of these public buildings it was necessary to explode the fallacy that a properly constructed lightning-rod never failed. During thunderstorms the atmosphere and all conducting objects in the immediate neighbourhood become charged with electricity at a constantly increasing potential or intensity as we recede from the earth. Even objects directly on the earth, such as railroad tracks, high fences, &c., become charged and will spark. The characteristics of a lightning flash more particularly concerning the present subject are:—(1) Surging, due to the oscillatory character of the spark, and consisting of a disruptive discharge, sudden and violent, more like the blow of a hammer; (2) Self-induction, a property which gives rise to counter force or choking effect, noticeable in straight wires, but much more pronounced in coils of wire; (3) Side-flash, the result of self-induction. A disruptive discharge will often leave what would ordinarily be called an excellent conductor and side flash through the air to other much worse conductors; for instance, the lightning-rod may be struck, but instead of following the course provided a side flash may select its own path through a wall of brick or stone to a neighbouring gas-pipe or bell-wire. The phenomena of surging and self-induction were described by the author and illustrated by diagrams.

In dealing with the question whether our public buildings are efficiently protected, the author first reviewed the methods formerly adopted for the protection of St. Paul's Cathedral. The spire of old St. Paul's was partially damaged by lightning three times, and its destruction by fire in 1561 was attributed to the same cause. The author had recently to

report on the lightning conductors put up at the Cathedral in 1872. These took the place of the original system erected under the advice of the Royal Society about 144 years ago. They were considered at the time to form the most advanced system of protection. The system was thoroughly overhauled by the author for the purposes of his report, and pronounced to be open to serious criticism. Elements of danger due to inadequate conductors, faulty connections, non-protection, and other causes were found to exist. Of the dome, statues, choir, and towers, none were efficiently protected. The author read extracts from his report, and fully detailed the weak points in the installation. This was an average specimen of the method of protecting public buildings. That more disasters do not happen is due to good luck and to the fact that the warm air ascending from the numerous chimneys in large towns helps to lessen the violence of thunderstorms; but should a direct flash strike an insufficiently protected edifice, a disaster would occur. Descriptions of continental and American practice were given by the author and details of installations on public buildings abroad which he had inspected. The method adopted at the Cathedral of Notre Dame, Paris, the author considered to be somewhat lacking; that at Cologne Cathedral was far more advanced, the work being carefully executed and of a design which might be followed with safety. At the Palais de Justice, Brussels, was installed the most recent adaptation of the Melsen system, details of which were given. The author next gave an account of his rearrangement of conductors for the better protection of St. Paul's. The plan recommended by him, taking into consideration the large amount of copper cable already disposed about the building, was, first, to run three new cables from the metal-work of the framework supporting the cross to the roof of the dome (making inter-connection with the iron supports of the structure); there connecting them with the eight existing conductors, and reuniting them at the base of the dome to the existing system, which is increased by running a new $\frac{1}{2}$ in. seven-ply copper cable on the top of the parapet entirely round the building. From this horizontal conductor, aigrettes, consisting of five pointed copper rods, were teed at intervals by means of special brass boxes tinned inside, into which the cable was placed, the aigrettes being first secured by binding and the whole united by running in hard solder. The method of obtaining efficient new earths (a matter of difficulty owing to the nature of the ground), the process of earth attachment, and the general arrangements were fully detailed and illustrated.

The installation should not be taken as a model one, except, perhaps, with reference to similar ecclesiastical structures, which do not lend themselves very readily to the improved methods of protection, such as the author recommended for all new public buildings. It is almost impossible to draw up a set of rules to be universally applicable; each building should be carefully studied, first, as regards its position with neighbouring structures; secondly, as to the disposition of the metal employed; and, thirdly, with reference to the subsoil and its suitability for earthing the conductors.

Under the head of practical questions, the author then recapitulated a number of rules and principles laid down by Professor Lodge, supplemented with suggestions of his own, his aim being to elucidate the possibilities of improvements in the erection and testing of lightning conductors. In conclusion, he warned those who had to specify methods of protection to put no faith in the generally received opinion that a certain space contiguous to a lightning-rod is completely protected by it, so that if the rod is raised high enough a building in this protected region is safe. Nothing was more illusory; no space near a rod could be definitely styled an area of protection, for it is possible to receive violent sparks or shocks from the conductor itself without taking into account the phenomena of surging and self-induction.

The paper was further illustrated by slides giving views of St. Paul's, Westminster Abbey,

Notre Dame and Cologne Cathedrals, and Rockliffe Church; also of lightning discharges showing, first, the popular representation of a flash of lightning, followed by others taken from photographs of actual discharges. These were lent by the Royal Meteorological Society.

On the table were specimens of the fittings designed by the author for St. Paul's Cathedral. A discussion followed.

Keystones.

Littleborough Church, Retford, has been re-opened after undergoing repairs.

A new **Wesleyan Chapel at Darwen** has been opened. Mr. J. B. Thernley was the architect, and Mr. R. J. Whalley the builder. The building is situated in Bolton Road and provides seating accommodation for 680 persons.

Mr. R. Randall, F.S.I., late surveyor, War Department, died at his residence, 1, Sunbury Gardens, Palmerston Park, Dublin, on April 20th. The deceased was sixty-six years of age, and retired only a year ago, so that he did not long enjoy his pension. During his career he was stationed at the War Office, Birmingham, Aldershot, Colchester, Halifax, and for the last thirteen years of his service at the Curragh, where he was responsible for the construction and finance of the great barrack scheme which is now in progress. He was also architect of the Church of Ireland Soldiers' Institute, Roman Catholic Soldiers' Institute, and Nurses' Home at the Curragh.

Roman Art.—A lecture (free) on "Rome" is to be delivered at the Passmore Edwards Settlement, Tavistock Place, W.C., on Saturday evening next, at eight o'clock. This is preparatory to the course of four lectures on "Roman Art, from Augustus to Constantine," which Mrs. S. Arthur Strong, L.L.D. (Miss Eugénie Sellers), will give on Fridays, at 8.30 p.m., commencing on May 4th. Lecture 1 will be "The Altar of Peace of Augustus"; 2, "The Arch of Titus"; 3, "The Column of Trajan"; and 4, "The Arch of Constantine." Fee for the course, 2s. 6d.; workmen and working women, 1s.; single lectures, 1s.; associates of the settlement, free.

Dundee Institute Competitions: Results.—The results of the competitions arranged by the Dundee Institute of Architecture, Science and Art have been announced. There were three entries for sketch work and the prize was awarded to F. Webster (Messrs. Keith and Sons' office). The exhibit of A. W. Lawrie (Mr. T. M. Cappon's office) in the section for a design of a golf clubhouse was placed first, and honourable mention was made of the work of A. S. Macrae (Mr. J. P. Bruce's office), and of John Soutar (Mr. Cappon's office). William Stocks (Mr. T. H. Thomas's office) has won the first prize for a design for a fireplace. There were six other sections, but one only competitor appeared in each, and the Council awarded suitable honorariums. The judges were Messrs. T. Ross, A. H. Crawford, and G. S. Aitken, Edinburgh.

Wages in Bradford.—The Bradford joiners have been conceded an advance of a halfpenny per hour on their wages from May 1st. Some months ago the local branches of the Amalgamated Society of Carpenters and Joiners gave notice of a demand for an increase from 8½d. to 9½d. per hour. The masters offered a halfpenny per hour, and after several interviews between representatives of the two societies the men have accepted this offer. A slight alteration in the hours of labour has also been agreed to by which during the six weeks before and the six weeks after Christmas the hours will be reduced to 7½ per day or 41½ per week.—The six months' notice of demand for an advance of wages from 8½d. to 10d. an hour which the Bradford branch of the Operative Stone Masons' Society gave to the masters will expire on May 1st, and the men have announced their intention to cease work on that day if the request is not complied with. They have refused an offer of an increase of a halfpenny per hour.

Professional Practice.

Bristol.—Funds are being raised for carrying out much-needed improvements at St. Paul's Church, in Portland Square. This church was opened in 1794 and it was described by a local historian as "a perfect architectural absurdity, belonging to no known order in art, nor allied to any style of building." The pews were re-arranged about fifty years ago, but they were not modernised, and, as stated in the circular, "this is probably the only church in Bristol where the worshippers are still seated in high pews with closed doors." Time and use have rendered the internal fittings obsolete, and they show manifest evidence of general decay. The flooring, too, is much worn and in need of renovation. It is proposed in the improvement scheme to reseat and refloor the whole of the nave and aisles, to remove the side galleries, to reconstruct the west-end gallery, provide new heating apparatus, and to thoroughly clean, paint, and decorate the whole of the interior of the

principal entrance is by a verandah, from which access is had to an entrance hall, about 15ft. by 12ft. To the left is the main corridor, 6ft. wide, leading to the public rooms, &c.; while to the right of the hall is placed the smoking room, adjoining the public bar, in connection with which there is a separate entrance from the outside. The private bar abuts on the hall. The accommodation on the ground floor consists of parlour, 20ft. by 17ft., and two dining rooms, 26ft. by 16ft. and 18ft. by 17ft. The latter can be thrown into one large room if necessary. Adjoining the dining room is the service room, with kitchen, scullery, pantry, and offices behind. The principal stair leads from the corridor to the upper floors, and there is also a service stair leading to all floors. Between these are placed the lavatory and w.c. On the first floor is the drawing room, 20ft. by 17ft., the remaining space being occupied with eight bedrooms and dressing rooms, with bathroom, water-closets, and housemaids' closets adjoining the corridors. On the upper floor is the billiard room, 26ft. by 18ft., and seven bedrooms, with bathroom, water-closets, &c. There is also a tower

On the ground floor is the dining hall, which, together with the principal entrance hall, occupies the centre of the front, and is distinguished both by projection and by a greater height than the remainder of the rooms on this floor. This apartment, which is 50ft. by 24ft., is being waiscotted all round with oak for a portion of its height, and the entrance hall is separated from the dining hall by an oak screen. It is intended to be used for entertainments as well as for refreshment. To the east and west of this central portion are respectively the women's and the men's wings. The women's wing contains an entrance hall with separate entrance and staircase, reading and writing room 19ft. by 18ft., and parlour 26ft. by 19ft. with a large bay window. In this wing are also situated the business room and the matron's sitting room. The men's wing contains a similar entrance and staircase, reading and writing room 19ft. by 18ft., parlour 18ft. by 14ft., and billiard and smoking room. A verandah extends in front of each wing for the use of the patients. A straight corridor runs behind the above-mentioned rooms from one end of the building to the other, and at the ends are placed box rooms, lavatories, cloakrooms, &c. On the north side of this corridor are the offices containing kitchen, scullery, servants' hall, and store rooms, all admirably placed for the control of the matron and the service of the patients. On the first floor are the bedrooms, those for men being—as in the case of the day rooms—in the west wing, and for women in the east wing. In these the cubicle system has been adopted, the space being divided, by means of wood partitions 7ft. high, into rooms for two or three beds. The windows of the cubicles on the south front are treated as French casements, opening on to the balcony over the verandahs, and permitting patients to be wheeled outside. Lavatories and bath rooms are provided at the ends of the wings, as on the ground floor, and at each end there is an emergency door and an outside escape staircase in case of fire. The central portion over the dining and entrance hall, is divided into two parts—that to the front being sub-divided into cubicles, and so planned that it can be used as an alternative ward for either wing, so as to provide for the fluctuation of the relative number of patients of each sex; that to the back being sub-divided into cubicles, baths, &c., for the servants. Two separate rooms for use in case of sickness are also provided—one in each wing—and quite separate from the other bedrooms for isolation. The building, which is crowned in the centre by a lofty clock turret, is faced all round with the Enfield Company's best deep-red pressed bricks from Accrington, with Matlock stone dressings. All the floors are of solid concrete construction, and will be covered with pitch pine blocks and terrazzo mosaic. The general contractors are Messrs. Dawson and Jones, of Huddersfield and Sheffield. The almshouses, which form part of the Woodfindin bequest, stand at the corner of Eccleshall Road and Brocco Bank in a convenient situation, with a southern aspect, and close to the public park. Treated somewhat in the mediæval style, they make a picturesque block of buildings, and harmonise with the neighbouring church of St. Augustine in the background. They are in three blocks of six houses each, forming a quasi crescent in plan, standing upon a raised plateau with a terraced roadway in front and carried round the back of the buildings. The Porter Brook passing through the grounds has been bridged over at the west end to form a carriage entrance and a rustic footbridge spans it as a shorter communication citywards. The walls are faced with red bricks from the Thurstonland Works, near Leeds, with dressings of Stoke stone, the roofs being covered with Broseley tiles. Each almshouse contains a complete living room, scullery, and larder, with the usual offices. There are two bedrooms on the upper floor, and the centre block, in addition, provides a large reading room for the use of the inmates. The designs for the almshouses have been prepared and carried out by Mr. W. R. Bryden, F.R.I.B.A., of Buxton, Derbyshire, the builder being Mr. James Salt, of Buxton.



PRESBYTERIAN CHURCH, ALTENBURG GARDENS, CLAPHAM COMMON, LONDON, S.W.
E. BECKITT LAMB, ARCHITECT.

church. Plans are being prepared by Mr. G. H. Oatley, F.R.I.B.A., of Bristol, and the estimated cost of the scheme is £1,200.

London, S.W.—The architect of the Presbyterian Church at Clapham Common, of which an illustration is given on this page, is Mr. E. Beckitt Lamb, of Craven Street, Charing Cross. The drawing shows the front elevation, which was, however, somewhat altered, owing to larger accommodation being afterwards required in the hall at the rear. The church and hall together accommodate more than 700 persons, and vestries, ladies rooms, lavatories, &c., are provided with easy access from both parts of the building. The total cost was about £3,500.

Glenfarg, Perthshire.—A new hotel has been built adjoining the station and fronting the Great North Road from designs by Mr. David Smart, architect, of Perth. The prin-

room, which can be used as a bedroom or a smoking room. On the basement floor are the washing house, laundry, and beer, wine, and coal cellars, &c. The cost of the new hotel has been about £4,000, and the style is modified Scottish Baronial.

Sheffield.—The convalescent home which is now being completed in Whiteley Wood is the gift of the late Mr. George Woodfindin, and is in the Renaissance style of architecture. Messrs. Hemmell and Paterson, of Sheffield, are the architects. The site contains about 16½ acres—sufficient, it is hoped, to protect the home from surrounding buildings—and a carriage drive has been constructed through the property from Whiteley Wood Lodge to Fulwood, thus affording two approaches to the home. Accommodation is being provided for about forty patients. All the patients' day rooms and bedrooms are arranged in a southerly direction. The building is two storeys high.

Engineering Notes.

The Gladstone Schools, Cardiff, are being warmed and ventilated by means of Shorland's patent Manchester stoves, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Halifax Tramway Extension.—The Halifax Tramways Committee have decided to commence the extension of the Illingworth tramway to Causeway Foot. Causeway Foot, although within the borough, is some three miles distant from the centre of the town. It is in close proximity to Ogden Reservoir, a popular pleasure resort.

New Tunnel at Thackley, Bradford.—The new tunnel which is being constructed at Thackley in connection with the widening of the Midland Railway between Leeds and Bradford is nearing completion. Recently the bricking of the tunnel has progressed at a rapid pace, so much so that there is every reason to believe that three months' time will see the work absolutely finished.

Proposed New Wear Bridge at Sunderland.—The scheme for constructing a bridge over the river Wear between Southwick and Deptford is not to be allowed to drop because of the rejection of the Sunderland Corporation Bill. It is understood that the Corporation, the North-Eastern Railway Company, the River Wear Commissioners, and the Southwick Urban Council have practically arranged the basis of an agreement as to bearing the cost of the structure between them.

Proposed Bridge Alteration in Connection with the Glasgow Exhibition.—A letter has been received by the town clerk of Glasgow from Mr. Hedley, the general manager of the Glasgow 1901 International Exhibition Association, asking permission for the removal by the Exhibition authorities of the present iron bridge across the Kelvin in Kelvingrove Park leading to Radnor Street. Mr. Hedley states that the bridge is out of line with the main front of the Exhibition buildings, and that the architect strongly recommends the erection of a temporary wooden bridge for the purposes of the Exhibition in line with the main entrance to the building. The matter was remitted for consideration and report to a sub-committee of the Corporation.

Electric Tramways for Newcastle.—On Thursday last the first rail was laid of the new electric tramways, on the overhead trolley system, which in Newcastle are to supersede the system of horse traction that has prevailed since the beginning of tramways in the city, more than twenty years ago. The cost of "construction and equipment" was put down, originally, at £400,000; it has already been swelled to nearly half a million sterling, and is likely enough to be very much more before the end comes. The total length of the routes is twenty miles, and, as the whole of the tramways are to be doubled, there will be just forty miles of track. The gauge is 4ft. 8½in. throughout. The construction of the tramways is being carried out by Mr. Edmund Nuttall, of Manchester, and the work is to be completed by April, next year.

Across New York.—The growth of New York has rendered the question of transporting the population between their homes and their places of business one of increasing difficulty. Were they compelled to depend upon surface cars running at the highest rate of speed compatible with safety, those living in the more remote sections would be compelled to pass one-half of each working day in going to and from their business offices. The elevated railroads relieved the pressure for a time, but it was at the expense of the convenience of those living upon the streets where the cars ran, and now the elevated systems are unable to handle the congested traffic of mornings and evenings. It is now proposed to meet the difficulty by the construction of an underground system that shall extend from the City Hall to the upper part of the Borough of Bronx. The main line will extend as far as Ninety-Seventh Street, a distance of nearly seven miles. This tunnel will be 50ft. wide and 13ft. high, and will

have four tracks, the two outside tracks being for local trains stopping at nearly every cross street, the two inside tracks for express trains stopping at about every six blocks. Beyond Ninety-Seventh Street the road separates into two branches with two tracks in each, upon which local trains only will be run. When the Harlem River is reached the tracks will divide, and each will pass under the water in circular cast-iron cylinders 15ft. in diameter. The motive power will be electricity, and all conveniences for the comfort of the passengers will be introduced. The engineering problems are interesting, particularly in the lower section of the road, where street traffic is extensive and cannot be disturbed. The first mile is through sand, but as there are no high buildings in this section, no difficulty is anticipated from this source. The remainder of the road is through rock, and the tunnelling will not disturb the foundations of the buildings. The contractors are to be allowed to open trenches not more than 400ft. long, and extending only one-half across the street. No two openings are to be less than 500ft. apart, and no trench may be kept open more than thirty days without the consent of the owners of adjoining property. Some idea may be gained of the magnitude of the work from a few of the figures of construction. The total length of all sections will be slightly more than 20½ miles; the length of track will be nearly 58 miles. It is estimated that three years will be required for construction, and that an army of 8,000 to 10,000 labourers will be employed. The contract price is 35,000,000dols., and the contractor is John B. MacDonald.

New Patents.

These patents are open to opposition until May 28th.

1899.—Incandescent Gas Mantles.—6,919. J. H. H. DUNCAN, THE NEW INCANDESCENT (SUNLIGHT PATENT) GAS LIGHTING CO., LTD., both of London; and H. T. BARNETT, Teddington. Mantles made according to this invention consist of variously treated filaments or cords woven, twisted, or combined together in such a way that the colour of the light emitted is variable—that is to say, the colour depends on the precise combination of strands.

Pipe Pliers—7,468. A. G. BAYLES, L. D. DE SAUSSURE, and T. HERRON; all of New York, U.S.A. The body of the pliers is made of untempered metal, while the jaws are fitted with tempered serrated plugs, each held in place by a screw. When the jaw becomes worn the part can be removed and a new plug easily fixed in place. The pliers is thus made more durable.

Blocks of Concrete and Cement.—8,084. W. H. BAKER, Bristol. The object of this invention is to make blocks of concrete or cement for building purposes without employing pressure. The mould has a perforated bottom covered by a piece of unglazed porous paper, and movable sides and ends; it lies on a frame which can be rocked by a shaft. When the material has been put in, the machine is started and the mould is shaken, the water filtering through the paper, and afterwards the block is allowed to stand and harden. The mass is not disturbed in setting, as is the case when ramming is employed, nor is the water expelled too hastily, and the resulting slab does not need to be faced after production, and is less liable to lamination than slabs made under pressure.

Sleepers for Portable Railways.—9,923. R. MANTLE, Dudley. The sleeper is made of rolled iron or steel and has three ribs on its underside—one in the centre and one at each side. The ends are turned over, and the rail is held between them and curved pieces of metal riveted to the sleeper.

Ventilators.—11,312. R. MACKAY, JR., Glasgow. The air in the shaft or channel

leading to the ventilating turret or outlet is heated by means of an electric coil, disc or radiator, the current for which can be controlled by a switch.

1900.—Paint Brushes.—3,349. G. C. DYMOND, Manchester (*The Vereinigte Pinsel-fabriken, Nuremberg*). The bristles are compressed into a stout metal ferrule or cap which fits into a slotted recess in the brush handle. Wire is wound round the latter to complete the fastening. By another method, the bristles are held in position by a nail contained in the middle of them being driven into the stock.

The following specifications were published on Saturday last, and are open to opposition until June 14th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—6,528, SIMS, HARROP AND HARROP, automatic and intermittent syphon flushing tanks and cisterns. 6,770, STUMPF, windows. 6,782, COOMBS, door check. 6,992, SCHLOSSER AND MOERES, switching contrivances for two electric incandescent lamps connected up together. 7,136, STANLEY AND STORMONT, appliance for use with paint brushes. 8,315, FARNHAM, brushes. 9,360, GERNAERT, manufacture of artificial or cast marble. 9,844, STAMPS, manufacture of metallic knobs or vases for door furniture, &c. 9,963, BOURNAL (*Elder*), traps for drain pipes. 10,439, HODDER AND LESTER, manufacture of gas for lighting and heating. 10,608, MORRISON, conduits for electrical conductors. 10,711, LILLEY AND LILLEY, folding rules. 10,845, TEE, incandescent gas lamps. 10,945, HILL, fastening brushes to handles. 10,994, HAM, manhole covers for sewers. 11,078, CHRYSTAL, manufacture of mortars, also applicable as fireproof, soundproof, or non-conducting compositions. 11,279, PREAUBERT, manufacture of decorative fabrics for use as wall-hangings. 11,298, WALL AND BALSON, pivoted reversible sliding sashes for windows. 11,302, WHITFIELD, apparatus for removing pitch from paving stones and paving blocks. 11,350, LEECH, metallic boxes, cases, tanks, cisterns, &c. 11,431, LIVESEY, street lamps. 12,114, SCOTT, electrically-driven fans. 12,799, BARBOUR, locking or fixing screws. 12,956, COMPAGNIE ELECTRO METALLURGIQUE DES PROCÉDÉS GIN ET LELEUX electric furnaces. 22,059, TURTON, tool holders for slotting, shaping, and planing machines. 22,625, FOULGER AND GLOVER, lighting torches for incandescent gas lamps. 23,082, FOULGER AND GLOVER, means and apparatus connected with the lighting of street lamps. 24,901, ADAMS, baths. 25,164, SCHMIDT, electric igniting devices for lighting gas and similar lamps. 25,755, SCHNELLE, brick-cutting machines.

1900.—171, WHEATAM, stone sawing machine. 519, PARBEL AND MEISSNER, bolts and nut locks. 891, LAKE (*Sykes*), lathing for buildings. 1,200, SMITH, adjustable bracket for the support of shelves. 1,479, RICHARDSON, gathering irons for glass working. 1,705, OLSCHESKY, devices for slaking lime and drying artificial stones. 1,996, DRESSER, device for stopping leaky joints in gas pipes. 1,997, DRESSER, pipe-coupling. 1,998, DRESSER, repair device for stopping leaky pipe joints. 2,288, DUNCAN, water meters. 2,343, HOWARD, furnaces. 2,375, TAYLOR, window frames. 2,714, FENLON, taps or valves for geysers and similar water heaters. 2,790, HEERDT, glass-blowing machines. 2,886, WUTH, manufacture of cement. 3,123, TAYLOR, windows. 3,277, FORDYCE AND DUNCAN, machines for making expanded metallic lathing. 3,359, LOOS, dust carts and receptacles for use in connection with such carts. 3,373, FERGUSSON, door locks or latches. 3,448, ADAMS, door-closing appliances and checks. 3,590, BOULT (*Wangelin*), flushing tanks for water-closets. 3,626, HARTMANN AND THEIL, wedge for fixing handles in axes, hammers, &c. 3,724, MORTERUD, furnaces and fire-boxes for effecting smokeless combustion. 3,735, HEINROTH AND TERESNEBREUTER, incandescent gas burners. 3,739, SANNY, washing-out apparatus for water-closets.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Old houses mended

Cost little less than new before they're ended."—

COLLEY CIBBER.

Kensington Palace Approach. THE approach to Kensington Palace from the High Street has now been made worthy of its history and its purpose. A pair of handsome iron gates have just been furnished to the piers still surmounting the lion and unicorn supporters of the Royal arms. The old gateway is quite in the Hanoverian style, or indeed older still, and the lion and unicorn are of the usual rampant type. The gates are a little more restrained in design—the V. R. is almost Tudor in its effective severity, and it is noticeable that the crown is an Imperial one. Now that the Queen's rooms are free for all Londoners to visit, the gates that give access from the roadway are made imposing and "practicable." Till now they were not considered. We cannot fancy the approach to any little ducal palace in Germany to be so unpretentious or so little regarded and it is gratifying that this much-needed improvement has been effected.

The British School in Rome. AFTER a preliminary exchange of views during the winter, it has now been decided to give practical form to the idea of founding a British School of Archaeology and Classical Studies in Rome, and to place the school as soon as possible on a working basis. A well-qualified director, Professor Rushforth, has been selected and appointed by the central permanent committee. Professor Rushforth will, as soon as his health permits, proceed to Rome to arrange on the spot for the preliminary organisation of the school. Professor Charles Waldstein, Slade Professor of Fine Art, a member of the central permanent committee, has, on behalf of Professor Pelham and his colleagues of the committee, been in consultation with Lord Currie, British Ambassador to the Quirinal, and with other resident supporters of the school, in order to consider the best method of securing its prompt organisation as a working institute. At a meeting held on April 18th at the British Embassy, under the presidency of Lord Currie, and attended by Professor Charles Waldstein, Sir Lawrence Alma-Tadema, Mr. Bliss, Mr. St. Clair Baddeley, and Messrs. Ashby, senior and junior, it was recognised as advisable that the school should be started as soon as Professor Rushforth has recovered from his present indisposition sufficiently to undertake the work of organisation. It is understood that the central committee disposes of enough funds to enable a good start to be made and work to be carried on until it may be practicable to recommend the school to the attention and support of the public. Communications which have passed between the committee and various learned societies of the United Kingdom have shown that a number of students of archaeology, architecture, classical MSS., and medieval history are ready to proceed to Rome as soon as arrangements have been made for a regular direction of their studies. It is, therefore, hoped that before the spring is far advanced the British School in Rome will have come definitely into being.

The House Unbeautiful. WE take the following extract from the "Pall Mall Gazette":—"I had walked for miles along a ridge where wood and heather alternated. . . . For two hours I had met no living soul, and was not surprised to find myself footing softly, as one afraid to disturb so benign a solitude. It was in this mood that I came upon the house. It was some twenty yards to the left of the track I followed, and was approached by a path almost invisible and trailed across by brambles. The gate hung limp upon its hinges, and unlatched. One gable-window was overtilted by some slipped tiles, which formed a kind of heavy eyebrow;

most of the roof had fallen in; and through the broken windows, where the sunlight lit the walls, I could see the marks of fire. Over the doorway was an escutcheon, bearing arms and an almost obliterated date. I pushed through the gate and approached the entrance. The date, after some difficulty, I decided to be 1673. . . . I turned the handle of the door, and pushed; the lock gave way, and I stepped into the midst of ruin. The floor was strewn with tiles, charred woodwork, scraps of metal. The upper floor had collapsed with the fall of the roof, so that the blue sky looked in upon the place. Only one piece of flooring remained, and that was supported by an iron column and still partly enclosed, as though it had been a cupboard. In places ivy was busy hiding the desolation, and in one corner a patch of nettles flourished, rank and green. I turned over a heap of rubbish with my stick and disclosed the half-melted works of a clock. . . . I got into the outside air again with a sense of acute relief; but the spell of the place was upon me, and I made my way round to the back. A garden, overrun and wild, with roses degenerated to their briar stock, stretched to a little wood. Inequalities in the ground indicated where beds had been; in one corner a great yew stood, black. I reached the centre of the garden and turned. That side of the house was ruined, like the other; but, on the right, on the first floor, was a window that seemed to have escaped the fire. My breath caught for a moment, and then I struck quickly through the broken hedge and hurried away without once looking back. The window was barred."

St. Patrick's Cathedral, Dublin.

IT was discovered some time ago, on an examination of the fabric by the architect of the Cathedral Board, Mr. Thomas Drew, that the eastern end of St. Patrick's Cathedral, Dublin, was in anything but a safe condition. The two eastern buttresses became considerably out of the perpendicular, so much so that it has been found necessary to take them down and reconstruct them. But further, the Caen stone, which was extensively employed in all the dressings of the windows and other parts of the sacred edifice has crumbled away piecemeal by the action of the weather, and is to be replaced by Portland stone. Lord Iveagh, the liberal and constant friend of this historic and venerable shrine, on learning Mr. Drew's report of what it was essential should be done, forwarded £1,000 to the Dean, the sum requisite for erecting the necessary scaffolding so as to be able to make a thorough examination of the nature and extent of the decay. The same munificent donor is now defraying entirely the very large expense of the masonry work which is at present in progress. It should be stated, however, that the defects mentioned have not occurred in those portions of the cathedral which had been restored by Lord Iveagh's father. Some forty years ago Sir Benjamin Lee Guinness—a frequent visitor to the Cathedral—observing almost everywhere signs of impending ruin effected a splendid renovation out of his own private purse, at an outlay of no less than £150,000.

New Florentine Casts at South Kensington.

AMONG the more recent acquisitions of the Victoria and Albert (South Kensington) Museum are a series of casts from Florentine sculptures, which very happily complete the collection already surpassingly rich in this respect. Thus we have the somewhat rude marble figure, "St. John the Baptist," by Donatello, from the Museo Nazionale of Florence, and his sublime "St. Francis," from S. Antonio, at Padua—perhaps the most perfect representation of physical suffering dominated by spiritual serenity that Italian art affords. The "David Triumphant" of Verrocchio, also from the Museo Nazionale, is so familiar as to need no new description, and the same may be said of the charming "Giovannino" of Benedetto da Majano. Donatello's strangely-mannered and strangely-fascinating pupil, Agostino di Duccio—whose chief work is the façade of the Oratoria di San Bernardino, at Perugia

—makes his first appearance at South Kensington, casts being now exhibited of his beautiful "Madonna and Child, with Angels," from the little museum of Santa Maria del Fiore, at Florence, and from two interesting reliefs, "Agriculture" and "Music," which adorn the church of S. Francesco—otherwise, the Tempietto—erected by the tyrant Sigismondo Pandolfo Malatesta at Rimini.

An Old Village Cross.

NORTH LEN, a village about six miles from Okehampton, has a reputation for coldness and bleakness and, according to the local tradition, it was here that the Devil died—from cold—and was interred beneath the steps of the ancient preaching cross that was erected on the village green by the monks of Tavistock Abbey. This cross was broken during Puritan times, and it is now to be restored according to the designs of Mr. E. Fellowes Prynne, F.R.I.B.A. The three octagonal and moulded steps with the die on top of them are still happily intact. There will be a tall new shaft, a monolith of grey Dartmoor granite, square on base, octagon in section higher up, terminating in a moulded capital with a square abacus. Upon the top of the latter the original thirteenth century capstone will be set. The work of actual reparation has been placed in the hands of Messrs. Hems and Sons, of Exeter, and it is anticipated that all may be completed so that the re-dedication of this time-honoured, and for ages time-desecrated, old cross, may take place upon the festival of St. Thomas-a-Becket.

The Bosco Reale Frescoes.

THE verdict of the archaeologists and the special students of Roman and Græco-Roman painting with regard to the new discoveries at Bosco Reale, near Vesuvius (see page 115 of our issue for March 21st last), will be awaited with interest. On the same spot where a few years ago was found the unique treasure of Greek and Roman silver-smiths' work, the finest pieces of which were acquired by Baron Edmond de Rothschild, and by him presented to the Louvre, have been laid bare the ruins of a vast and splendid Roman villa. First there were found the mosaics of an atrium; then four chambers, preceded by a peristyle, decorated with frescoes as remarkable for their perfect preservation as for their extreme beauty. In one of the palatial chambers are no less than fourteen figures exceeding life-size by a metre and a half, and some of these would appear to be portraits. Should the information furnished prove to be exact in this particular, these frescoes would stand alone, as regards dimension, among extant paintings of the same type and epoch. In another room are groups of women in diversified attitudes, a citharist splendidly attired, a seated gladiator, and a female figure supporting a shield. The connoisseurs who have had an opportunity of seeing them pronounce these paintings to be the finest that have hitherto been discovered, whether at Pompeii or Rome.

What Becomes of Old London?

THE announcement that a large number of the stone balustrades of Kew Bridge, which is now being actively demolished, have been bought to decorate the terrace of a country house reminds us that, although old London is disappearing with mournful rapidity, there is at least some salvage from the wreck. The destroyed bridges of the capital have not, indeed, been doomed to disappear altogether. Bits of the extremely picturesque old Putney Bridge still exist, while one of the alcoves from the first London Bridge that was built of stone stands in Victoria Park, and another is in the grounds of Guy's Hospital. But objects more important and more interesting than these have managed to escape the wreck of centuries. Almost within sight of Kew Bridge is Sion House, and over its river front still stands, looking towards London, the stiff-tailed Percy lion, which so long kept watch and ward over Northumberland House at Charing Cross. The fate of Temple Bar is familiar enough. Another bit of old London which was familiar to all of us until the early

eighties was Bird's statue of Queen Anne in front of St. Paul's Churchyard. It is now in Mr. Augustus Hare's gardens at Holmhurst, Sussex. The sad case of the equestrian statue of the Duke of Wellington, which was deported from the arch at Hyde Park Corner to Aldershot, is too recent and too familiar to need discussion. In the early days of the century one of the most popular sights in London was the performance of the giants who struck the hours at old St. Dunstan's, Fleet Street. Time came when, seventy years ago, the universal fate befel them. The church was pulled down, but the giants, with their clock and bells, were bought by the Marquis of Hertford for 200 guineas and moved to the grounds of St. Dunstan's Lodge in Regent's Park, which Decimus Burton built for him. The house now belongs to Lord Aldenham, who also preserves there what is left of two of the statues upon Lud Gate.

Far-away Fragments.

MANY pieces of old London stand far away from their original habitat. The staircase of Brandenburg House, Hammersmith, where Queen Caroline lived for some years, is, with other relics of the building, in a house in a Northumberland village; portions of Ald Gate are at Rothley Castle; two of the monuments from the destroyed church of St. Dionis Backchurch are in Hawkstead Church, Lancashire. But the richest of all spots in the architectural flotsam and jetsam of the capital is the odd little town of Swanage. For the façade of its town hall it has the front of old Mercers' Hall which once stood in Cheapside, while close to the wooden pier stands the elaborately pinnacled clock-tower erected on the south side of London Bridge to the memory of the Duke of Wellington. Some minor relics are also to be seen at Swanage, having found their way there in consequence of the connection with the place of Messrs. Mowlem and Co., the contractors. Coming nearer to London we find Weybridge in possession of the real Seven Dials column, which was taken away from its original abiding place a century-and-a-quarter ago. It was not, however, until it had lain derelict for fifty years that the thrifty people of Weybridge bought it for conversion into a memorial of the Duchess of York. Mr. W. S. Gilbert possesses and cares for the statue of Charles the First from Soho Square; the splendid staircase from Baron Grant's short-lived house at Kensington is now at Madame Tussaud's; what was St. Mildred's, Poultry, lies awaiting re-erection in the park of a Lincolnshire country seat. And let us not forget that Clifton Suspension Bridge was constructed largely from the materials of old Hungerford Bridge. Thus we see that, making allowance for South Kensington and the Guildhall Museums, bits of old London are "scattered far and wide, by mountain, stream, and sea."

The Emperor's Cathedral.

WHILE a new cathedral is gradually nearing completion in the south-west of London, the scaffolding which for more than five years has enshrouded the Kaiser's Cathedral at Berlin has been removed, and we are now enabled to form some sort of notion of what this great church is to be like. It occupies the site of the old Dom, between the Lust Garden and the Spree, almost opposite the most ancient portion of the Royal Schloss, and probably the finest position in Berlin. The Kaiser intends it to be the finest Romanesque church in Germany. But the cathedral makes the worst of first impressions. The element of stateliness seems altogether lacking. Orders were given the architect that it had to be the highest church in Berlin, and this order had to be obeyed. The architect, Herr Raschdorff, cannot be blamed, except in so far as he has permitted his better judgment to be set aside by those more or less ignorant of the true canons of Renaissance architecture. The roof has been raised to such a height as to give the impression that the whole building is hampered, confined, squeezed in. The lines of curve of the cupola have been fantastically

interrupted in order that a platform might be built upon it, from which a slender lantern soars—the lantern, by the way, full of unnecessary points and summits—a grotesque ending to the smooth lines of the dome. The immense surface of the dome is, moreover, of an unspeakably ugly brown. When the copper, of which it is composed, becomes oxidized, the green may contrast harmoniously with the light sandstone of the walls; at present it is hideous. But above all else one cannot but condemn the pretentious and all too lavish ornamentation. The entrance on the south side is a notable example of elaboration in the worst taste. It is not yet definitely known when the Kaiser will have the cathedral consecrated. The interior decoration, which is also to be most elaborate, is being pushed on with speed, and it is possible that all will be ready somewhere in 1902. It is the Kaiser's wish to make the new cathedral the burial place of the Hohenzollerns and of those among German statesmen whose services for the Fatherland are of transcendent merit—a sort of German Westminster Abbey, but lacking the great broad national character of the renowned British fane.

Excavations in Crete.

THE Athens correspondent of the *Times* says: "The excavations recently instituted on the site of ancient Knossos, near Candia, under the joint direction of Mr. Arthur Evans and Mr. D. G. Hogarth, have already begun to furnish important results. On the hillside opposite the famous palace site at Kephala a Mycenaean building has been discovered by Mr. Hogarth, which, so far as it has been cleared, seems to consist of three halls, in two of which stand square pillars—a feature not hitherto apparent in structures of this period, except in a rude form at Phylakopi, in Melos. The walls were faced with thin slabs of white gypsum, many of which remain in their places, and the floors are paved with similar slabs. The masonry presents novel features, among these being masons' marks in the 'Cretan script.' In what was apparently the tank of the house were found about forty vases, mostly capable of restoration, and all of the pre-Mycenaean period. The building, which is perhaps a temple, contains no trace of anything Roman or Greek."

Mr. Belcher's New Building.

THE foundations of a great building for the Eastern Telegraph Company are being laid at the corner of South Place and Finsbury Pavement. This will be from the designs of the newly-erected A.R.A., Mr. John Belcher, architect of the neighbouring Institute of Chartered Accountants' building, and will be of an imposing nature. Meanwhile, the demolition of the old Ophthalmic Hospital and the Roman Catholic Church of St. Mary, Moorfields, goes on apace. It is stated that the site of the church has been sold for £202,000, and that a large portion of this sum will be applied to the building fund of the Roman Catholic diocese of Westminster, whose new cathedral is now being erected behind Victoria Street.

Architecture at the Royal Scottish Academy.

THE architectural section at the Royal Scottish Academy this year is very disappointing. There are forty-eight exhibits, nineteen of which were done for competitions or are "proposed" erections, leaving twenty-nine representations of actual work. Of these again, to carry the analysis a little further, a good dozen are gate-lodges or other works of quite minor interest, leaving some eighteen frames in this national exhibition of the Fine Arts to chronicle the year's output. Further, of the architect members and associates (nine in all) four are absent, namely, Dr. Rowand Anderson, Mr. Leiper, Mr. Washington Browne, and Mr. David Robertson, while of the remainder, only two, Mr. Burnet and Mr. Kinross, are at all worthily represented. Of the competition and "proposed" drawings no fewer than seven frames are devoted to various solutions, with

a remarkable similarity to each other, of one subject—the Mid-Lothian County Buildings. Of public buildings erected or in course of erection, only two, and these of minor importance, are shown—the Carnegie Free Library, Dumfries, and the Public Hall, Edinburgh. It is the more to be regretted that commonplace is the mildest epithet that can with truth be applied to both. The examples of ecclesiastical art exhibited require little comment, with one notable exception, that of Greyfriars, Elgin, as restored for the Marquis of Bute by Mr. John Kinross, shown in two frames, Nos. 533 and 549, the former containing a plan and general view of the exterior, the latter a perspective of the chapel interior and one of cloisters. The only examples of office architecture are Mr. J. J. Burnet's Waterloo Chambers and Atlantic Chambers, Glasgow, Nos. 511 and 521, which show a bold and careful treatment; but Mr. R. S. Lorimer's "Hallyards," Peeblesshire, No. 547, is quite the best design for a house in the room. It may be mentioned in closing that, unlike all modern exhibitions of importance—with the sole exception of its sister academy, the R.A.—the Royal Scottish Academy refuses to admit photographs of architectural work.

The Late M. Falguière.

M. FALGUIÈRE, one of the most famous of French sculptors, died last week at his Paris residence after a painful operation for an intestinal malady. He lately fell ill at Nîmes, where he insisted on going in order to be present at the unveiling of the statue of Alphonse Daudet, which was the last completed work of his hands. The deceased artist was born at Toulouse in 1831 and obtained the Prix de Rome in 1859, after having already exhibited in the Salon. In 1875 he gained a medal for painting, but his claims to celebrity rest chiefly on his statuary work, such as the Corneille Memorial, for the Théâtre Français, his Ophélie and the Diane. M. Falguière was also commissioned to execute the La Fayette Monument for the city of Washington, United States. He was brought into much prominence of late years owing to the agitation over the Balzac Memorial. His friend, Rodin, made a Balzac who appeared to be suffering from elephantiasis, and the figure was subjected to so much ridicule that the horrified members of the Literary Society refused it. Then M. Falguière executed a sculptured presentment of the voluminous novelist which was accepted. In order to show that he had no animosity against his brother in art, Falguière started a bust of Rodin, and the latter returned the compliment. The Rodin bust still remains unfinished in M. Falguière's studio.

The Salon.

THE Society of French Artists has opened its annual exhibition a good deal earlier this year than usual (it used to open on May 1st); the Exhibition may probably have something to do with this. There are fewer pictures shown this year, though they are better in quality than those shown at the last Salon. It is an unfortunate fact, but there appears to be a mechanical repetition being practised by the majority of the exhibitors and a consequent lack of originality, in which faults M. Bouguereau, M. Dupré, M. Bail Joseph, M. Jules Breton, Mme. Romano and Mme. Demont-Breton all share. These painters have produced a certain type of picture and seem to copy it, probably because they find it pays, for there is a decided absence of art for art's sake at the Salon this year. There are, however, exceptions; M. Benjamin-Constant is one of them and his portraits rank high. Another feature of the exhibition is the prominence of the works of foreign artists and subjects. Brozik's "Proclamation of George of Podiebrod as King of Bohemia" is a very fine treatment indeed, and Wertheimer's picture, "The Waves," is strikingly original. But, as a whole, the exhibition is greatly lacking in spirit and power, which have perhaps been carried off to the Grand Palace to form a vis-à-vis to the productions of foreign rivals.

Surveying and Sanitary Notes.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on April 11th the following gentlemen were elected:—As Members: Mr. S. Crawshaw (India), and Captain C. H. Vasturme (Woolwich). As Associate: Mr. F. B. Patch (London).

The Death is announced of Mr. Robert Russell, who was surveyor of the Government of New South Wales of the shores of Port Phillip Bay in 1836, and in the following year assisted in laying out the town of Melbourne. He was ninety-three years of age when he died.

A Bradford Improvement.—The Parks Committee of the Bradford City Council have purchased about 1,500 sq. yds. of land in Bramley Street, at 5s. per sq. yd., as a recreation ground. The space is well paved, drained, and flagged, and will come under similar regulations as other recreation grounds in the city.

Another Open Space for Harrogate.—The Harrogate Corporation have received the sanction of the Local Government Board to a loan of £2,100 for the purchase of land in East Parade at present used as a bill-posting station. It is proposed to keep the site as an open space and to convert it into a miniature pleasure ground.

Street Works and New Buildings at Pembroke, Dublin.—A Local Government Board enquiry has been held into an application by the Pembroke Urban District Council for sanction to loans of £1,400, £10,200, £9,032, and £3,000 for the purpose of constructing street crossings, paving pathways, erecting working-class lodging-houses under the Housing of the Working Classes Acts, erecting a fire department station, and for alterations and additions to the Town Hall.

Local Government Board Enquiry at Bootle.—A Local Government Board enquiry was recently held at Bootle into the application of the Corporation for a provisional order to enable the Town Council to carry out the work of altering the levels of and widening Lineacre Lane, altering the levels of Litherland Road and New Street, widening the corner of Strand Road, and putting in force the powers of the Land Clauses Act in respect to the purchase of land otherwise than by agreement.

Leeds Improvement Schemes.—A Local Government Board Enquiry has been held into the application of the Leeds Corporation to put in force the powers of the Land Clauses Acts with reference to certain properties required for the widening of Cookridge Street, and for the construction of a new street between Albion Place and Briggate. The City Engineer (Mr. Hewson) mentioned at the enquiry that the bottom of Cookridge Street was now 34ft. 5in. wide. They would be able to make it 85ft. wide. They desired to acquire from the Roman Catholic authorities 14,625 sq. yds. of land. What was now used for the improvement would, no doubt, be afterwards sold as surplus land. The width of the proposed new street to Briggate would be 45ft.

Duck's Foot Lane, E.C.—The City Corporation proposes to abolish the name of Duck's Foot Lane, Upper Thames Street, and to incorporate the lane with Laurence Pountney Hill, and an application has been made to the London County Council to sanction this alteration. Duck's Foot Lane is a corruption of Duke's foot-lane, the Duke of Suffolk's private way to the river from his house in Suffolk Lane, the scene of the conversation alleged to have been overheard by the Duke of Buckingham's surveyor, as related in the first act of Henry the Eighth. "The Duke, being at the Rose, within the parish St. Laurence Pountney, did of me demand what was the speech among the Londoners concerning the French journey." The proposed alteration appears to be unnecessary and will obliterate an interesting landmark of ancient London.

New Companies.

Argillite Slab Company, Limited.

This company was registered on April 10th with a capital of £2,000 in £1 shares to carry on the business of marble, stone, slate, brick, timber and hardware merchants, &c.

Steam Ovens and Tile Company, Ltd.

This company was registered on April 9th with a capital of £5,000 in £1 shares with objects as indicated by the title. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Nyewood Brick and Tile Works, Ltd.

This company was registered on April 11th with a capital of £10,000 in £1 shares to acquire and carry on the brick, tile and pottery works at Nyewood, Harting and elsewhere, now owned by H. Hutchinson. The first directors are H. Hutchinson and H. Wade.

Medley Road Syndicate, Limited.

This company was registered on April 14th with a capital of £1,000 in £1 shares to carry on the businesses of builders, contractors, land and property owners, sawyers, joiners, stone merchants, &c. Registered office: 84, Colmore-row, Birmingham.

Wootton Pillinge Brick Co., Limited.

This company was registered on April 10th with a capital of £12,000 in £1 shares to acquire and work brickfields and other property in Bedfordshire or elsewhere. The first directors (to number not less than two nor more than seven) are J. E. Allen and T. C. Moleworth.

North London Cartage Company, Ltd.

This company was registered on April 9th with a capital of £5,000 in £1 shares to acquire certain premises at Belle Isle, York Road, N., to adopt an agreement with A. W. Tooley, and to carry on the business of cartage contractors. The first directors are A. W. Tooley and F. G. Oliver.

Cropley Brothers, Limited.

This company was registered on April 17th with a capital of £3,000 in £1 shares to carry on the business of brick and tile makers, porcelain and earthenware manufacturers, &c. The first directors (to number not less than two nor more than four) are John Cropley, C. Cropley and James Cropley.

Hook Brick and Tile Company, Limited.

This company was registered on April 11th with a capital of £10,000 in £1 shares to adopt an agreement with A. F. Woodwell, and to carry on the business of brick, tile and artificial stone makers, &c. The first directors (to number not less than two nor more than six) are W. Cambden, H. A. Woodwell and A. F. Woodwell.

Birmingham Incandescent Lighting Company, Limited.

This company was registered on April 9th with a capital of £1,000 in £1 shares to manufacture, work, sell, let on hire, and deal in burners, meters, wires, and other gas and electrical accessories and appliances. John Wilson is the permanent managing director, with £150 per annum and 20 per cent. of the net profits. Registered office: 230, Market Place, Dudley.

Isaac Gould, Limited.

This company was registered on April 9th with a capital of £20,000 in £1 shares to acquire the business carried on by Isaac Gould at Hartshead Works, Hunslet, Leeds, and to carry on the business of contractors, brick and tile makers, &c. The first directors (to number not less than five nor more than ten) are W. C. Williams, G. Franklin, A. Barrett, A. Mountain,

H. Season, S. Macfarlane, J. Gordon, Marmaduke Chaplin and I. Gould.

Park Lane Brick and Tile Company, Limited.

This company was registered on April 10th with a capital of £10,000 in £1 shares to acquire the business carried on by J. C. Dean, at the Park Lane Brick, Tile, and Terra-cotta Works, Bryn, near Wigan, Lancashire, and to carry on the business of brick, tile, and pottery makers, stone merchants, &c. The first directors (to number not less than three nor more than seven) are P. Pinnington, J. Morris, D. Houghton, J. Graham and J. Shaw.

Tunstall Coal and Iron Company, Ltd.

This company was registered on March 31st with a capital of £100,000 in £1 shares to carry on the business of coal and iron masters, &c., and generally to carry on in all or any of their respective branches the businesses of engineers, brass, iron, copper, and zinc merchants, builders and contractors, ironmongers, bar fitters, lock and bolt makers, gas engineers and gas fitters, manufacturers of tanks, cisterns, gas fittings, stoves, grates, and all kinds of heating apparatus, &c. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories, Messrs. W. T. Ellison, F. B. Heywood, H. A. Glover, R. B. Cowley, H. Bertin, H. W. Clayson, and J. Baker.

James Latham, Limited.

This company was registered on April 7th with a capital of £80,000 in £10 shares (4,000 preference and 4,000 ordinary) to acquire the business of timber merchants, manufacturers of and dealers in every description of veneers, mouldings, &c., as carried on under the style or firm of James Latham at 124, Curtain Road; Mahtal Wharf, Grove Road, Victoria Park; at 80, Boundary Street, Bethnal Green; and 1, Virginia Road, Bethnal Green; and generally to carry on the businesses of timber and wood merchants, sawmill and moulding mill proprietors, packing-case makers, box manufacturers and dealers, carpenters and joiners, &c. The first directors (of whom there shall be not less than three nor more than five) are J. Latham (permanent managing director and chairman), J. Latham, junr., E. L. Latham (deputy-chairman and assistant manager) and E. Latham.

Walton, Goody and Cripps, Limited.

This company was registered on April 4th with a capital of £225,000 in £10 shares to acquire the businesses of marble quarrymen, &c., as carried on under the style of W. Walton and Nephew, at Carrara and elsewhere in North Italy, the business carried on at 14, Graham Street, Islington, N., and the businesses now carried on at Canon's Marsh, Bristol, and 17 and 19, Parliament Street, Liverpool, and elsewhere, as Goody, Cripps and Sons, Limited; and generally to carry on the businesses of marble quarrymen, manufacturers and merchants, proprietors of sawmills, and other businesses carried on at Carrara and elsewhere in Northern Italy, &c. The first directors (of whom there shall be not less than three nor more than eight) are H. Goody, H. K. Cripps, S. B. Cripps and G. Salvini.

W. F. Stanley and Co., Limited.

This company was registered on April 10th with a capital of £120,000 in £5 shares to acquire the business of manufacturers of and dealers in optical, geodetic, surveying, mathematical, drawing and philosophical instruments of every description, carried on by W. F. Stanley at 4 and 5, Great Turnstile, Holborn; 13, Railway Approach, London Bridge; and 8, Victoria Street, Westminster; and the factories at 10, Great Turnstile, Holborn, and 8 and 9, Tichborne Street, W.C., and the optical works at South Norwood. The first directors (of whom there shall be not less than three nor more than seven) are J. Stanley, W. T. Stanley, G. I. Gray and W. W. Cobbett. Registered office: 4 and 5, Great Turnstile, Holborn.

Keystones.

Mr. R. A. M. Stevenson, the well-known art critic, and cousin of Mr. E. L. Stevenson, died last week.

A new Fountain at Dunoon has been erected within the bandstand of Pier Road. It is of Aberdeen granite with brass mountings.

Public Baths for Leyton, Essex.—The Local Government Board have sanctioned a loan of £25,643 for building public baths at Leyton.

For a Proposed Nurses' Home at Woolwich Workhouse the designs of Mr. C. W. Brooks, of 63, Finsbury Pavement, E.C., have been accepted by the Woolwich Guardians.

Kew Gardens and Old Deer Park.—The Government has decided to erect a large National Physical Laboratory in Old Deer Park, at the side of the Queen's Cottage grounds at Kew. This is regretted by many.

Millais Memorial.—A meeting of the Millais Memorial Committee was held on Saturday, when Mr. Brock's design was adopted. The statue will be placed in the space to the front of the right wing of the Tate Gallery.

Explosion at a Varnish Works.—An explosion occurred last week at the varnish works of Messrs. Mander Bros., of Wolverhampton, when three men were injured. The explosion is supposed to have been caused by the fumes from some boiling oil or varnish becoming ignited.

The "William Dawson" Memorial Chapel, Barwick, Leeds.—This building has been erected from designs by Mr. G. F. Danby, architect, of Leeds, and provides accommodation for 200 persons. The principal contractors were Mr. J. Richardson, of Chapeltown, and Messrs. H. Atkinson and Sons, of Leeds. The total cost has been £3,014.

The Ancient Castle of Chillingham, which is to be let by the Earl of Tankerville, was erected in the reign of Edward the Third, and has characteristic features of all the styles of architecture in vogue during its existence, the modern part, in Renaissance style, having been designed by Inigo Jones. It has a beautifully wooded park of 1,500 acres.

New Church at Harrogate.—A new church, dedicated to St. Mark, is in course of erection in the southern part of Harrogate. A portion of the edifice was opened last year by the Bishop of Ripon for public worship, and the remainder will be proceeded with as funds are received. The additions include a chancel, side chapel, organ chamber, vestries, and tower. When complete the church promises to be a handsome building. The architect is Mr. J. Oldrid Scott.

New Admiralty Buildings.—The second block of the new Admiralty buildings, though fast approaching completion, will probably not be in a condition for occupation for another three months. Externally the building is practically finished. This new block, erected at a cost of about £200,000, will be taken possession of by the Accountant-General of the Admiralty, for whose department it has been specially designed. A third new block is still under consideration. The dome on the summit of the new building is a handsome piece of work, and is seen to great advantage from the Horse Guards Parade.

Discoveries in Babylon.—The German Oriental Society has heard from the director of the Babylonian excavations, Dr. Koldewey, that three gates have been discovered, besides a canal built with Aramean bricks, which is supposed to be the long-sought-for East Canal, so often mentioned in inscriptions. A temple called "Ernach of the Goddess Ninniach" has been laid bare, the stones bearing inscriptions dating from the time of Nebuchadnezzar, and it is worthy of special notice that, though all the excavators' discoveries date from or before the reign of Nebuchadnezzar, yet little or nothing has come to light that can be attributed to the anterior times of Sardanapalus.

Ruskin's Turner Water Colours are to be again exhibited in London at the Fine Art Society's premises.

At the Manchester Corporation Art Gallery the spring exhibition of water colour drawings has been opened.

New Conservative Club at Settle.—The contracts for a new conservative club at Settle, amounting to about £2,300, have been let.

Dedham Bridge.—The old wooden bridge over the Stour at Dedham is about to be pulled down and replaced by a new bridge of less picturesque appearance.

For Erecting a Statue of General Gordon on the pedestal already finished at Khartoum, £2,000 are wanted. The "Morning Post" has opened a subscription list.

A new Conservative Club at Ripponden has been erected at the corner of Royd Lane from the designs of Mr. C. F. L. Horsfall, of Halifax. The total cost will be about £3,500.

Fall of a Wall at Manchester.—In the course of some demolition work at the corner of Port Street and Dale Street, Manchester, three men were injured last week by the fall of a wall.

A Working Men's Club at Gosforth, Newcastle-on-Tyne, has been erected. The building fronts West Avenue, and on the ground floor there is a room capable of accommodating 150 persons.

New Workhouse Infirmary for Retford.—The tender of Mr. C. Jones, of Retford, amounting to £3,292, has been accepted for the erection of a new workhouse infirmary. Messrs. Sanders and Taylor's tender of £300 for hot-water heating, &c., has also been accepted.

The Memorial of the late Dean Vaughan, the Master of the Temple and the Dean of Llandaff, takes the form of a marble statue. It has been executed by Mr. W. Goscombe John, and will be exhibited at the Royal Academy before being removed to Llandaff Cathedral.

Christian Archæological Congress.—The second international congress on Christian archæology began its sittings at Rome on April 17th in the Grand Hall of the Roman Seminary. Cardinal Parocchi delivered a speech in Latin, in which he welcomed the congress and conveyed the best wishes of the Pope for its labours. Mgr. Duchesne, president of the congress, delivered his inaugural address.

A new Mission Church at Ossett is being built in Junction Road. The cost will be about £1,200. The architect, Mr. A. S. Marriott (Messrs. Marriott and Son), has designed a structure entirely of stone on the outside, with ashlar dressings from the Holmfirth quarries; the doors and windows in the front elevation having Tudor heads. The building will measure 50ft. by 22ft., and will be dedicated to St. Aidan. The chancel end can be separated from the rest of the building by a movable screen, leaving a room to be used on week-days as a school, with accommodation for seventy desks. Two classrooms adjoining will seat thirty and thirty-six scholars respectively, and there are other usual accessories.

Alleged Vandalism in Cyprus.—In the Milan "Corriere della Sera," a sarcastic attack appears on the British authorities in Cyprus for the alleged destruction of the ancient Famagusta and other archæological remains in the island. After recalling the outcry made by English lovers of ancient monuments at the restoration of St. Mark's in Venice, the writer asks if those who then protested against what was described as vandalism in Italy are aware that the ancient city of Famagusta is being systematically destroyed in order to provide stones for building at Port Said, and that the old walls of the city with the fort, still surmounted by the lion of St. Mark, are about to be demolished and the material used for a tramway. The writer animadverts upon the difference regarding the fate of the monuments of Hellenic art in Cyprus displayed by the British archæological societies which protest against the removal of similar relics of the past in Greece and other foreign countries.

A new Wesleyan Church at Darlington is being built. It is in the Gothic style and will cost £3,000, exclusive of the organ.

Addition to All Saints' Church, Harworth, Rotherham.—A new chapel of ease has been added to this church. It is dedicated to St. Mark and has been erected by Messrs. Kelsey, of Goole, from the designs of Messrs. Hodgson and Fowler, of Durham.

Dublin Housing: Lord Iveagh's Gift.—A Local Government Board enquiry was recently held into the scheme promoted by Lord Iveagh for providing dwellings for persons of the labouring classes who are to be displaced under the Dublin Improvement (Bull Alley) Act, 1899.

Clerical Definition of a Keystone.—A contemporary prints the following:—"One of our readers sends us a mixed metaphor which he heard the other day in church. The preacher, referring to some special aspect of religion, described it unhesitatingly as 'the keynote of the Christian arch.'"

Memorial to Mr. Gladstone.—Mrs. Drew, wife of the Rev. Harry Drew, vicar of Buckley, Flintshire, and Miss Helen Gladstone have offered to erect a memorial chancel in Buckley Church to their father, the late Mr. W. E. Gladstone, and the parishioners having gratefully accepted, a faculty will be applied for shortly. The cost of the memorial, it is estimated, will be about £1,000.

A new Board School at Chesterfield is being erected at the corner of Ashgate Road and Foljambe Road. Messrs. Tiltman and Jackson are the architects. The school will cost £14,230, exclusive of site and furniture, and accommodation will be provided for 1,191 children. Under the central hall there will be swimming baths, cookery and laundry rooms, and a pupil teachers' centre. The contractors are Messrs. J. C. Kellett and Son, of Leicester.

The New Old Bailey.—A number of architects have forwarded plans for the rebuilding of the Old Bailey Sessions Court, and they will be considered at an early meeting of the Common Council. The present buildings, which were originally reared in 1773 and enlarged in 1808, are altogether too small, inconvenient, and ill-ventilated to suit present-day requirements. The proposal to demolish them and raise a new court-house was first made rather more than thirty years ago, since when the matter has cropped up on many occasions.

Scottish Building Trades' Federation.—The half-yearly meeting of the Scottish Building Trades' Federation was held at Aberdeen on Thursday last, when the chair was occupied by Mr. Alexander Beveridge, builder, of Perth, in the absence through indisposition of the president, Mr. Thomas Kay, of Glasgow. Members were present from all parts of the country. The secretary, Mr. James L. Selkirk, C.A., of Glasgow, read the report, which referred in detail to the principal matters that had been under consideration during the six months. The first of these was the question of organisation; a scheme for the appointment of a consultative committee was proposed and adopted. The committee will consist of six gentlemen from each of the four principal cities—Glasgow, Edinburgh, Dundee and Aberdeen—twenty-four in all—representing the different trades, whose duty it will be to meet from time to time to consider what steps are necessary in order to further the objects of the Federation, with special reference to wages and other conditions of labour. It was remitted to the Executive Committee to carry out the resolution. Reference was made in the report to trade disputes, and a strong opinion was expressed as to the by-laws being operative for three months instead of six—the three-monthly arrangement being already in satisfactory operation in Dundee and other places. The next annual meeting was appointed to be held in Edinburgh in October next. The next quarterly meeting of the executive will be held in Perth in July, when reports will be given in by the consultative committee.

Masters and Men.

Dumfermline Painters' Strike.—The employers have agreed to give the advance of wages from 8d. to 8½d. struck for, but with the proviso that future agreements should terminate at the end of December each year, and that any alteration of rules should come into force on the first of February of each year if mutually agreed to.

Masons' Strike at Kilbirnie and Beith.—The master builders of Kilbirnie, in conjunction with those at Beith, having given notice to the men that they would reduce the wages on the 23rd inst., the Beith men left off work last Saturday week and the Kilbirnie men last Monday week. The employers wish to reduce the rate from 9d. to 8d. per hour.

Disputes at Glasgow.—The strike of joiners that took place last week has been settled by the masters withdrawing their proposal to reduce the wages by 1d. per hour, and agreeing to continue the present wage of 10d.—The master masons have also intimated to their workmen a reduction of a half-penny per hour in wages. The men have decided to adhere to the standard wage of 9½d.

The Dundee Masons' Strike has come to an end, the men agreeing to return to work on condition that no reduction of wages should take place until May 15th; that wages should then be reduced by ½d., and remain stationary for six months; that no further reduction or advance should take effect unless after three months' notice on either side; and that there should be no victimising of individuals on either side for the part they had taken in the dispute.

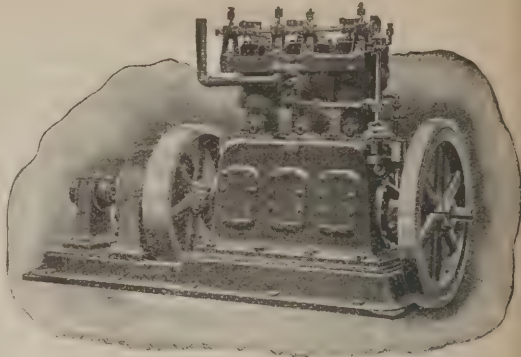
Labour Disputes at Tamworth.—The application of the bricklayers' labourers for an advance of ½d. per hour has been referred to arbitration, and pending the result the men will remain at work.—The master painters have again offered to consider the application of the workmen for an advance of ½d. favourably next year if the men will return to work on the old terms. This offer has been rejected by the men, who have expressed their willingness to submit the dispute to arbitration. The masters' reply to this proposal has not yet transpired.

Disputes in Edinburgh and Leith.—The master joiners proposed to reduce the men's wages from 9½d. to 8½d. per hour, but have agreed to a compromise making the wage 9d. A strike, however, took place last week upon the question of when alterations in wages or any of the working rules should come into force. The master builders proposed that at the beginning of June—at which date the present arrangement comes to an end—a reduction in wages should take place. At present the operative masons are in receipt of 9½d. per hour, with ½d. extra in cases where there is no shed shelter, and the proposal of the employers was that the wage should be reduced to 9d. per hour, the reduction to take effect in three months. Along with this proposal was one that the yearly agreements which at present exist between masters and men should terminate, and that henceforth any agreements as regards wages, rules, &c., should last for only three months. The men decided to resist the proposals of the masters both as regards reduction of wages and the termination of the annual agreement system, and, if necessary, to come out on strike at the beginning of June in the event of the employers insisting upon their proposed terms. There are about 2,000 joiners in Edinburgh and district, but by the action of the conceding firms 700 men have been freed from participation in this trouble. The masters agreed eventually to allow the men's terms.—A largely-attended meeting of Edinburgh and Leith masons last Wednesday received an intimation from the masters that on the termination of the existing agreement on 5th June a reduction of wages would take place from 9½d. to 8½d. per hour. By 298 votes to 48 the men resolved to adhere to the present arrangement, and they also resolved against a proposal by the employers to substitute a quarterly for an annual agreement.

Trade and Craft.

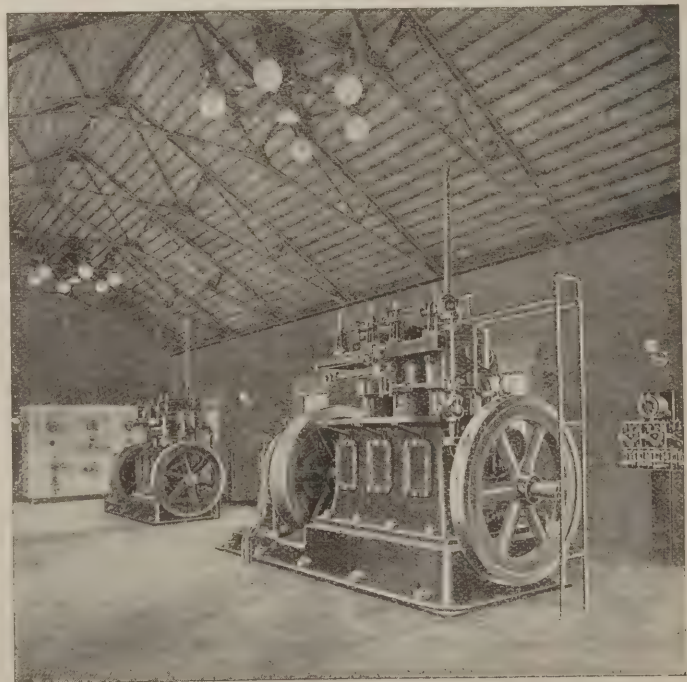
Private Electric Lighting.

It is a great pity that the proper illumination of homes is commonly neglected. The building may be an architectural perfection outside, the interior may be adorned with valuable pictures and statues, but unless the illumination receives proper consideration the whole internal effect will be marred. As a useful, handy and economical illuminant, the electric light has for many years been gaining in favour, both when supplied from public and private sources. With regard to the latter, we now wish to refer to the Westinghouse gas engine, which can be operated by gasoline, so that the owner becomes independent of coal and gas. One of the great advantages of electric lamps, with their shades or ornamental glass, is that they can be clustered in any manner to give the most artistic effects, and are readily fixed in any nook or corner, which is not possible with gas. Above all, electricity is a safe means of lighting, a most important consideration for owners of country and suburban places far distant from fire stations. As regards economy, a gas or gasoline engine involves a much smaller expense for fuel than a steam plant, and one man of ordinary intelligence and mechanical experience can operate the whole installation. The serious problem in the past in providing electric light for country houses and other isolated buildings has been an economical and mechanically satisfactory means of driving the dynamo. This problem the Westinghouse Company, of Westinghouse Buildings, Norfolk Street, Strand, W.C., now claims to have solved, and they contend that theirs is the only gas engine which can be direct-connected to a dynamo and give an absolutely steady light. Whenever floor space has to be economised, the Westinghouse direct-connected outfit is most suitable, and it requires far less space than where a belt is used. A Westinghouse gas or gasoline engine and dynamo can be applied to many useful and labour-saving purposes, for not only will it afford the illumination, but it can be used for elevator service, driving sewing machines, ventilating fans, pumps, lathes, sawing, preparing fodder, and driving ice freezers, dairy and laundry appliances. The current may also be utilised for cooking and warming the house. All these and many other forms of work are possible. Mr. George F. Gould's plant at Lakewood, N.Y. (an illustration of



WESTINGHOUSE GAS ENGINE GENERATING SET, NO. 909.

which is seen on this page), consists of one 85 horse-power and one 28 horse-power Westinghouse gasoline engine placed in a detached building, each of the engines being direct-connected to a Westinghouse "Engine Type" dynamo. The electric current provides light for the house and grounds, power for a refrigerating plant, and for pumping water to the house and stables. Electricity also operates the laundry, and is used for other purposes. The charming summer hotel known as the "Kirkwood Inn," at Scarborough Beach, Maine, is lighted by electricity generated by a Westinghouse plant, which affords one of the best illustrations of the advantages of Westinghouse practice. A 30 horse-power Westinghouse gas engine is connected to a generator, and also to a "triplex" pump. The generator furnishes light to the hotel and grounds, and the pump supplies all water required on the premises. This plant was installed in the spring of 1893, and its successful and economical operation, its freedom from noise and odour, have led to the installation of similar plants in various parts of the country. The installation at the residence of Miss E. J. Clark, Pomfret, Conn., which consists of a 30-horse power Westinghouse gasoline "Engine Type" dynamo, illustrates the great utility of the gasoline engine, for no coal gas could be obtained on the estate, and the introduction of a steam plant, with boilers requiring coal, and the accompanying smoke, dirt, and ashes would not have been considered for a moment. Enough has been said to show the economical qualities of the Westinghouse plant, qualities which are important enough to receive a first consideration.



INTERIOR OF MR. GEORGE GOULD'S POWER HOUSE, SHOWING WESTINGHOUSE PLANT.

ARCHITECTURE

AT THE

ROYAL ACADEMY,

1900.

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The pre-eminent position of the "ARCHITECTURAL REVIEW" has enabled the Editor to secure the right of reproducing all the Architectural drawings exhibited at this year's Academy. Nearly 400 photographs of the best designs have been secured, and a list of some of the leading Architects whose designs will appear, is given below.

Instead of publishing, as formerly, special supplements in succeeding monthly issues, the whole of the May issue of the "ARCHITECTURAL REVIEW" will be devoted to Academy Architecture, and this issue, which will be largely increased in size, will form the most complete and permanent record of current architecture and design.

LIST OF ARCHITECTS AND CRAFTSMEN WHOSE DRAWINGS WILL APPEAR IN THE SPECIAL MAY ISSUE.

E. W. Allfrey.
Louis Ambler.
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Bateman and Bateman.
Bedford and Kitson.
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Walter Cave.
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Hubert C. Corlette.
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Arthur S. Dixon.

Alfred Drury.
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C. Hodgson Fowler.
G. J. Frampton.
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The Countess Feodora Gleichen.
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Edwin T. Hall.
Henry T. Hare.
W. Campbell Jones.
W. H. Knowles.
Mervyn Macartney.
E. J. May.
C. E. Mallows, and Grocock.
Arnold Mitchell.
E. W. Mountford.
Percy E. Newton.

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C. H. B. Quennell.
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R. Weir Schultz.
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J. Hatchard Smith.
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COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—				
April	27	Broxton, Essex—Culvert	County Council	P. J. Sheldon, Chief Surveyor, Duke-street, Chelmsford.
"	27	Burnupfield, Durham—Two Workmen's Houses	Consett Waterworks Co.	A. Russell, Secretary, Sherburn-terrace, Consett.
"	27	Longwood, near Halifax—Farmhouse		F. F. Beaumont, Architect, Southgate-chambers, Halifax.
"	27	Weston-super-Mare—Altering Cottages		W. J. Wilcox, 1, Belmont, Bath.
"	27	Warrington—Retorts, Firebricks, &c.	Gas Committee	W. J. Haddock, Engineer, Gas-works, Warrington.
"	27	Winchester—Public Baths	Corporation	Lansell and Harrison, 33, Bow-lane, Chelmside, E.C.
"	28	Dedham, near Colchester—Rebuilding Bridge	Essex and East Suffolk County Councils.	Widnell & Trollope, Broad Sanctuary-chambers, Westminster.
"	28	Notting Hill, W.—Church		C. J. Mann and Son, 29, Great George-street, Westminster.
"	28	Swindon—Addition to Factory	Reynolds and Co.	W. H. Read, Corn Exchange, Swindon.
"	28	Cricklade, Wilts.—Cemetery Chapel, Wall, &c.	Burial Board	W. Drew and Sons, Architects, Victoria-street, Swindon.
"	28	Grimthorpe Colliery, near Cudworth—Parsonage		Boreham and Moreton, 24 John-street, Sunderland.
"	28	Thornley Colliery—Branch Shop		Central Stores, Station Town, Thornley Colliery.
"	30	Birkenhead—Alteration, &c., to Workhouse	Guardians	J. Carter, 45, Hamilton-square, Birkenhead.
"	30	Canterbury—Public Convenience	Corporation	City Surveyor, Tudor-chambers, High-street, Canterbury.
"	30	Canterbury—Two Semi-detached Villas		L. T. Ashenden, 29, Westgate, Canterbury.
"	30	Dudley—Extensions, &c., to Chapel	Wesleyan Chapel Trustees	A. Ramsell, 187, Wolverhampton-street, Dudley.
"	30	Nuneaton—Theatre	Theatres and Entertainments Co., Ltd.	Owen and Ward, 71, Colmore-row, Birmingham.
"	30	Wadebridge—Hotel	W. Hicks	T. H. Andrew, 1, Trevarrick-villas, St. Ansell.
"	30	East Ham—School Buildings	School Board	E. L. Curtis, 120, London Wall, E.C.
"	30	Redhill—Boundary Walls, Gates, and Sewer	Market Hall Co., Ltd.	Clayton and Black, 152, North-street, Brighton.
"	30	Blackpool—School	School Board	Anderson, Simon & Crawford, 16, Rutland-st., Edinburgh.
"	30	Herne Bay—Schools	School Board	E. Collard, 12, East-street, Herne Bay.
"	30	Chelmsford—Two Cottages	Joint Sewerage Committee	Surveyor, 16, London-road, Chelmsford.
"	30	Edinburgh—Slater's Work	Corporation	W. R. Herring, Gasworks, Edinburgh.
May	1	Gloucester—Brick Gasholder Tank	Gaslight Company	W. S. Morland, Company's Engineer, Gasworks, Hempsted.
"	1	Modbury, Devon—New Wing to Farmhouse		—Rogers, East Leigh Farmhouse, Modbury.
"	1	Morecambe—School	Poulton School Board	J. B. Newton, Architect, Euston-road, Morecambe.
"	1	Poole—Building	Gas and Coke Co., Ltd.	W. Davis, Engineer, Gasworks, Poole.
"	1	Stapleton Road, near Bristol—Offices	Great Western Railway Co.	Engineer, Bristol Station.
"	2	Itamsey, Essex—Schools	School Board	J. W. Start, Architect, Cups-chambers, Colchester.
"	2	Sheffield—Store, &c.	United Gaslight Company	J. W. Morrison, Engineer, Gasworks, Sheffield.
"	3	Bristol—Premises	E. Everard	H. Williams, 24, Clare-street, Bristol.
"	3	West Bridgford, Nottingham—Bridge	Urban District Council	W. Pare, Surveyor, George-road, West Bridgford.
"	4	Bermondsey, S.E.—Chimney Shaft	Vestry	F. Ryall, Vestry Clerk, Town Hall, Spa-road, S.E.
"	5	Wallsend—Sessional Court, &c.	Northumberland County Council	J. Cresswell, Architect, Moot Hall, Newcastle-on-Tyne.
"	5	Morpeth—Alterations to Business Premises	Ashington Industrial Co-op. Soc., Ltd.	Society's Branch, Newgate-street, Morpeth.
"	7	London—Stables, Cart Shed, Cottages, &c.	Hounsey Urban District Council	E. J. Lovegrove, Surveyor, Southwood-lane, Highgate, N.
"	8	Chalvey, nr. Slough—Foundations at Pumping Station	Slough Urban District Council	W. W. Cooper, 1, Mackenzie-street, Slough.
"	9	Margate—Extension of East Cliff House	Metropolitan Asylums Board	C. and W. Henman, 64, Cannon-street, E.C.
"	12	Romsey, Hants.—Infirmary at Workhouse	Guardians	J. Jenvey, Architect, Market-place, Romsey.
No date.		Workington—Town Hall	Corporation	Oliver and Dodgshun, Architects, Lowther-street, Carlisle.
ENGINEERING—				
April	27	Sunderland—Electrical Switchboard, Panels, &c.	Corporation	J. F. C. Snell, Borough Electrical Engineer, Dunning-street, Sunderland.
"	30	Nuneaton—Pumping Main	Urban District Council	J. S. Pickering, Engineer, Council Offices, Nuneaton.
"	30	Salisbury, Scotland—Sea Wall, &c.	Commissioners	J. and H. V. Eaglesham, Engineers, Ayr.
"	30	Windsor—Gas Plant	Royal Gaslight Co.	J. Wadson, 2, Victoria-street, Windsor.
"	30	Edinburgh—Bridge	County Council	Crouch and Hogg, 53, Bothwell-street, Glasgow.
"	30	Bollington—Borehole	Urban District Council	W. H. Radford, Angel-row, Nottingham.
"	30	Edinburgh—Steel Girder Bridge	Mid-Lothian County Council	Johnson and Rankine, 238, West George-street, Glasgow.
"	30	North Famburgh, Essex—Sea Wall	Maldon Rural District Council	H. G. Keywood, 6, Market hill, Maldon.
May	1	Mountain Ash, Wales—Sewage Farm, &c.	Urban District Council	J. Mansergh, 5, Victoria-street, Westminster.
"	1	Southampton—Electrical Generator, &c.	Corporation	R. R. Linthorpe, Town Clerk, Municipal Offices, Southampton.
"	1	Amble—Water Mains	Urban District Council	W. Gibson, Council Offices, 31, Queen-street, Amble.
"	1	Ardee, Ireland—Cooking Apparatus, &c.	Union Guardians	T. B. Dromgoole, Clerk, Board Room, Workhouse, Ardee.
"	2	Ludlow—Gas-engines and pumps	Town Council	Pollard and Tingle, 31, Old Queen-street, Westminster.
"	3	Smethwick—Gas Purifiers, &c.	Gas Committee	B. W. Smith, Gasworks, Smethwick.
"	3	Plymouth—Street Lighting Articles	Corporation	J. H. Rider, Borough Electrical Engineer, Prince Rock, Plymouth.
"	3	Bregeton, near Rugeley—Waterworks	Lichfield Rural District Council	W. E. Rogers, Surveyor, Rugeley.
"	7	Barking—Light Railways	Urban District Council	G. Barker, 1, Victoria-street, Westminster, S.W.
"	8	Lybster, Scot.—Railway	Highland Railway Company	W. Roberts, Company's Engineer-in-Chief, Inverness.
"	12	Leominster—Storage Reservoir	Corporation	J. Budd, Borough Surveyor, Town Hall, Leominster.
"	16	Marinopol—Electric Railway and Electric Light	Municipality	Commercial Department, Foreign Office, S.W.
"	17	Seville—Material for Metal Wharf		Commercial Department, Foreign Office, S.W.
July	23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
IRON AND STEEL—				
May	2	Darlington—Stanchions, Girders, Roofing, &c.	North-Eastern Railway Company	W. Bell, Company's Architect, York.
"	2	Stretford, Manchester—Stores	Gas Company	H. Kendrick, Engineer, Gasworks, Stretford.
"	5	Wolverhampton—Ruils, &c.	Corporation	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
"	7	Bexhill, Sussex—Wrought-iron Fencing, Gates, &c., to Cemetery	Urban District Council	G. Bill, Engineer, Town Hall, Bexhill.
"	7	Bermondsey, S.E.—Galvanised Iron Pails	St. Mary Magdalen's Vestry	F. Ryall, Vestry Clerk, Town Hall, Spa-road, S.E.
"	10	Darenth—Iron Caps and Ties to Destructor Furnace	Metropolitan Asylums Board	T. D. Mann, Board's Offices, Carmelite-street, Embarkment, E.C.
PAINTING AND PLUMBING—				
April	27	Hull—Painting, &c., at Sanatorium	Corporation	A. E. White, City Engineer, Town Hall, Hull.
"	30	Aberamen, near Aberdare—Paints, Drysalteries, &c.	Powell Duffryn Steam Coal Co., Ltd.	Stores Manager, Aberamen Offices, near Aberdare.
May	1	Blaenavon—Painting and Colouring	Workman's Institute	Librarian, Workman's Institute, Blaenavon.
ROADS AND CARTAGE—				
April	27	Uxbridge—Granite, Gravel and Flints	Rural District Council	E. Birks, District Surveyor, Town Hall, Uxbridge.
"	28	Scarborough—Asphalt Footpaths	Town Council	H. W. Smith, Borough Engineer, Town Hall, Scarborough.
"	28	Chesterfield—Slag and Limestone	Rural District Council	T. J. Robinson, Surveyor, Hasland, Chesterfield.
"	30	East Dereham—Broken Granite	Urban District Council	H. G. Himson, Surveyor, East Dereham.
"	30	Rothwell, Yorks.—Materials	Urban District Council	J. T. Pears, Surveyor, Council Offices, Rothwell, nr. Leeds.
"	30	Wickham Market, Suffolk—Broken Granite	Plomesgate Rural District Council	T. W. Read, Clerk, Board Room, Wickham Market.
May	1	Braintree, Essex—Victoria Stone Paving, &c.	Urban District Council	H. H. Nankivell, Surveyor's Office, Vestry Hall, Braintree.
"	1	Govan, Scotland—Street and Sewer Works	Commissioners	F. G. Holmes, Borough Surveyor, Hillock House, Govan.
"	2	Charlton—Paving, Kerbing, &c.	Lee Board of Works	G. Charlton, Clerk, Chief Office, Old Charlton, London.
"	2	Litherland, Lancs.—Passage	Urban District Council	W. B. Barton, 25, Sefton-road, Litherland.
"	2	Plumstead—Horse Hire	Vestry	Surveyor, Maxey-road, Plumstead.
"	2	Charlton—Horse Hire	Lee Board of Works	G. Whale, Clerk, Chief Offices, Old Charlton, London.
"	2	London, S.W.—Making-up and Paving Road	Fulham Vestry	C. Botterill, Surveyor, Town Hall, Walham Green, S.W.
"	4	Ashford, Kent—Broken Granite	Urban District Council	W. Terrill, Surveyor, North-street, Ashford, Kent.
"	7	Bexhill, Sussex—Cemetery Works	Urban District Council	G. Ball, Engineer, Town Hall, Bexhill.
"	7	London, E.—Wood Paving	Limehouse Board of Works	S. G. Ratcliff, Clerk, Board's Offices, White Horse-street, Commercial-road East, E.
SANITARY—				
April	28	Lichfield—Lime for Purification	Gas Company	F. Key, Engineer, Gas Offices, Lichfield.
"	30	Brighouse—Stoneware Pipes and Cast-iron Tubes	Corporation	A. M. Fowler, 1, St. Peter's-square, Manchester.
"	30	Cupar Fife, Scotland—Sewers	Fife County Council	H. Bruce, Engineer, County Buildings, Cupar Fife.
"	30	Aldershot—Sewers	Urban District Council	N. F. Dennis, 126, Victoria-road, Aldershot.
May	1	Lathom, Lancs.—Sewerage Works	Urban District Council	J. T. Wood, 3, Cook-street, Liverpool.
"	1	Richmond, Surrey—Stores	Main Sewerage Board	W. Fairley, Engineer, Kew Gardens.
"	2	Lancaster—Pipe Sewer	Rural District Council	Surveyor, Council Offices, Lancaster, Durham.
"	2	Ludlow—Sewerage Works	Town Council	Pollard and Tingle, 31, Old Queen-street, Westminster.
"	3	Camberwell—Seven Refuse Vans	Vestry	W. Oxboby, Engineer, Vestry Hall, Camberwell.
"	7	Armagh—Sewerage Works	Urban District Council	J. F. Peddie, 36, Scottish Provident-buildings, Belfast.
"	8	London, E.—Sewers	London County Council	Engineer's Department, County Hall, Spring Gardens, S.W.

COMPLETE LIST OF CONTRACTS OPEN-continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
May 8	SANITARY-Continued. London, E.C.-Removal of Dust, Refuse, &c. Fletton, Peterborough-Sewerage and Sewage Disposal Brisbane, Queensland-Scavenging, &c.	Corporation	Town Clerk, Public Health Department, Guildhall, E.C.
" 18		Norman Cross Rural District Council..	G. and F. W. Hodson, Engineers, Loughborough.
June 1		Municipal Council... ..	Town Clerk, Brisbane.
May 8	TIMBER- Wolverhampton-2,000,000 Wood Paving Blocks ... London, S.W.-120,000 Wooden Casks	Tramways Committee	J.W. Bradley, Borough Engineer, Town Hall, Wolverhampton
" 15		Admiralty	Director of Navy Contracts, Admiralty, Whitehall, S.W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
April 28	Leicester-Infirmmary	£100, £50, £25	H. Mansfield, Pocklington's-walk, Leicester.
" 30	Newport, Isle of Wight-Buildings	£50, £50	W. H. Wooldridge, Clerk, Newport, Isle of Wight.
May 1	Eastbourne-Technical School	£50, £30, £20	R. M. Gloyne, Engineer, Town Hall, Eastbourne.
" 31	Honiton, Devon-Supplying Town with Water... ..	£21, £5 5s.	Town Clerk, Honiton.
June 1	Bury, Lancs.-Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhampsted-Girls' Grammar School	£50, £35, £15...	A. W. Vaisey, Solicitor, Berkhampsted.
" 30	Riviera-Villa for Sir Wilham Ingram	£78 15s. £26 5s., £5 5s.	"Architectural Review."
July 16	Falmouth-Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.

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FORAGE.			
	£ s. d.	£ s. d.	
Hay, best	per load	3 10 0	4 5 0
Sainfoin mixture	do.	3 15 0	4 5 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 6	1 8 6
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 8 0	1 9 9
Colza Oil, English	per cwt.	1 9 6	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Linseed Oil	per cwt.	1 9 0	—
Petroleum, American	per gal.	0 0 7½	0 0 7½
Do., Russian	per gal.	0 0 7	—
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 7 6	1 8 6
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 1 6	—
Lead, white, ground, carbonate per cwt.	do.	1 2 10	—
Do. red	per cwt.	1 0 4½	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	3 1 0	—

METALS.

Copper, sheet, strong	per ton	88 0 0	90 0 0
Iron, Staffs, bar	do.	10 15 0	11 10 0
Do. Galvanised Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 17 6	16 18 9
Do. do. English common brands	do.	17 6 8	—
Do. sheet, English, 3lb. persq.ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	13 0 0
Nails, cut clasp, 6in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	139 7 6	139 17 6
Do. English ingots	do.	143 0 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Veille Montaigne	do.	27 7 6	—
Do. Spelter	do.	22 8 9	22 15 0

TIMBER.
Soft Woods.

Fir, Dantzic and Memel	per load.	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	3 14 0	4 4 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	19 10 0
Do. do. 4th & 3rd. do.	do.	12 15 0	14 5 0
Do. do. unsorted do.	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	do.	14 0 0	17 15 0
Do. do. 2nd do.	do.	8 15 0	12 0 0
Do. do. Unsorted, do.	do.	14 5 0	—
Do. do. White do.	do.	11 5 0	—
Do. Swedish	per P. Std.	10 15 0	15 0 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	23 15 0	—
Do. do. 2nd do.	do.	18 15 0	—
Do. do. 3rd & 4th do.	do.	9 0 0	10 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd do.	do.	9 15 0	10 10 0
Do. New Brunswick do.	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 2 6	10 5 0
Flooring Boards, 1 in. prepared, 1st	per square	0 11 0	—
Do. 2nd	do.	0 9 9	—
Do. 3rd & 4th	do.	0 7 6	0 8 9

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 0 3½	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 3 7/16	—
Do. African	do.	0 0 5 17/32	—
Do. St. Domingo	do.	0 0 5 5/8	—
Do. Tobasco	do.	0 0 5 3/32	—
Do. Cuba	do.	0 0 8 3/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub.ft.	0 2 9	0 3 5

COMING EVENTS.

Wednesday, April 25.

SOCIETY OF ARTS.—Ordinary meeting at 8 p.m.

SURVEYORS' INSTITUTION.—Country Meeting at Leeds. First Day.

Thursday, April 26.

WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL.—Lectures on Carpentry and Joinery—1.—Prof. T. Roger Smith, F.R.I.B.A., on "Carpentry, Framing of Roofs, Partitions, &c." 7.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Prof. H. S. Hele-Shaw, LL.D., F.R.S., on "Road Locomotives." 8 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF FINE ARTS.—Mr. W. G. P. Townsend on "Some Ancient Embroideries." 8 p.m.

SURVEYORS' INSTITUTION.—Country Meeting at Leeds. Second Day.

SOCIETY OF ARCHITECTS.—Mr. E. Guy Dawber, A.R.I.B.A., on "The Domestic Architecture of the Cotswolds." 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Prof. George Forbes on "The Electric Transmission of Power." 8 p.m.

ROYAL INSTITUTION.—Prof. Dewar on "A Century of Chemistry in the London Institution."—I. 8 p.m.

Friday, April 27.

ARCHITECTURAL ASSOCIATION.—Messrs. J. D. Grace and Gerald Moira on "Colour Decoration." 7.30 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XV. 11.30 a.m.

SOCIETY OF ARCHITECTS.—Meeting at the Grand Hotel, Birmingham. Mr. Ellis Marsland on "The Statutory Registration of the Profession."

ROYAL INSTITUTION.—Lord Kelvin on "Nineteenth Century Clouds over the Dynamical Theory of Heat and Light." 9 p.m.

BAYLISS JONES & BAYLISS

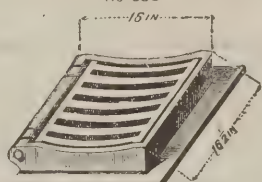
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No. 35C.

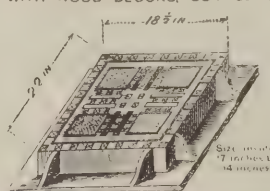


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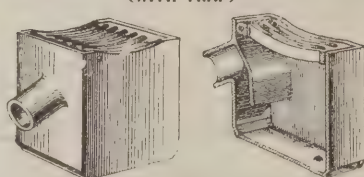
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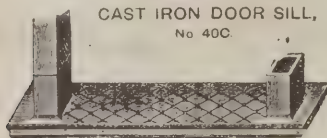
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ROBT. W. FULLER, MOON, and FULLER, at the **MART**, Tokenhouse-yard, E.C., on **MONDAY, APRIL 30th**, at **TWO p.m.** Particulars of Mr. HUBERT GILFORD, Architect, Purley; and of the AUCTIONEERS, Croydon, Reigate, and Epsom.

Sales by Auction for the Year 1900.—Messrs.

DEBENHAM, TEWSON, FARMER, and BRIDGEWATER beg to announce that their **SALES** for 1900 of **ESTATES, Investments, Town, Suburban, and Country Houses, Business Premises, Building Land, Ground-rents, Advowsons, Reversions, Stocks, Shares, and other Properties** will be held at the Auction Mart, Tokenhouse-yard, near the Bank of England, in the City of London, as follows:—

Tuesday, May 1st	Thursday, July 12th
Tuesday, May 8th	Thursday, July 17th
Tuesday, May 15th	Thursday, July 19th
Tuesday, May 22nd	Thursday, July 24th
Tuesday, May 29th	Thursday, July 26th
Tuesday, June 12th	Tuesday, July 31st
Tuesday, June 19th	Tuesday, August 14th
Thursday, June 21st	Tuesday, October 9th
Tuesday, June 26th	Tuesday, October 23rd
Thursday, June 28th	Tuesday, October 30th
Tuesday, July 3rd	Tuesday, November 13th
Thursday, July 5th	Tuesday, November 20th
Tuesday, July 10th	Tuesday, December 4th

By arrangement, Auctions can also be held on other days in town or country. Messrs. Debenham, Tewson, Farmer, and Bridgewater undertake Sales and Valuations for Probate and other purposes of Furniture, Pictures, Farming Stock, Timber, &c.

Detailed Lists of Investments, Estates, Sporting Quarters, Residences, Shops, and Business Premises to be Let or Sold by private contract are published on the 1st of each month, and can be obtained of Messrs. DEBENHAM, TEWSON, FARMER, and BRIDGEWATER, Estate Agents, Surveyors, and Valuers, 83, Cheapside, London, E.C. Telephone No. 503, Bank.

SALE DAYS for the Year 1900.
Messrs.

FAREBROTHER, ELLIS, EGERTON, BREACH, GALSWORTHY, and CO. beg to announce that the undermentioned dates have been fixed for their AUCTIONS of **FREEHOLD, Copyhold, and Leasehold ESTATES, Reversions, Shares, Life Interests, &c.**, at the AUCTION MART, Tokenhouse-yard, E.C.

Other appointments for intermediate Sales will also be arranged.

Thursday, May 10th	Thursday, August 2nd
Thursday, May 24th	Thursday, August 9th
Thursday, June 7th	Thursday, September 27th
Thursday, June 21st	Thursday, October 11th
Thursday, June 28th	Thursday, October 25th
Thursday, July 5th	Thursday, November 8th
Thursday, July 12th	Thursday, November 22nd
Thursday, July 19th	Thursday, December 6th
Thursday, July 26th	Thursday, December 13th

Messrs. FAREBROTHER, ELLIS, and CO. publish in the advertisement columns of "The Times," "Standard," and "Morning Post," every Saturday a list of their forthcoming Sales by Auction. They also issue on the first of every month a schedule of properties to be let or sold, comprising landed and residential estates, farms, freehold and leasehold houses, City offices and warehouses, ground-rents, and investments generally, which will be forwarded free of charge on application.—No. 29, Fleet-street, Temple Bar, and 18, Old Broad-street, E.C.

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LECTURES ON CARPENTRY AND JOINERY
In connection with an examination to be held at **CARPENTERS' HALL, June 13th—16th.**

DATE.	LECTURER.	SUBJECT.
1900. Thursday, April 26.	Prof. T. Roger Smith, F.R.I.B.A.	Carpentry, Framing of Roofs, Partitions, &c.
Thursday, May 3.	Prof. T. Hudson Beare, B.Sc., M.I.C.E.	Strength of Timber and how to Test it.
Thursday, May 10.	S. Barter, Examiner City and Guilds of London Institute.	Joinery, Windows.
Thursday, May 17.	Thos. Blashill, F.R.I.B.A.	A Comparison of English and Continental Doors.
Thursday, May 24.	James Bartlett, M.S.A., Demonstrator King's College.	The Setting-out and Construction of Staircases.

These Lectures are primarily intended for Candidates for the present or future Examinations, and are illustrated by take-to-pieces models, large diagrams, photographs, and specimens of materials.

Lectures commence at 7.30 p.m.
Entry Forms for the Examination, Tickets for the Lectures, and all particulars can be had from

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TO BUILDERS and OTHERS.—SITE for PLATS in the best part of Wimbledon where they would be eagerly sought after. Advances to an approved builder.—Apply, Messrs. DOWSETT and MANN, 18, Walbrook, E.C.

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TELEGRAMS: LONDON TELEPHONE No. 1011 Holborn

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CONTRACTS OPEN.

CITY of WINCHESTER. TO BUILDERS.

The Corporation of the City of Winchester invite TENDERS for the ERECTION of PUBLIC BATHS, consisting of Swimming Bath, Slipper Baths, and Turkish Baths, on land facing North Walls and Lower Brook-street, Winchester.

The drawings, specification, and conditions of contract can be inspected between the hours of TEN a.m. and FOUR p.m. (Saturdays until One p.m.), on application either to the Town Clerk, at the Guildhall, Winchester, or to the Architects, Messrs. LANSDALE and HARRISON, 38, Bow-lane, Cheapside, London, E.C., from either of whom bills of quantities and forms of Tender can be obtained, upon depositing the sum of £5, which will be returned to the depositor upon receipt of a bona-fide Tender.

Tenders (upon the printed form) must be signed, enclosed in a sealed envelope, and endorsed "Tender for Public Baths," and addressed to the undersigned and delivered at the Guildhall, Winchester, not later than TWELVE o'clock noon, on FRIDAY, APRIL 27th.

The builder whose Tender is accepted will be required to enter into a bond with two sufficient sureties for the due performance of the contract.

The Corporation do not bind themselves to accept the lowest or any Tender.

WALTER BAILEY,
Town Clerk.

Guildhall, Winchester.
April, 1900.

COMPETITION.

BERKHAMPTSD GIRLS' GRAMMAR SCHOOL BUILDINGS' ASSOCIATION. TO ARCHITECTS.

The Board of Management invite COMPETITIVE PLANS for the ERECTION of a SCHOOL to accommodate 150 girls.

Premiums of £50, £35, and £15 will be awarded to the authors of the Designs placed first, second, and third respectively, and in the event of the selected Design being carried out, the premium will merge into the commission.

The President of the Royal Institute of British Architects will be asked to appoint an Assessor to advise upon the design. A copy of the conditions and instructions, together with site plan, may be obtained upon application to A. W. VAISEY, Solicitor, Berkhamsted, the Secretary to the Association, to whom the drawings must be delivered under cover not later than JUNE 16th, 1900.

Berkhamsted,
April, 1900.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BLACKBURN.—For the erection of shop and house, Eldon-street, for the Blakey Moor Co-operative Society. Messrs. Simpson and Duckworth, architects, Richmond-chambers, Blackburn:—
R. Hatton ... £1,151 15 6
R. Webster ... 1,139 0 0
Ginger & Cooper ... 1,124 6 8
Willson and Sons ... 1,109 0 0
Jas. Parker ... 1,078 0 0
Lewis and Sons ... 1,065 0 0
Jas. Holden ... £1,035 0 0
W. J. W. Cronshaw ... 1,028 0 0
J. Gill brand, Blackburn* ... 1,020 0 0
* Accepted.

CREDITON (Devon).—For the choir stalls in oak for the church of the Holy Cross, Crediton, Devon. Messrs. Tait and Harvey, Fellows R.I.B.A., architects, Exeter:—
W. Berry ... £350
W. Dart ... 350
T. Norbett ... 335
Harry Hems and Sons, Exeter ... £320

HUNSLLET.—For the erection of the proposed new work-house, for the Hunsllet Board of Guardians:—
Joseph Howe and Co. ... £63,923 17 11
John R. Stott, Sunderland ... 63,986 18 0
Sam Warburton, Miles Platting ... 63,870 0 0
George Oakes and Co. Hunsllet ... 63,799 4 4
W. Storrs, Sons, and Co., Ltd., Staley-bridge ... 62,639 10 0
J. E. Johnson and Son, Leicester ... 62,201 0 0
Walker and Slater, Derby ... 61,930 0 0
W. Nicholson and Son, Leeds ... 61,496 0 0
Harold Arnold and Son, Doncaster* ... 59,490 0 0
* Accepted, with £1,656 extra for Westmorland slates, making a total of £61,026.

LONDON.—For the Children's Receiving Home at Tremar-gardens, for the Guardians of the Poor of Paddington. Mr. J. Wallis Chapman, architect, 11, Sutherland-avenue, W.:—
J. O. Richardson ... £5,536
Barrett and Power ... 5,379
Kingerlee and Sons ... 5,379
Sniffin Bros. and Co. ... 5,316
Falkner and Son ... 5,255
John Appleby ... 5,244
Holliday & Greenwood ... 5,154
Godson and Sons ... £5,145
F. and H. F. Higgs ... 4,973
W. Gibson ... 4,918
B. E. Nightingale, Albert Embankment ... 4,793

LONDON.—For putting in foundations up to damp course of St. Thomas's Church, Telford Park, Sreatham Hill, for the Vicar and building committee. Messrs. Sidney R. J. Smith, 14, York-buildings, Adelphi, and Spencer W. Grant, 63, Finsbury-pavement, E.C., joint architects. Quantities by Mr. Money Marsland, 68, Great Tower-street, E.C.:—
Contract No. 1.
G. H. & A. Bywaters ... £2,354
and Sons ... 2,591
A. Porter ... 2,525
F. G. Minner* ... 2,070
Contract No. 2.
For the erection of part of the superstructure.
F. and H. F. Higgs ... £2,343
Holloway Bros. ... 8,575
A. Porter ... 8,449
Higgs and Hill ... 8,334
Higgs and Hill ... £2,354
Candler and Sons ... 2,195
Smith and Sons ... 7,945
Gregory and Co. ... 7,845
F. G. Minner ... 7,800
* Accepted.

LONDON.—For erecting two pairs semi-detached villas, Clapham Common, S.W. Mr. Herbert Bignold, architect, 212, Lavender Hill, S.W.:—
Heather ... £2,200
Jewell ... 3,714
Jenkins ... 2,880
Dickson ... £2,750
Cane accepted ... 2,730

LONDON.—For the erection of St. John's Institute, Larcom-street, Walworth, S.E.:—
Higgs and Hill ... £5,995
Lorraine and Sons ... 5,854
Holloway Bros. ... 5,738
William Shepherd ... 5,700
Edwards and Medway £5, 95
Johnson and Co. ... 5,569
Holliday & Greenwood 5,449
John Marsland* ... 5,415
* Accepted.

LONDON.—For erecting the first block of new Works Depot at Brompton Green, for the Vestry of St. Matthew. Mr. R. Stephen Ayling, architect, 19, Old Queen-street, Westminster:—
Perry Bros. ... £2,587
Jarvis and Son ... 2,797
Johnson and Co. ... 2,790
Sheffield Bros. ... 2,777
Ashby Bros. ... 2,748
G. E. Todd ... 2,720
F. and F. J. Wood ... 2,683
Chessum and Sons ... £2,679
Harris and Wardrop ... 2,637
Thomerson and Son ... 2,578
W. Gladding ... 2,512
Gough and Co. ... 2,484
Joseph Hay ton* ... 2,169
* Accepted.

LUTON.—For the erection of a highway depot, &c., St. Mary's-road, for the Town Council. Mr. A. J. L. Evans, borough engineer, Town Hall, Luton:—
Miskin and Sons ... £5,817
S. Redhouse ... 4,911
T. and E. Neville ... 4,811
G. Smart ... £4,848
W. G. Dunham, Luton* ... 4,693
* Accepted.

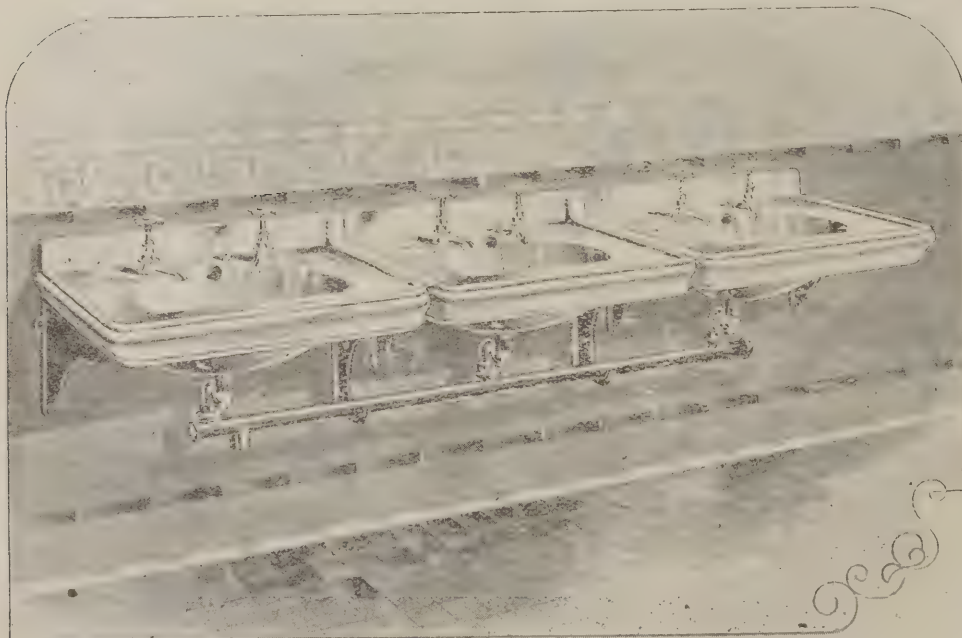
MAESTEG (Wales).—For the erection of school's, &c., Caerfan, for the School Board. Mr. E. W. Burnett, architect, Tondu, near Bridgend:—
W. McGaul ... £2,893
P. Gaylard ... 2,820
W. Francis ... 2,791
J. Battary ... £2,493
E. Evans, Maesteg* ... 2,398
* Accepted.

MORTLAKE.—For the erection of forty-two workmen's dwellings, South Worpole Way, for the Urban District Council of Barnes. Mr. G. Bruce Tones, C.E., High-street, Mortlake:—
B. E. Nightingale ... £13,285 0 0
Lorden & Sons ... 12,883 0 0
F. Tingley ... 12,867 2 5
W. S. Beaton ... 12,511 8 1
Soole and Sons ... 12,100 0 0
A. H. Harris ... 11,800 0 0
C. R. Gurr ... 10,530 0 0
S. Dockerill ... £10,496 0 0
J. Wilford ... 10,300 0 0
D. Pitt, Holly Lodge, Mortlake* ... 9,947 0 0
G. W. F. Bates ... 9,854 18 7
Jones Bros. ... 9,833 11 7
* Accepted.

SPEKE (near Garston, Lancashire).—For the construction of a river wall, for the trustees of the late Richard Watt, of Speke Hall, Messrs. Charles H. Beloe and Frank E. Priest, M.M.Inst.C.E., engineers. Quantities supplied:—
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MAY 2, 1900.
No. CCLXXIII.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

Woes of a Picture Hanger.

THE ordinary visitor to a picture show has no conception of the thankless and exhausting labours of the committees of selection, and of those on whom the duty of hanging the selected pictures falls. It is to enlighten the public upon some of the difficulties which these bodies encounter that this little article is written, thrown into narrative form, but not describing anything which actually happened in the way described; and it will be of special interest in view of next week's opening of the Academy. There were four of us on the Hanging Committee, and we had been selected with the intention of giving as catholic a flavour to the Exhibition as possible. One was a Decadent, one a High Art man, one a "Market Produce" man—by which I mean one of those sane painters who consider first whether a subject is likely to be saleable when an idea occurs to them, and if they decide that it is not, throw it aside in favour of another which does not please them quite so much but which is less likely to be left on their hands—and as all these were figure painters, a landscapist was thrown in, just "to keep the balance true."

The Committee of Selection was quite another body, with whose proceedings we had nothing to do. Our duty was to make the best of what they passed on to us. We were turned loose one morning into rooms stacked with pictures with their faces to the walls, and with a number of carpenters under our orders, who were to handle the pictures and whom we had to keep supplied with work. The first thing, of course, was to turn the big pictures face outwards and settle which should form centres around which to group other less important works, and now our troubles began. The Decadent immediately fixed on an empty-looking canvas covered with crude colour, much of which was laid on with the palette knife, and purporting to represent the interior of a *café chantant*. When it was objected that the colour was crude, coarse, and unfeeling, he said it "sang." When the subject was voted unpleasant by the rest of us he shrugged his shoulders and expressed his contempt for "subject," but maintained that we were not likely to find another work so individual. We rather hoped not, if that was what the word meant. Meanwhile the Landscape man lugged out a canvas which was nearly as black as night, and swore it would give distinction to the Exhibition if hung in the best place, and called on us to admire its sobriety of colour and excellent and impressive tone. And the Market Produce man dug out a large picture of two children and some puppies which he said was certain to sell, "and, mind you, that's a thing we ought to think of, because of the commission the Society will get, and one picture marked 'sold' often helps to sell others." The High Art man all this time was looking round with a dissatisfied air, as if there was nothing visible which met with his full approval, until a large picture was turned

round which was all blue and green and had some dubious forms silhouetted against a lighter ground, the outlines of the various patches of colour being well defined and everything treated flatly. This he pounced upon at once, and said with decision: "This picture will be the making of the Exhibition. Let us put it in the middle of the wall over there." The secretary now approached us with a deferential air, and suggested that

stimuli from the carpenters) where the big pictures should go, until at last the Market Produce man, who was, perhaps, the most practical of us, said: "Look here, you fellows, there isn't the least chance of our agreeing yet; let's go to lunch, and afterwards divide the rooms among us, and go on each one alone." But it was objected that there were only three rooms and there were four of us. "Well, then," he said, "let's divide



THE CENTRAL TOWER, COUTANCES CATHEDRAL. DRAWN BY J. A. WOORE.

the carpenters were wasting their time while we were discussing, and could: we give them something to go on with? So we all turned round on him at once, and said in chorus: "Let them get these four pictures ready, and put them up for us to look at"; and for the rest of the morning we discussed, and tried to decide (under occasional

the big room into two, and let the Decadent and the High Art man each do half of it. And then we can revise each other's work, and pull the Exhibition together at the end." And then we went to lunch. This arrangement saved time by economising the opportunities for disputes, which now generally occurred over the demand for

carpenters—but the progress made was rather slow. The High Art man got along rather faster than the others, because he had more idea of what pictures would look like when hung together, and how they would affect each other; and every now and then, too, the other men would miss a favourite picture and discover it in a prominent place in his room! which he explained by saying that everything which had any decorative quality in it had a natural affinity for his room, and necessarily gravitated towards it; and then there were ructions! But he had time to spare every now and then, which he utilised for standing behind the others and giving them good advice, and then there were ructions again. The Market Produce man, being, as I have said, on the whole the most reasonable of the four, took his remarks in good part, and sometimes even acted upon them, and thus discovered that a yellow-green landscape and a blue-green figure did not mutually improve each other, and that scarlet and purple was not a combination quite satisfying to the eye. This was a thing which the Decadent could not be brought to see, and every time the High Art man stood behind him, with his hands on his hips and a quizzical look in his eye, he began to snort and stamp about even if he didn't open his lips. When he began to give good advice the room suddenly became darker, and a bluish tint obscured the colour of the pictures near. On the other hand the Landscape man treated him with the loftiest contempt, and assured him that he knew nothing about atmosphere and natural effect, and advised him to confine himself to "Arrangements," and "Nocturnes," and "Symphonies," and the like.

It was scarcely to be expected that there should be much "unity" about an Exhibition hung in this way, although there was plenty of variety. But the High Art man became very uneasy, particularly over the big room (with which he had nothing to do!), and was observed to be frequently holding consultations with the Market Produce man. One morning, when the other two arrived to complete their labours, they started back in surprise. Had there been a hurricane in the night, which had shifted the pictures from their places? Or had they somehow strayed into an unfamiliar gallery? It was true that they seemed to recognise some of the pictures, but others looked quite strange, being hung so differently. The larger works had been regrouped, and some of the most impossible combinations of colour had been put away into inconspicuous places, while in every case the effect of a picture upon its neighbours had been thought of, so that they improved each other. Their first feeling was bewilderment—the next, anger at the presumptuous mortals who had dared to interfere with their cherished arrangements. And then there was half an hour's heated discussion, after which the Landscape man was brought to see that there had been some improvement effected, and the Decadent, being outvoted, had to succumb.

It may be thought that our troubles were now pretty well over? Not at all. The Selecting Committee, which was of quite a varied a complexion as the Hanging Committee, came again on the scene to revise what we had done, and long and fierce were the discussions that ensued. The Hanging Committee, having arrived at a compromise which was accepted by them all, fought tooth and nail for everything which had been done by anyone of them, while the Selecting Committee, having forgotten how difficult a matter it is to satisfactorily hang a number of pictures brought together by chance, looked at the matter rather from a purist point of view, each individual member having in his mind what he thought to be the absolute best, and practically ignoring that Spirit of Compromise.—JUDGE.

On Reflection.

The Ottawa Fire. THE terrible calamity which has befallen the Canadian capital has sent a thrill of sympathy throughout the English speaking world. The destruction of 3,600 buildings, rendering thousands of people homeless, and entailing a loss of property estimated at three and a half millions sterling—besides the even more lamentable loss of life—mark the conflagration as one of the most extensive and destructive of which we have any record. The first impulse of all humane persons at such times of calamity is to adopt at once such means as may be possible to alleviate the distress that has been caused. But when this first duty has been discharged there will be two questions to be asked and answered. The first is: How is it that, with all the skill and study that has been devoted in recent years to the work of fire prevention and fire extinction, it should be possible for such a calamity to overtake one of the most progressive communities in the Empire? The second question is: What measures can be taken to make the recurrence of such a calamity virtually impossible, not only in Ottawa, but in every city in the world? As regards the first question, the character of the quarter in which the fire originated would sufficiently explain its development without any need to suggest the work of Fenian incendiaries. Given a dense agglomeration of wooden dwellings, huge timber stacks, and manufactories using combustible materials a hurricane and any of the hundred and one accidents from which small fires originate every day, and we have all the elements of a very serious disaster. The second question admits of many answers. One thing is quite obvious; when the devastated area comes to be rebuilt the new buildings must be subject to stringent regulations as regards materials and methods of construction.

Local Authorities and Fire Prevention.

THE safety of a city from fire depends in no small degree upon the energy and forethought of its governing body. Many local authorities (notably the London County Council) exercise the most careful control with a view to preventing the loss of life and property by fire, but others are too much inclined to leave things to chance, regarding the provision of a fairly efficient fire brigade as the beginning and end of their duty. There have just been published by the British Fire Prevention Committee two volumes (the second and third volumes of the Committee's transactions) which should be carefully studied by all who are interested in methods of fire prevention. These volumes contain a great deal of information on the fire-resisting qualities of various forms of building construction, including ordinary methods and those which claim "fireproof" qualities. The information is thoroughly reliable, being based upon scientific tests carried out by the Committee at its testing station, and it is almost superfluous to point out the extreme value, from the point of view of fire prevention, of the mass of facts that have been collated. In view of the Ottawa fire, a paper of very special interest is that in which Mr. Charles E. Goad reviews the history of the greatest fires of the past ten years, pointing out their causes, and showing by diagrams the progress and extent of the fires. This paper is full of suggestiveness, and the hints and warnings it contains would—if universally regarded—go far towards making such vast conflagrations impossible. The pity of it is that men will not take warning until calamity has come very close to their own door. Chicago is built on sound lines as regards fire prevention, because thirty years ago

Chicago was almost entirely destroyed by fire. Ottawa, we doubt not, will be rebuilt on the most approved principles, now that it has had such startling evidence of the dangers of wooden buildings. But there are many other towns where measures for the prevention of fire seem to be almost entirely overlooked. It is a poor policy to wait until the steed is stolen before shutting the stable door.

The Paris Disaster. ANOTHER warning—and a very sad one—of the danger which may result from slipshod or careless work on the part of architects, builders, or engineers, reaches us from Paris. At the time of writing the exact causes of the collapse of the footbridge at the Exhibition last Sunday, with the disastrous loss of life resulting from it, are involved in some uncertainty. The bridge was a temporary one constructed of wood, iron, and concrete; whether there was anything defective in its construction does not appear, but it seems certain that the work had not been properly completed at the time of the accident. The shores supporting the structure are stated to have been prematurely removed in opposition to the advice of the chief architect. It is further stated that M. Picard, the director-general of the exhibition, who examined the bridge the very morning of the disaster, gave orders that no one was to be allowed on it, as he did not consider it safe; yet, notwithstanding this prohibition, one report states that the bridge was crowded at the time of the disaster, and it is certain that no precautions were taken to prevent people passing underneath. If these statements can be substantiated there has been something not far removed from criminal negligence on the part of those who, in the mad rush to get the Exhibition ready at or near the appointed time, disregarded the most obvious precautions for securing the safety of the public. The report that the Prefect of Police had been inspecting certain buildings of doubtful solidity, and had ordered one of them to be closed, seems to indicate that no proper survey of the Exhibition had been made before it was thrown open to the public. It should be obvious that a structure to be used by thousands of people, though only for the shortest time, needs to be subjected to as stringent tests as if it were designed to last for centuries.

Trade Agitators. THE paid agitator is the person who is responsible for a good many of the strikes that are now becoming a regular feature in the trade programme. The ball is set rolling by him, sometimes in a bad cause, and sometimes in a good one. But, putting aside the merits and demerits of trade unionism, one cannot but deplore that there should so often be this discord between master and workman, this feud which must and does injure the work in which both are interested. What are the general labour relations to-day? Simply those which form a basis of agreement for so much money to be given for so many hours' work. The quality of the work itself receives only slight consideration. Who is to blame? Both the master, for not trying to raise the level of the work that is done for him, and the workman, for caring about nothing but wages and hours. And this is one reason why modern handicraft is so degenerate. What is wanted is a higher standard to be set up, and in this connection the paid agitator, who now so zealously pleads the cause of the monetary and physical, might very well be supported by an equally zealous advocate of the ethical. It is well that working conditions should be improved, but it is also well that the standard of the work itself should be raised, though at the present day the former consideration is pushed so much to the front that the latter has only the smallest chance of success.

BUILDING IN THE WEST INDIES *

By JOHN T. REA, F.S.I.,
SURVEYOR, WAR DEPARTMENT.

AS one who has spent four years in the West Indies as a Government official, the writer has thought that a short account of building and architecture in those islands would be interesting and uncommon to the members of the profession in this country. A century and a half ago the West Indies were thought to be of the greatest value to Great Britain, and the history of these sunny islands is nothing but a succession of fierce fights by sea and land. In those days sugar was king, and planters were prosperous and wealthy, and, imitating the merchant princes at home, they erected splendid houses for themselves on their country estates. But all this has changed and foreign subsidies on beet-root have ruined these island colonies, so that building opera-

wildernesses of mighty peaks, intersected by valleys, ravines and rivers, the hills and land being densely clothed with forest and bush. Barbados and Antigua, on the other hand, are almost flat, and afford ample building ground.

Geology.—It is supposed that the West Indies were formerly a part of the continents of North and South America, which extended at a remote period towards the south-east and north-east respectively. They are nearly all of volcanic origin, as the ever-active sulphur springs attest. The rocks are igneous, and are either crystalline, in which case they exhibit much variety of structure; or uncrystalline, composed of volcanic ashes, constituting tufas. Of the former many resemble basalt and greenstone, whilst some are an approach to granite or syenite. These rocks are Tertiary or Post-Tertiary. Barbados and Antigua are of coral formation, resting on a volcanic base. This coral stone is so soft that it can be cut with a hand saw, but hardens on exposure. The building stones are therefore limited in character.

Hurricanes.—Hurricanes form one of the principal factors against which special precautions must be taken in the erection of buildings. They are an extraordinary phenomenon in the West Indies, and it is computed that more than 130 have taken place since the days of Columbus. Their violence is usually confined to the months of August, September, and October. No less than twenty-two have desolated Barbados, and that of August, 1831, was especially remarkable. Buildings were lifted from their foundations and hurled across the streets. A lump of lead, weighing 400lbs., was lifted by the wind and carried 560yds.; and heavy guns were dismantled and shifted great distances. St. Lucia has been laid waste by six hurricanes, and in that of October, 1817, Government House was blown down and the Governor killed. In St. Kitts in 1871, an ox was cut in two by a sheet of iron blown from a roof many yards distant, and in St. Vincent a year ago several people were beheaded from the same cause, and 30,000 rendered homeless. The velocity



CASTRIES, ST. LUCIA.

tions on any respectable scale have now stopped, except in the islands of Jamaica and St. Lucia, where the War Department is erecting large barracks. The writer was stationed in the latter place, but during his stay abroad he visited Barbados, Martinique, Dominica, Antigua, Nevis, St. Kitts, and other islands, so that his observations have been fairly extended. The differences between home and West Indian practice are mainly due to the causes set forth under the following half-a-dozen paragraphs, the rest of the paper being a description of the buildings themselves and of the materials used in their construction.

Nature of Country.

Hurricanes.

Geology.

Earthquakes.

Rainfall and Landslips. Climatic Influences.

Nature of Country.—The nature of the country in most of the islands is very hilly, rendering transit of materials most difficult and making the selection of the site an extremely hard task. This is particularly the case in the more mountainous islands, such as St. Lucia and Dominica, which are simply

Rainfall and Landslips.—Owing to the mountainous and wooded nature of the land, the rainfall is very heavy, being on an average 90in. to 100in. per annum. When we compare this downpour with the average 32in. of the United Kingdom it will be seen that some extra provision must be made in buildings to meet this excessive discharge, and to lead off the rain quickly, which falls in sudden torrents out of a clear sky, choking the gutters and downpipes.

Because of the undermining action of this superabundant rain-water and the steep slopes of the clay-covered hills, landslips are of almost every-day occurrence, and are sometimes of alarming dimensions, destroying roads, carrying away houses, trees, and boulders, and materially altering the general aspect of a district. Great care must therefore be taken in selecting sites for buildings, especially as there is scarcely a level plot of ground to be had and the slopes are sometimes so great that while the doorstep is flush with the road in front a complete basement may be formed beneath, which can be economically utilised for such accessories as lavatories, bathrooms, storerooms, &c.

of the wind was estimated at 105 miles per hour. In the West Indies hurricanes seem to take place in cycles of four years. The author was one of a Government Committee appointed to enquire into the damage done in St. Lucia by the hurricane of 1898.

The experience of the Barbadians has taught them to construct their houses with deep foundations, and with cellars, where the inmates can take refuge. A good protection is a thick hedge of bamboos on the windward side, which breaks the force of the tempest, and partially diverts it. Long rows of quick-growing trees may also be planted. Generally speaking, a well-built house has less to fear from a hurricane than from earthquakes, which we shall next consider.

Earthquakes.—On account of their volcanic origin, almost every island possesses some sort of a crater, and hence they are subject to terrestrial eruptions of more or less violence. A terrible earthquake demolished Port Royal, Jamaica, in June, 1692, and St. Vincent was the scene of a terrific volcanic explosion in April, 1812. Eruptions also occurred in Guadeloupe, and in February, 1843, the capital was engulfed. This city has passed through

* A paper read before the Architectural Association of Ireland on February 6th, 1900.



STREET IN CASTRIES, ST. LUCIA.

so many vicissitudes in the form of hurricanes, earthquakes and fires, that the bewildered residents have now adopted a system of construction with strong iron frames filled in with brick or composition; but it has not yet been put to the test.

It is a notable coincidence that in the West Indies the ground is severely shaken during hurricanes. Thus, shocks, not unlike those of earthquakes, have occurred during the hurricanes in Martinique, Barbados, Havannah, and Guadeloupe, thereby creating a double source of danger to erections of every sort. Structures of wood undoubtedly resist earthquakes better than those of brick or stone, and most of the houses are of this material. The following are useful hints on construction in earthquake countries:—Marshy, wet ground, which is popularly supposed to absorb earthquake motion, is notably a bad foundation, and low soft ground suffers very much more disturbance than the hard, solid places. Steep slopes are also bad situations. Buildings should be founded on the firmest sites, which, if soft, may be consolidated by piling, or by a thick bed of concrete. A platform of masonry or concrete may also be formed, which must extend beyond the base of the house. Foundations should be made continuous. Another method is to give the building free foundations, resting on rollers or balls. Cellars and basements are admissible, and in these vaulting is allowable; but for storeys above ground arched construction should be suppressed because of its outward thrust. Thus vaulted cathedrals and churches have often been overthrown while other houses were saved.

Roof trusses ought to be light and rigid, with a low pitch, and resting freely upon their supports, as it is their thrusting action which tends to overthrow walls when a shock takes place. Walls should be long, thick, and low, and well tied together by means of cross walls and partitions, while the outside corners should be well united; the foundations should be deep, and the upper portion light. Hence the system of building with an upper storey of wood resting on, and not built into, the supporting wall, and a light roof, produces good results. It is on this principle that Government House in St. Lucia is built, its superstructure being a comparatively light framework of timber.

Masonry should be built in lias lime, which has the valuable property of resetting in any slight damp, so that when a building is fissured by earthquake the cracks will speedily close again and still be of a yielding nature. Caverns, wells, and quarries retard the disturb-

ance of the earth, and protect works in their neighbourhood.

Climatic Influences.—For a long time past it has been a matter of notoriety that the West Indies and yellow fever have been synonymous terms, and in certain parts, through bad sanitation, the pestilence still lingers. In earlier years a great deal of the mortality among our troops in foreign stations was caused by improper and unwholesome diet and by the effects of intemperance. Another cause which operated in the same direction was the injudicious selection of barrack sites, a notable instance of which occurred in Trinidad about seventy years ago, where, after a million of money had been spent in new forts and barracks, it was discovered that they could not be inhabited even by Africans. A similar condition of things prevailed at Fort Augusta, Jamaica, where regiment after regiment was swept away by the malarious exhalations of an adjacent morass, until the spot was at last abandoned and left for a powder magazine. Such unhealthiness was due to the vicinity of large tracts of uncultivated land and marshes, from which the poisonous vapour rises as a dense cloud and penetrates into every valley and up every hill-side. The mortality amongst our white soldiers less than fifty years ago ranged on an average from 5 to 25 per cent. per annum; now it is little greater than that of British troops on home service.

The poisonous effects of the vapour arising from the decaying animal and vegetable matter with which the soil in hot countries is particularly impregnated are now well understood, and profiting by the experience of the past, all modern barracks in the tropics are constructed so that the ground floor is raised several feet above the level of the soil and the whole area of the site underneath covered with a layer of concrete, having a deep air space between.

Confined and defective barrack accommodation, however, was the main cause encouraging disease, and in Grenada troops were formerly housed in casemates beneath the forts, such chambers being devoid of windows and having thick walls, vaulted ceilings, and no means of ventilation. The death-rate was about twenty-two per thousand. The seasons are not distinctly marked, and drought, rain or heat seem to have no particular rotation throughout the year.

Planning and Construction.

General Design.—Houses in the West Indies are planned very much alike, and may be divided into three classes—(a) bamboo and

grass huts; (b) wooden houses; and (c) stone or brick buildings.

(a) These are merely one-roomed hovels, about 16ft. by 8ft., forming the abodes of the poorest class of natives who live in the bush. The framework is made of wood cut from the nearest plantation, roughly squared and fastened together with wooden pins. The walls are constructed of horizontal strips of split bamboo, between which the blades of coconut leaves are vertically interlaced. The roof is of steep pitch, hipped at both ends, and thickly thatched with the "thrashed" or stripped ribbon-like tops of sugar cane; the floor is of bare earth, and square apertures take the place of windows. These choice and picturesque specimens of rural villadom are thus referred to as "trash huts," a title that may be interpreted in more senses than one.

(b) Some of the wooden shanties to be seen in the towns are not much better, but in St. Lucia they are limited by a building by-law to 16ft. by 16ft. as a minimum size on the streets. They are most frequently built in semi-detached fashion, with one or two rooms each, and very narrow passages between leading to courtyards behind, where the space may be sub-let by the dwellers in front for smaller tenements. This consequently leads to "overcrowding in unsanitary areas," that bugbear of medical officers of health, though it is said that the authorities intend to prohibit this practice. The framework is of pitch-pine covered with weather-boarding; the floors are of wood, while the roofs are also hipped at both ends and covered with shingles, and a bell-cast being invariably given to the eaves aesthetically satisfies the eye. Split bamboos not infrequently form a substitute for eaves-gutters, and walls are often patched up with the sides of old tin cans—a ludicrous sight indeed. These "packing cases," as they are jeeringly termed, are of the most flimsy construction, and it would not be difficult to knock a whole house down, especially as the structure rests on four or more big stones by way of piers, looking as if with open arms they were inviting a gentle breeze to blow them all over. It is no uncommon spectacle to witness one of these negro huts being carried through the streets by less than a dozen men for the purpose of being deposited on a fresh site. "Where they put 'em" is a mystery that surrounds the occupants, but this can be partly explained by the fact that the people spend most of the day in the open air, only resorting to their cabins at night as so many sleeping berths.

There is a considerable step between the dwellings of the poorer classes and those of the planters and wealthier citizens. These again seem to be much of a pattern, for they are generally of a simple rectangular shape, or bungalow type, one or two storeys in height, with a 6ft. or 8ft. open verandah all round, the whole being raised above the ground on piers. As the verandah acts as a passage the rooms open into each other, and if the house be of one storey, open roofs take the place of ceilings, leaving trusses and rafters exposed to view. Creole builders seem to have little idea of the science of construction, for beams are run into walls anyhow without templates, and they as often as not rest over openings, while lintels have unequal bearings. Joists are spaced at 2ft. apart, and as there are no ceilings the underside is bared, making the floors very noisy to the people beneath. Partitions inside are only carried up some 8ft., leaving a clear space above, and this, together with the fact that everything is of wood, enables every sound to be heard throughout the building, so that in West Indian houses there is no real privacy. Double partitions and double-boarded walls are seldom put up, as the space between harbours ants, cockroaches, and other insects. Instead of windows there are jalousies (or louvred shutters), hung folding, and the verandahs and balconies are sometimes enclosed by fancy patterns of treillage. Roofs are covered with galvanised iron, and if they are of shingles there is the usual hip and bell-cast at eaves. The style of architecture is of the finicking American order, with fret-work patterns and restless ornaments, the initials of the owner being conspicuously carved as a

monogram in front. Kitchens, servants' quarters, &c., form separate out-buildings, this being a distinctive feature of the domestic life in this part of the tropics. A good house of this type, with two storeys and an attic, and containing two living rooms, six bedrooms, verandah, closets, and outbuildings, will cost £700, or less than 4d. per foot cube to build.

(c) Stone and brick buildings are only erected when they are of a public character, the difficulty of obtaining and dressing the local stone, and the necessity for importing bricks, lime, and cement, no doubt acting as deterrents in this direction. Such foreign building materials are necessarily more expensive on account of the heavy import tariff levied upon them, as well as the cost of freight in addition. Articles for the public service are exempt from duty.

There are many passable, if not fine, public buildings in the West Indies, and among those that I am personally acquainted with may be mentioned:—Codrington College and The Mutual Assurance Company's Buildings, Barbados; Government House and Roman Catholic Church, St. Lucia, both recently erected; the Roman Catholic Cathedral in Fort de France, the capital of Martinique, which is a magnificent structure, erected almost wholly of iron, and, indeed, the finest building in that material I have ever seen. The style of the whole is most harmonious, and free from any crude attempts at that imitation of stone ornament which usually mars all such works. The Cathedral in Antigua is a substantial edifice, with unpainted woodwork inside; but hard times press upon it and are leaving the fabric out of repair. A splendid Colonial Bank has just been put up in Trinidad, from the designs of Mr. L. Mallet-Poret. Stone and brick buildings are usually characterised by architectural neatness rather than by any pretensions to architectural beauty, but some of them possess features enough to make one gasp. These, of course, are trifles, and neither does such an anachronism as the proposal to put a Gothic spire on a Classic church ruffle the artistic susceptibilities of the worthy West Indians.

Military Works.—British and native troops are now concentrated in those positions which are of vital importance—that is, at Jamaica

and St. Lucia, leaving these islands the two military headquarters of the West Indies. In St. Lucia the more important barrack buildings are almost wholly built of imported materials. The foundations and verandah floors are of Portland cement concrete; dwarf walls, foundations, and plinths, of rubble stone or brickwork in cement; the superstructure of English bricks laid in Portland cement mortar, 1 to 3; pitch-pine is used for ordinary woodwork; white pine for scaffold planks, sheeting, and centering; native hardwoods supply fencing, posts, and outdoor work; and galvanised corrugated sheet iron is the common roof covering. Rubble masonry is often built in lime mortar mixed with a little cement to strengthen it. Eaves-gutters and ridging ought to be of galvanized iron, as those painted will not withstand the corroding effects of the climate. Rain-water pipes and eaves-gutters must be of ample size—to carry away the heavy fall of rain. Roofs should be of timber or light iron trusses, according to the span, with boarded ceilings and ventilators where necessary. The buildings are of simple rectangular shape, generally two storeys high, with a verandah, at least 10ft. wide, round each floor to mitigate the heat and glare of the sun, and to afford a cool sitting place. As the verandah is used for a gallery, there are no inside corridors, the rooms being entered direct from the outside. The staircases are of iron and are often placed in the verandahs, which have concrete floors supported on a wrought-iron framework with columns and railings of the same material, except upon upper floors, where the two last may be of wood. As before stated, it is most important that all dwellings in the tropics should be on stilts, as it were, the ground floor elevated several feet above the level of the soil, with a layer of concrete underneath sloping outwards. The space between should admit of being cleaned out, and be kept free from wet, refuse, or dirt of any kind. Doors are about 8ft. high, with fanlights or louvres above, and the casement windows have a similar arrangement, the idea being to get as much circulation of air as possible; with the same object in view rooms are lofty.

The aspect of the more important barracks must be carefully chosen, more especially with

reference to the prevailing winds and rain, which drive in from the north-east. This selection is often difficult because of the crumpled configuration of the country, which renders compulsory the good plan of short blocks with a free play of air all round them. The heavy penetrating showers necessitate all walls being built in cement mortar; and storm shutters, and even double doors, are sometimes required on exposed sites to resist the fury of the elements.

The artificer's work is entirely done by day work by the natives, without the intervention of a contractor, such a thing as a general builder being unknown in most of the islands. Of the tradesmen, it may be said that they are naturally inferior to British workmen, and extremely slow, but a few of them by dint of practice on War Department buildings have come quite up to the home standard, and no doubt the others will improve. Masons can undertake only the roughest description of rubble work, and will persist in building walls with two outer skins filled in anyhow with spalls, and without bond. Bricklayers can lay only 300 to 325 bricks per day at the utmost, and when the military works were started nine years ago there was not a man who could lay a brick; some can now build a wall if the levelling and plumbing of each course is checked and corrected for them. Native carpenters and joiners are pretty good, but it is necessary to give them a great many explanations. Women do most of the labourer's work, and carry everything on their heads, from a bucket of water to an empty bottle. The men are lazy, and many of them will not exert themselves unless the eyes of the foreman are upon them. Procrastination is one of their chief faults, and "Never do to-day what you can put off till to-morrow" is their motto. Knowing these characteristics, the system of piece-work is found to be of service, for the negro will hurry up with his set task in order to idle for the rest of the day, careless of the extra pay he would otherwise earn. Wages are, for timekeepers, 3s. 6d. to 5s. per day; for skilled tradesmen, 3d. to 5d. per hour; for labourers, 2d. to 3d. per hour; and for women, 1s. to 1s. 2d. per day.

Though workmen are only paid about half English rates, yet the cost of labour is con-



NATIVE HOUSES, ST. LUCIA.



STREET IN BRIDGETOWN, BARBADOS.

siderably higher than at home, as the men are naturally slow and indifferent. This, together with the increased price of imported materials, runs up the cost of erection to something like 25 or 30 per cent. above that in England. The value of labour, especially, is very fluctuating, and it is found that the cost of works depends almost wholly upon the closeness of supervision and upon the energy and dominant power of the foreman. Prices cannot but be empirical, and estimating must be largely a matter of conjecture, which no amount of experience will render altogether reliable.

Colonial Works.—All the more important islands of the West Indies possess a Public Works Department presided over by a Colonial engineer, for the execution of the public works of the colony, such as Government buildings, roads and bridges, harbour works, waterworks, telegraph lines, etc. Persons who desire to practise as private land surveyors must serve a three years' apprenticeship with the Colonial or other commissioned surveyor, and must pass a qualifying examination.

Sanitary Arrangements.—The dry earth system is usually adopted, the soil being removed nightly and carried out to sea in the early morning by a hopper barge. Water is mostly obtained by collecting the rainfall from roofs into cisterns, or from wells or regular waterworks. For drinking purposes this water is afterwards filtered and boiled. Legislation is provided in various Public Health Ordinances for securing the health of the inhabitants generally: for regulating the width, and insuring the cleanliness of streets and public places; for controlling the erection of houses, buildings, and structures of all kinds; and for the suppression and abatement of nuisances. The pollution of rivers and streams is forbidden, washing clothes in them being one of the principal causes of fouling. It is needless to add that there are very stringent quarantine regulations, strictly enforced.

Building Materials.

Stone.—As previously stated, the building stones are rather limited. They are mostly greenstones and basalts, trachyte lava, coralline and dolomitic limestones, quartzites, sandstones, and porphyrites. The first are dark, close-grained, and compact, and very durable. The limestones are soft, apt to fly under the chisel, and more suitable for internal than external work. There are scarcely any proper quarries, and stone is mostly obtained by breaking the huge boulders found in river beds and valleys. Owing to the difficulty of working, and to avoid the unnecessary dressing, concrete blocks have been used as quoins, voussoirs, sills, and copings, in place of stone, in Government House, St. Lucia, as well as in recent military and other buildings.

Bricks and Tiles.—Military buildings in St. Lucia are mostly built of bricks imported from England. These are Gaults, hard and of a light-yellow colour, weighing 6lbs. each, and

absorbing $\frac{1}{10}$ th of their weight in water after twenty-four hours' immersion. Bricks should be sent by sailing ships, as these generally deliver them with much less breakage than steamers do, and the charge for freight is less. Many buildings are covered with red tiles, which are manufactured in Martinique and other places. But tiles are being superseded by galvanised iron, which gives a light appearance to the large buildings, especially as these are generally plastered and coloured on the outside.

Timber.—The most important West Indian woods are mahogany, green-heart, purple-heart, mora, angelin, balata, cedar, cocoa-nut, fustic, galba, gri-gri, groo-groo, iron-wood, laurel trees, lignum-vitæ, locust, logwood, mangol mangrove, mastic or gum tree, palatuvier, rosewood, sapodilla or naseberry, satinwood, simaruba or bitter ash, tamarind, torch wood, and yellow sanders. Of the foregoing mahogany, green-heart and balata are the most valuable for general purposes, and are most common. It would be too tedious to enumerate the characteristics and uses of all these woods, but those of mahogany and green-heart are well-known to us all.

It is very difficult to determine the classification of West Indian trees, as the names of perhaps the same tree vary in different islands, while the variations of patois titles also lead to much confusion. Specimens of some of these woods were sent to the Colonial and Indian Exhibition of 1886, and were then permanently housed in the Imperial Institute, where they may now be seen, as well as a

collection of specimens from all the British Colonies. Various compilations on West Indian timbers have been made, but these are not always easy to obtain. Gum and resin-yielding trees abound, and commercially valuable fibres may be stripped from quite a number of them. The barks, leaves and berries of others furnish well-known drugs, dyes and spices. White pine and pitch-pine are largely imported in sawn scantlings and boardings for all common work. The former comes from Canada, and the latter from Florida.

Attacks of Ants, Worms, &c.—With the exception of some of the bitter and hard woods, most of the timber is liable to the attacks of "white ants," commonly called woodlice, and this is especially the case with white pine and white oak. These ants do not attack sound wood, but only that which has first been permeated by the mycelium of a fungus, which has probably found entrance to its tissues at some point of injury, as, for example, any spot which is rendered damp by leakage from the roof or other cause. The insects thus follow the attack of the fungi, and as they eat away the heart an apparently healthy piece ultimately becomes nothing but a mere shell, which suddenly collapses without warning. To escape their depredations the builder must therefore first of all prevent the attack of the fungus by insisting upon conditions which will ensure perfect ventilation and dryness, which are well known to be antagonistic to the growth of this form of vegetable life. One cure is said to be a treatment of calomel, or of molasses and arsenic, but the pests often reappear. Kerosene is effective whilst its smell remains.

Seasoning.—Timber may be cut down at any time of the year, but it is preferable to do so during the dry season, and before the wet months commence (on the same principle as felling at home in the winter, when the sap is down), as the trees then become extra sappy with the absorption of the moisture. Native wood-cutters have an idea—which may be laughed at, but which is believed to be right—that if the trees are not felled during certain phases of the moon, the timber is almost certain to be attacked by woodworms or borers, and the months of February and March are generally preferred by them for hewing. Practically this has been found to be correct, and the period between three days after new moon and three days before full moon is the time selected. Trees should be squared and cut up immediately after felling, and the wood should not be worked for six months, or even a year, during which period it ought to be stacked and well covered in sheds, with a free circulation of air round the several pieces, otherwise it will warp and twist when used. Owing to the readiness with which it is attacked by ants, all wood in store,



STREET IN CASTRIES, ST. LUCIA.

especially unwrought spars, should be stowed away so as to admit of easy and frequent inspection; this liability to attack is greatly increased if the bark be left on.

Roofing Materials.—These are: shingles, tiles, galvanised iron, zinc, concrete, and vulcanite. Shingles are mostly used, as they are cheap and light. The best are Cypress and Wallaba, imported from Carolina and Demerara, respectively. They last about twenty-five years, but require frequent repair, and promote vegetable growth. The largest size is 22in. by 6in., and they are sometimes painted to imitate tiles. Tiles are made in Martinique, but they are heavy and absorptive, and are unsatisfactory unless bedded in mortar. I have seen a red tiled roof repeatedly covered with long grass, owing to the absorption of moisture in so humid a climate. Corrugated galvanised iron has proved by far the most satisfactory material. It is quick and easy to lay, and light, but must be well secured from hurricanes. It should be boarded and felted underneath, or this covering will be hot, and noisy from rain. Zinc has the same qualities as galvanised iron, but it expands and contracts considerably, and is not often employed.

Flat concrete roofs have proved very unsatisfactory owing to cracks repeatedly occurring. The reason appears to be the very rapid change of temperature, caused by brilliant sunshine being frequently followed, without any transition, by torrents of rain. Vulcanite roofing has been tried as an experiment in St. Lucia, and as it is flat it minimises the resistance to the wind. So far it has been very satisfactory, and is being further adopted. It is supplied by an Irish firm from Belfast. Slates are rarely employed, and they suffer much from breakage in transit. Thatch is only resorted to on the lowest class of negro huts.

Metals are imported, and I am not aware of any West Indian foundries.

Paints, varnishes, &c., are all imported. R. Gay and Co.'s "Impenetrable" paint has been extensively used on military buildings in St. Lucia, and has the advantage of being sent out ready mixed for use. But it rubs off in dust and powder within a very short period of application, from exposure to the sun. Torbay paint behaves in a very similar manner, and in fact most paints perish rapidly when employed externally. They likewise become sticky from the combination of hot and damp atmospheres. The experiment has been tried of sanding over external painting to protect it from heat, a mode of work that has been adopted in America. Pitch and asphalt can be obtained from the famous Pitch Lake in Trinidad, which is more than a hundred acres in extent, and a mineral tar comes from Barbados. Native sulphur can be picked up at the various sulphur springs, and pumice is likewise to be found. The majority of things purchased locally are inferior and expensive, and this is especially so with ironmongery, roofing iron, &c., which are of very flimsy make; glass is particularly dear. It may be said that the islands generally possess good resources in building materials, which require developing, but for this capital and enterprise are necessary, which do not seem to be forthcoming on account of the poverty of the inhabitants since the decline of the sugar industry. Let us hope that brighter times are coming for these islands of romance, which long ago stirred the imagination of the great Columbus and his long train of succeeding adventurers, but which now stand as deserted outposts on the wider rim of our advancing Empire.

South Library, Liverpool.—There is every probability that the erection of the promised South Library, Liverpool, will be proceeded with before long. Operations were postponed some time ago owing to lack of funds at the disposal of the Library Committee, but after a good deal of consideration a reduction in the cost of the proposed building has been effected. The city surveyor has now been instructed to prepare new plans for a library, the expenditure on which is not exceed £12,500.

STENCILLING TOOLS AND THEIR APPLICATION.

IN studying stencilled work it must be remembered that connecting and supplementary lines are a very essential part of the design. Connecting lines are better executed with a flat fitch or lining tool and straight edge than by the lining pencil, unless the lines are curved and irregular or are broken in short lengths by stops, or are curved or irregular in shape, when they may either be cut in the stencil pattern or done by specially-cut stencil lines of the exact curve or shape required. In lining with the fitch and straight edge, a good lining fitch or tool and a perfectly straight-edged lath are obviously necessary. Some scene painters and decorators prefer a long hair fitch, so that it will hold a larger modicum of colour, thus enabling the painter to run a long stretch with one dip of colour; but others prefer a short hair fitch. The long hair fitch is a useful tool, but requires great skill in order to keep the line of one uniform thickness throughout, and the slightest inequality of pressure will cause the brush to spread, thus rendering the line irregular; for if the extreme ends of the bristles are used without direct pressure the line will be of the same thickness at the end of the tool. The fitch should be held by the extreme end of the handle, so that the pulsation will not cause it to waver, as it may do if held too tightly, the pulse controlling the motion of the fitch along the straight edge. A good lining fitch will form throughout a line of exactly the same width as the width of the end of the brush. Such a fitch should be fixed in tin, secured in the ordinary way to a flat wooden or round handle, the bristles extending from the tin about $\frac{3}{4}$ in. The bristles should be close and compact and firm in the body, so that they will not spread to any appreciable extent except when pressed very hard. A tool of this kind will run a line of the exact width, or nearly so, of the thickness of the bristles it contains. In use we require to have them of different widths and thicknesses to run lines from $\frac{1}{16}$ in. to $\frac{1}{2}$ in. in width. When lines of more than that width are required it is best to run two lines on the outside edges of the width of the line or band required, and to fill up the space between with a fitch or other tool. With a good tool of this description, filled with colour and laid with its side against the straight edge, with the ends of the bristles touching the wall or ceiling, it only requires to be kept steady and drawn carefully along to form a perfectly straight line of uniform thickness throughout. Both on the walls and ceilings chalk lines should always be struck as a guide to place the straight edge to avoid mistakes. The colours to be used in lining with a fitch should be so mixed as to work freely; thick colours, besides not running freely, will not leave a sharp cut line. Use thin colour, either in water or oil. In lining, it is best to draw the lining tool along the straight edge with a quick and steady motion, avoiding the pulsative motion before mentioned, when the line will be truer than if it is drawn with a slow graduated motion. The straight edge should be from 2in. to 3in. wide, and about $\frac{1}{2}$ in. thick (if very long, a trifle thicker), both edges being bevelled to about $\frac{1}{4}$ in. in thickness. The most useful length is about 3ft., as it can be held by the workman with one hand while he uses the fitch with the other. The straight edge should be wiped frequently. Fitch lining and pencil lining differ in the fact that in running light coloured lines on a dark ground the pencil will leave a much heavier and more solid body of colour than is possible with the fitch, but for lining on walls and ceilings the fitch is decidedly the better tool. Lining pencils differ from all other pencils in having a square end, being made with hair considerably longer than any other kinds. Those not having a straight edge and used for striping are generally about 2 $\frac{1}{2}$ in. long in the hair and of various thicknesses. Sable hair, of which the best pencils are made, is obtained from a species of marten, but it differs from the marten hair proper in having a strong spring and fine soft point.

Cheap sable pencils are usually made of sable and marten hair mixed, or sable and dyed camel hair. The red sable is obtained from a different animal. It is a much stronger hair than the others, but being less pliable is not so reliable for making good pencils. It is, however, of great service in manipulating heavy pigments, such as white lead, vermilion, &c. Red sable is obtained from Russia and Siberia. The high price of sable pencils arises from the fact that it is only the hair on the tails of the animals which can be used for the manufacture of pencils. For running lines with a straight edge the best hog-hair bristles are indispensable, but ox hair makes a good pencil for most purposes. In stencilling a short brush is best and cleanest. W. N. B.

"THE BUILDER."

Who's sent for when the pipes are "bust,"
Or when a crack lets in the dust,
And tell him come at once he must?

The Builder!

Who on the roof tops has to get
To find out wherein comes the "wet,"
And finds it's but a jug upset?

The Builder!

Who's blamed about the copper flue
(The bricks blown out by Poll and Sue
Don't count), and told his work won't do?

The Builder!

From church on Sabbath morn who goes
To meekly settle cooking woes,
And show them how the "damper" goes?

The Builder!

Who sets a drain all "spick and span,"
Is told, "your drain's a fraud my man,"
Then finds a boot-brush down the pan?

The Builder!

And if the parlour door won't fit,
And folks in comfort cannot sit,
Who's called in "just to ease a bit"?

The Builder!

Who must not sleep by night or day,
But close attention always pay,
Is told for thanks he's "in the way"?

The Builder!

And when he's done his best to please
And dares to claim a well-earned ease,
Is frowned at when he asks for fees?

The Builder!

The only respite he can crave,
The rest and quiet of the grave;
For him a meed of pity save—

The Builder!

G. D.

Proposed Baths for Rotherham.—The Town Council of Rotherham propose to borrow £2,000 for improving their public baths. An enquiry has been held.

Canklow Mission Church, Rotherham.—This new building consists of a nave only, 80ft. by 36ft., with a temporary vestry and parish room at the east end. When completed, there will be in addition a chancel, north and south aisles, organ chamber, and vestry. The architect is Mr. E. Isle Hubbard, M.S.A., of Rotherham, and the cost up to the present has been £1,850. Mr. W. H. Trehern, of Parkgate, is the general contractor, and Messrs. W. Truswell and Son, of Sheffield, have had charge of the heating arrangements.

Edinburgh Architectural Association.—The Edinburgh Architectural Association recently visited Ravenscraig, St. Serf's Tower, and Dysart House, by permission of Mr. Michael B. Nairne. The party drove first to Ravenscraig, when Mr. J. A. R. Inglis, A.R.I.B.A., in describing the castle, said that, built in 1460, its plan was of much interest, and that, unlike many similar Scottish buildings of the period, the name of its builder, the date of erection, and even the cost of much of the material were still on record. The members then walked to St. Serf's Tower, when Mr. Inglis pointed out that the north aisle had been wholly sacrificed to form the new road.

Views and Reviews.

GAS, WATER, AND ELECTRIC LIGHTING.

Mr. Lawrence Duckworth has produced a very handy little volume on the Law relating to Gas, Water, and Electric Lighting, so far as it affects consumers. We cannot lay too great a stress on the importance of having a knowledge, such as this book affords, of the Law relating to these burning questions of the day, so constantly before the public in municipal and private affairs. The amount of useless litigation over these questions, due to inadequate knowledge of the most simple outline of the Law, is immense, and it reflects, therefore, considerable credit upon Mr. Effingham Wilson, the publisher, that he has sought to remedy this source of worry and loss by providing a series of cheap hand-books upon various sides of the Law, such as this one gives. The usefulness of the book is further enhanced by particulars of the authorised rates of charges for water supplied by the different metropolitan water companies. Reference has also been made to the Electric Lighting (Clauses) Act, 1899, and a good index is provided.

"The Consumer's Handbook of the Law Relating to Gas, Water, and Electric Lighting." By Lawrence Duckworth, Barrister-at-Law. London: Effingham Wilson, Royal Exchange, E.C. 1s. 6d. nett.

LONDON BUILDING ACT APPEALS.

This book is written with but one object, to enable an intending applicant or, say, his architect or surveyor, wishing to exercise his rights of appeal to the Tribunal to do so personally without employing counsel, solicitor, or agent, and no doubt there are many who will find the information given of the greatest use to them, as everyone is delighted to escape legal fees if it is in any way possible to do so. The Tribunal constituted under the London Council (General Powers) Act of 1890 consisted of three members, severally appointed by the London County Council, the Council of the Royal Institute of British Architects, and the Council of the Surveyors' Institution. This Tribunal gave such satisfaction in working that it was decided to continue it, with certain alterations and with extended powers, under the London Building Act of 1894, and the gentlemen who now represent it are Mr. Arthur Cates, chairman (appointed by the Council of the Royal Institute); Mr. John Wornham Penfold (appointed by the Council of the Surveyors' Institution); and Mr. Alfred Arthur Hudson, barrister-at-law (appointed by a Secretary of State). The author has dealt with the matter in a most practical and lucid manner, which, considering his position as clerk of the Tribunal, is only to be expected. Nevertheless, we have here a compact book which will be much valued by those applicants who desire to use their powers without the aid of a legal gentleman, though the latter, of course, can hardly be expected to regard it with enthusiasm.

"The Tribunal of Appeal under the London Building Act." By Charles H. Love. London: P. S. King and Son, 2 and 4, Great Smith Street, Westminster. Price 3s. 6d. nett.

ST. PAUL'S CATHEDRAL.

This volume, like the former numbers of the series, is a handy little guide book, and we presume that that is its only aim. This volume is perhaps more disappointing to architectural students than others of the same series have been, for although there is given a good deal of what is generally known about Wren and his great work, fifty-four pages out of the 148 are devoted to Old St. Paul's—interesting matter in its way but purely antiquarian. The consequence of this is that the matter relating to the present cathedral is not by any means so full as it could have been with advantage—and we are not now speaking from the architect's point of view, but generally. Perhaps it is too much to expect any ordinary clergyman to treat a book on an architectural subject architecturally and give us something new on the subject, still less to give any valuable original

criticism, and it must in fairness be recognised that there are popular handbooks in which a modicum of architectural lore is all that can be looked for. The illustrations to the volume cannot, of course, be expected to be of great value, owing to their small size, but this is not anything against the book, for it would have served its purpose as a guide-book almost as well without them. There are a few short accounts of the monuments in addition to those of greater length on the building itself, but the greater number of these memorials are merely catalogued, which is, of course, purely ridiculous in a book of this character, for the information can be obtained more easily from the monuments themselves as one is going through the cathedral. Unless some interesting narrative or criticism can be given these notices of monuments had better be left out, and reserved to large works on the subject that may be consulted as catalogues. Again, the appendix containing lists of bishops and deans is of little general interest. The book is a cheap one, and will, perhaps, be of use to country and foreign visitors who require a convenient guide to the points of interest.

Bell's Cathedral Series: "The Cathedral Church of Saint Paul: An Account of the Old and New Buildings, with a short historical sketch." By the Rev. Arthur Dimock, M.A. London: George Bell and Sons, York Street, Covent Garden, W.C. 1s. 6d.

STEAM LAUNDRIES.

In this little book it is only the first part, dealing with construction, that is of special interest to the architect, and though the information given savours somewhat of the layman, it is good so far as it goes. The remainder of the book, that is to say, nine-tenths of it, describes the various washing machines, ironing machines, and other laundry appliances, and supplies much that would be useful to a prospective manager of one of these establishments. As the most important considerations, the author places first the proximity of labour, then the water supply, next the coal supply, and then the disposal of sewage, and points out that a niggardliness in first cost will entail much inconvenience and prove to be a false policy. The laundry should also be near the gas supply, on account of the number of standard machines that are heated by this means, electrically-heated irons and ironing machines not having yet proved a commercial success, however clean and handy a power electricity may be. To show that the author does not approach his subject exactly from the standpoint of an architect, we may cite the following passage, which speaks for itself:—"The nature of the ground upon which the laundry is to be built is of some, but not very great importance, so long as a good foundation can be obtained without excessive cost. A site running along a railway line is not advisable, as the vibration of the trains injures the foundations of the building and the seatings of the boilers; but if any of the principal items before noted are available on such a site, for example, 'a good water supply,' this position need not be considered detrimental to the site, but great care should be taken in laying out the foundations, and an extra thickness of brickwork should be given to the boiler seatings." The author points out that architects, when designing the roof of a single-storey building, should not place the principal beams more than 8ft. to 10ft. apart, on account of the shafts which these beams usually have to support. The case given for the drain-layer is rather difficult and amusing. No straight length of drain is to be more than 20ft. without an inspection chamber, because "it is no unusual thing for bundles of towels, body linen, and lumps of waste, coal and coke, scrubbing brushes, and pieces of wood to find their way into the laundry drain, in spite of each drain having a grate on it," and "laundry employees as a rule are not very particular as to what they throw down the w.c." In this case, we think it is the employees and the gratings that want looking after, though we are at one with the author in demanding the best drainage work for laundry purposes. The book is produced in a handy form and includes a small

plan of a model laundry "to wash £100 per week, family work," which should be useful to some of our readers.

"The Steam Laundry: its Construction, Equipment and Management." By John Taylor, A.I.M.E., &c. London: Heywood and Co., Ltd., 153, Holborn. Price 7s. 6d.

Correspondence.

Mitchell's Building Construction.

To the Editor of THE BUILDERS' JOURNAL.
LONDON.

SIR,—The criticism by A. R. J. on page 155 of your issue for April 4th is most excellent. It is a pity there are not more of such reviews. In my short career I have had occasion to dive into many of these so-called text-books to prepare for several examinations, and I have mostly bewailed the absence of the whys and the wherefores of the particular subject treated; and I must avow that to enable me to be successful in those many examinations I had to obtain the whys and the wherefores from other sources than text-books. May I ask, cannot we have these whys and wherefores embodied in the text-books, and obtain practical experience as well as theoretical?—Yours faithfully,
F. F.

Building Stones Around Liverpool.

To the Editor of THE BUILDERS' JOURNAL.
36, DALE STREET, LIVERPOOL.

SIR,—My attention has been drawn to an article in your issue for April 18th last on "Building Stones Around Liverpool," by Ernest C. Aldridge. On page 187 he states that he is afraid we will have to speak of Stourton in a past tense. You will observe from the circulars I am sending you that I have taken over the Stourton Hill Quarries from Messrs. J. D. and W. Bulcock for a term of years. It is my intention to re-lay the railroad from the quarries to the L. and N. W. and G. W. joint railways, and to forward through Port Sunlight and Bromborough Pool. I think Mr. Aldridge will find that if this is done I shall be able to make a greater output than has been done by any of the previous lessees.—Yours truly,
J. SIMPSON.

A new Congregational Church at Olton is being built from the designs of Mr. John P. Osborn, of Birmingham. It is situated in Kineton Road, and Mr. J. A. Turton, of Birmingham, is the builder. The style of the buildings, which will be of red brick, with stone dressings, is Perpendicular Gothic, and the block will consist of chancel and vestries, with a commodious schoolroom, already erected at the rear of the church. Accommodation will be provided for 350 worshippers, and the cost of the work will be about £3,500.

The Temple of Karnak in Danger of Demolition.—At the conclusion of an article on "Archaeological Discoveries in Egypt, 1899-1900," which appeared recently in the "Times," the Cairo correspondent refers to the fall of the nine columns in the Temple of Karnak last year and says: "Two of these columns fell against the pylon and dangerously unsettled that huge mass of masonry, the whole of which now threatens to topple over inwards and knock down like nine-pins the famous rows of columns of the hypostyle hall. Every precaution that can be devised to avert this catastrophe is being taken by M. Maspero and his staff, whose workmen, by the erection of a scaffolding between the north and south sides of the pylon, and supports of iron, wood, and earth, are endeavouring to hold the masonry in its place. The critical period will be during the Nile flood this year, whose subsidence may cause dangerous movement of the soil. After that a attempt will be made to take down the wall of the affected angle of the pylon and rebuild tier by tier; but unless and until this can be done the European public must be prepared to hear of an unparalleled disaster which no human science or effort may be able to avert."



ARCADE OF ST. AGATHA'S ABBEY, EASBY.

ARCHITECTURAL STUDIES IN YORKSHIRE.*

BY G. BERTRAM BULMER, F.R.I.B.A.

THE theme of the present paper is not a great one, nor one that commands the grand, the majestic, or the colossal, but a more simple one dealing with little bits and details of architectural interest in Yorkshire, details that have a peculiar charm of their own which is just as attractive as that of the larger works.

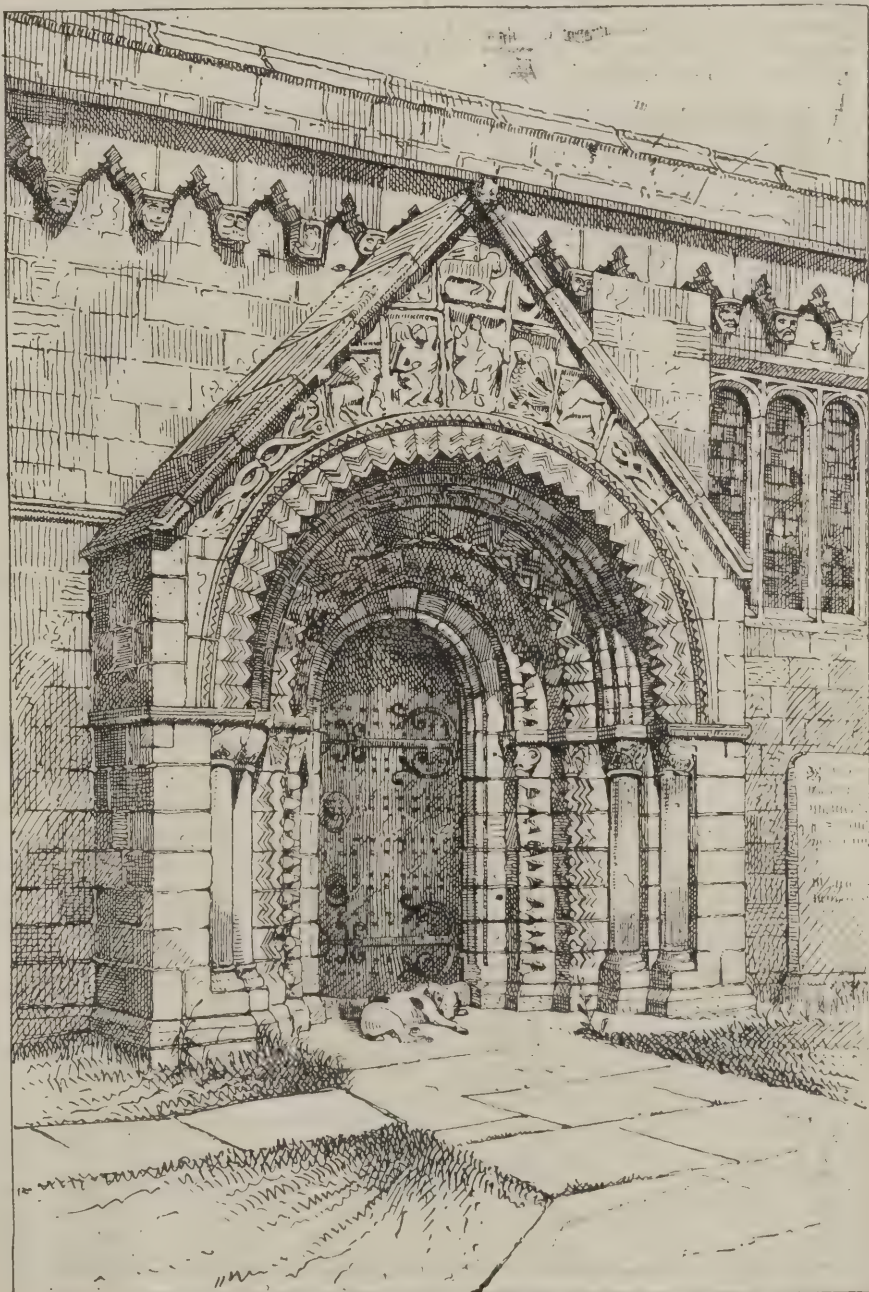
Porch of St. John's Church, Adel.—Adel is situated about six miles from Leeds. It derives its name from the Saxon "Ada," and was the site of a Roman station called Burgodunum, indications of which have been discovered from time to time. The existing church is a fine relic of the Norman period. The south porch, shown in the accompanying illustration, with the sculpture over the archway, is a splendid specimen of the art of that period. These sculptures, it may be noticed, are each on separate stones, wedged in or fitted to the irregular space formed by the gable and outer line of the arch, and not carved on the courses of masonry, a practice often followed in later and modern work. The interior shows a fine chancel arch of Norman work. The church was renovated by the late George Edmund Street, R.A. There is a dragon's head carved on the apex of the porch gable, with curious eyes of inlaid work. Some of the original narrow round-headed windows remain. The curious corbeling to the parapet is indicated in the drawing, as well as the flat pier or buttress usual to the period. The window shown is a modern insertion. The dimensions of the porch are: Width, 14ft. 6in.; height to eaves, 10ft.; and height to apex of gable, 18ft. 6in.

Arcade of St. Agatha's Abbey, Easby.—St. Agatha's Abbey is situated near the River Swale, which winds round the base of the massive cliff on which stands the famous Castle of Richmond. It is distant about one mile from the town, and rises with varied outline from the undulating meadows which slope gently towards the edge of the river. The abbey was erected about 1152 and is a specimen of Early English architecture retaining the Norman method of interlacing the arches. By this treatment the two single lights (which were once the windows of the abbot's house) are made an imposing centre to a handsome façade, and the careful student will not fail to observe the clever treatment of the interlaced arches, which are struck from varying centres to suit the narrower width of the two blank arches. There is also to be noticed a peculiarity in the

string mould above the arcade, which is worked out of the solid course of ashlar, and not in a thin course of stone as usual. The

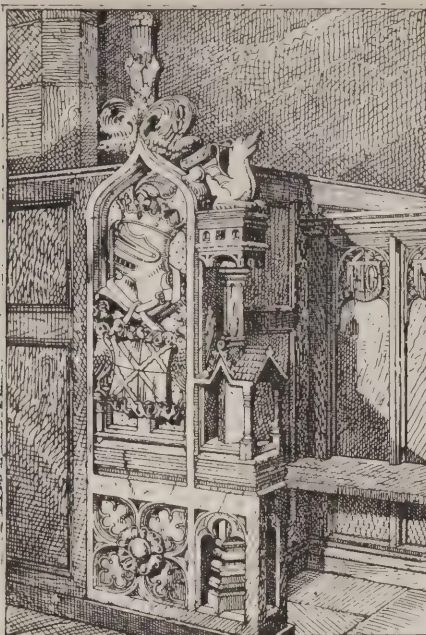
circular caps and bases are an indication of the period, and the style of the carving, imitated from natural foliage, displays the guiding hand and eye of the skilled workman. The remaining portions of the building are very varied in design, even in cases where the work is evidently of the same period; and parts may be selected which are in themselves excellent examples of the diversified treatment of which our ancient English architecture is susceptible. The abbey gate-house is a pleasing specimen; adjoining it is the village church. The dimensions of the arcade illustrated are: Width between shafts of centre lights, 4ft. 7in.; width between side compartments, 4ft.; height from sill to springing line of arch, 4ft. 9½in.; depth of caps, 10½in.; and thickness of wall, 3ft. 3in.

Stall End at Holy Trinity Church, Wensley.—Not far from Leyburn Station (which is on a branch line of the North-Eastern Railway) stands the Church of the Holy Trinity in the charming village of Wensley. The building is of early date. Among the interesting objects in its interior is the bench or stall end illustrated on this page. It is a well-executed and carefully-designed piece of work, and was saved from destruction on the dissolution of Jervaulx Abbey. The large heraldic panel bears the arms of Scrope and Tiptoft, with helm and two Cornish choughs as supporters. The stall fronts shown in the drawing are dated 1527. The visitor to Wensleydale should not omit to see this church and its fine remains of



PORCH OF ST. JOHN'S CHURCH, ADEL.

* Portion of a paper read before the York Architectural Society.



STALL END AT HOLY TRINITY CHURCH,
WENSLEY.

ecclesiastical woodwork. The following are the dimensions of the stall end illustrated: Width across widest part, 1ft. 4½ in.; width across narrow part, 11 in.; height, 4ft. 10½ in.;

height to underside of dragon, 3ft. 3½ in.; height to eaves of gablet, 2ft. The thickness of the wood is 4 in.

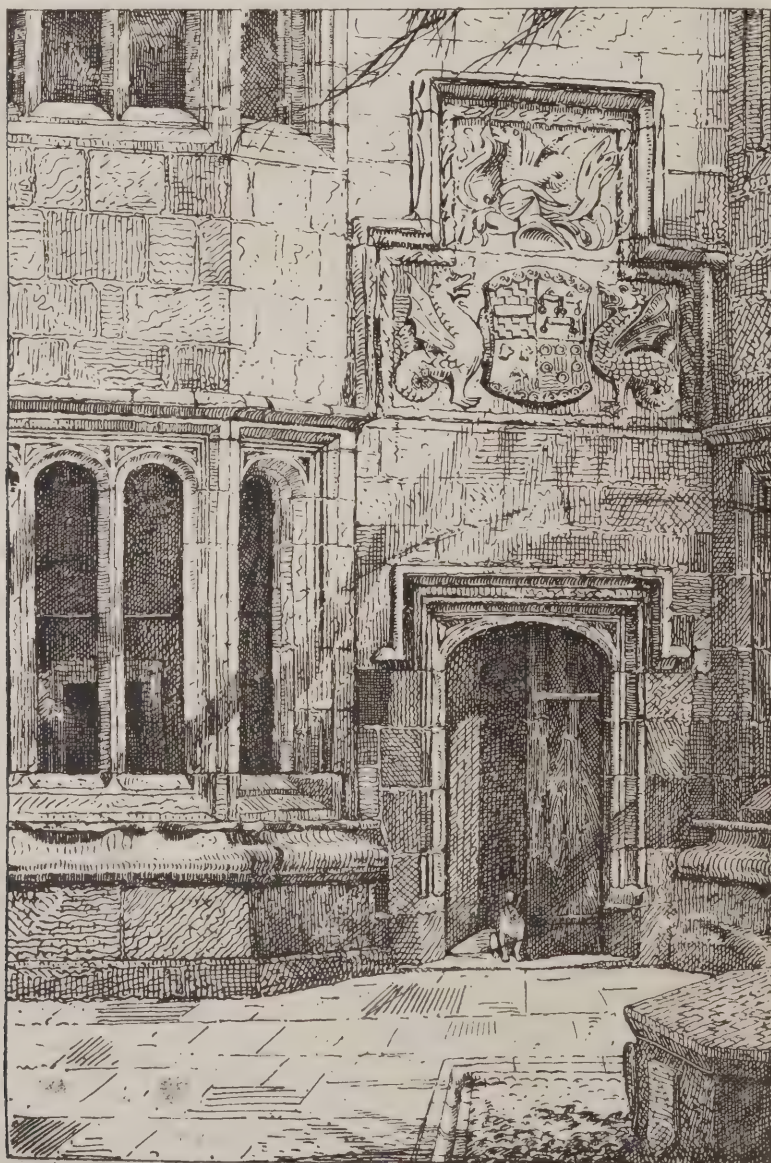
Rood-loft at St. Michael's Church, Hubberholme.—Hubberholme may be approached from Skipton by post-cart, or from Settle or Ribbleshead Stations on foot, a distance of fourteen miles. This rood-loft, singing loft, or music gallery is over the screen dividing the nave from the chancel, but is apparently not exactly in its original position, as modern alterations have wiped out all trace of the stair or other approach which it must formerly have possessed, and there is no mode of access to it at present. The surfaces of oak, which are bare, betray no signs of stain or varnish, and colour decoration remains in many parts. The tracery panels are tinted a mustard yellow, and the uprights between are of a dull red, with white margins, enriched with black scrolls and dots. The top rail has traces of colour in a pattern of black and yellow lines. The bottom rail has a black scroll pattern on the oak ground, with lines of black and yellow; on the bottom edge is a bead mould of dull red, with hollows of black, and the soffit is white. The floor is decayed, and the woodwork of the gallery has a more ancient appearance than the woodwork of the screen. The dimensions are: Height of screen, 8ft. 6 in.; height of gallery front, 2ft. 6 in.; width of gallery inside, 5ft. 10 in.

The Courtyard at The Castle, Skipton.—This castle was built by Robert de Romille, and is quadrangular on plan, with several circular towers for purpose of defence. It was many times besieged in the Wars of the Roses, and in the reign of Charles the First it was held against the Parliamentarians for three years,

but ultimately surrendered. In 1649 the Countess of Pembroke restored it and made it habitable, and it is now occupied by the steward of the Earl of Thanet. The present entrance is a comparatively modern building, having an archway between two circular towers, and the portion above the arch is finished with a parapet formed of the letters "Des-or-mais." Internally, many portions of the building are in ruin. The accompanying illustration shows a doorway above which is a large bas-relief of the arms of Clifford. Its dimensions are: Height of door, 6ft. 6 in.; height to panel, 10ft. 6 in.; height to top of panel, 16ft. 6 in.; width of door, 3ft. 3 in.; width between windows, 7ft.; width of bay windows, 12ft. 6 in.; width of window lights, 1ft.



ROOD LOFT AT ST. MICHAEL'S CHURCH,
HUBBERHOLME.



DOORWAY AT THE CASTLE, SKIPTON.

Principal Entrance to King James's Palace, York—Now known as the "Wolverforce School for the Blind," in Bootham, York, this building was erected by James the First as a Royal abode for his use when travelling northward. The present building is a more or less heterogeneous mass of various dates and styles, but the entrance illustrated is a fine example of the free classic treatment of King James's time. There are two doorways of this design opening into the entrance court, one only, however, with the Royal arms, and in the interior are some excellent details of the period, notably a fine arched stone fireplace, with carved vou-soirs and a plaster ceiling and frieze. In examining the design of the principal entrance the reader will not fail to notice its delicacy of detail, and the richness of the carefully studied ornament which covers its surface. The caryatides at the side are supposed to be representative of the king and his consort. The panels on the dado beneath bear the Royal initials, "J. R.," under a crown, and the spandrels of the arch have been enriched with well-modelled symbolic sculpture. The whole is surmounted by a bas-relief of the national arms; the "supporters" are holding erect two bannerets. The ground-work of the panel is diversified with an enrichment of the rose, shamrock and thistle. The dimensions are: Width of frontispiece, 7ft.; width of door-opening, 4ft. 6 in.; width of heraldic panel, 6ft. 9 in.; height of pedestal, 3ft. 3 in.; height to spring of arch, 6ft. 6 in.; height of entablature, 9ft. 4 in.; height to top of entablature, 11ft. 4 in.; height to top of heraldic panels, 15ft. 6 in.

Chimney-piece at the Swan Inn, Knottingley.—In the main street of Knottingley is the Swan Inn, an ancient residence of a branch of the Ingram family. It is now in the possession of



PRINCIPAL ENTRANCE TO KING JAMES'S PALACE,
YORK.

Mr. Benjamin Atkinson, who resides in a portion of it, and by whose permission a reproduction is given of the finely-sculptured stone chimney-piece which has decorated a large room on the chamber floor, now divided into smaller apartments. In some of the rooms the old mantels still remain, as well as a considerable amount of wainscot panelling. The dimensions are as follows: Width of chimney-piece, 7ft. 10in.; width of fireplace, 5ft. 10in.; height of fireplace from floor, 4ft. 7in.; height from floor to top of cornice, 7ft. 3in.; height to top of sculptured panel from floor, 10ft. 6in.; height of room, 13ft. 4in.

Entrance Gates to the Old Hall, Knowsthorpe.—The village of Knowsthorpe, or Knostrop, situated about $1\frac{1}{2}$ miles to the east of Leeds, has an old Hall which was once the mansion of the Baynes family, who possessed it up to 1843. The gateway shown in the drawing is immediately opposite the front entrance, and is a picturesque, carefully-studied feature, with its flight of semi-circular steps, massive square piers, and its unique "chairs" of solid stonework, exhibiting an independence of thought on the part of the designer worthy of the present day. At one side of the building is to be seen the remains of a handsome porch, with open arches on two sides, and panels in the haunches bearing shields; right and left of the entrance arch are two rudely-carved statues on pedestals; in consequence of frequent alterations, however, it is difficult to ascertain its exact relationship to the main building. The dimensions are: Width between piers, 8ft.; width of pier, 4ft. 4in.; height of pier, 8ft. 7in.; height of plinth, 1ft. 5in.

FIRE TESTS WITH PARTITIONS.

THE British Fire Prevention Committee send us Nos. 44 and 47 of their publications, dealing with partition tests. An account is given in the former of a fire test with a partition made by the Mural and Decorations Syndicate, Limited, having an area of about 75ft. super. and a width of 10ft. Seven weeks (winter) were allowed for construction and drying. Whilst the heat was being applied a portion of the setting coat on the fire side of the partition fell, and hair cracks, from which steam escaped, appeared from time to time on the passage side of the partition. On the application of water to the fire side of the partition a considerable portion of the setting coat was washed off. The temperature of the outside face of the partition during the latter part of the test was too hot to bear the hand, although not sufficient to

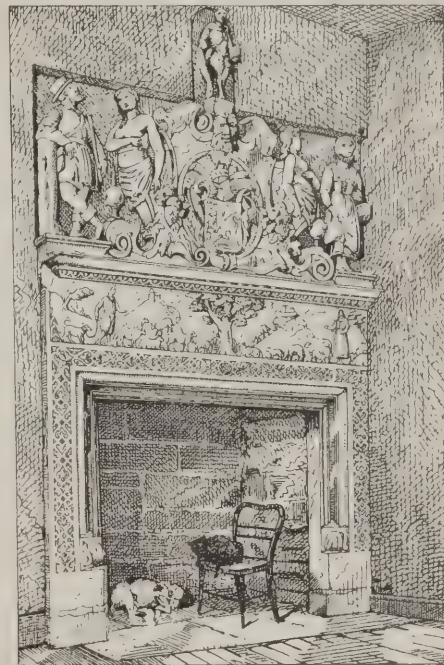
ignite a vesta by contact. The fire did not pass through the partition, though the highest temperature recorded was 2,130 deg. F. The test lasted an hour and a quarter. Publication No. 47 gives the result of a fire test with a matchboarded partition filled with silicate cotton (slag wool) made by Messrs. D. Anderson and Son, Ltd., and Messrs. J. C. Broadbent and Co., Ltd., both of London. The partition had an area of 75ft. super., with a width of 10ft., and the object was to record the effect of a fire of forty-five minutes' duration commencing at 300 deg. F. and increasing to 1,800 deg. F., followed by the application of water for one minute on the outside and two minutes on the inside. The following is a summary of what happened:—The internal boarding was completely destroyed. The slag wool was fused and blackened on the inside face and a narrow strip down the side of each stud was blackened; it was damp from the water applied, but otherwise good and clean. The studs were burned about $\frac{3}{4}$ in. deep on the inner edge, the wire-netting was sound and not loose, and the studs were sound, white and clean for a distance of $2\frac{3}{4}$ in. from the outer edge. The outside boarding was sound, white and clean, both on the fire and passage side. The fire did not pass through the partition. The temperature on the face of the partition next to the passage remained the same during the test. The following are the arrangements of the British Fire Prevention Committee for May. To-day the tests will comprise partition tests between matchboarded partitions of non-flammable wood and ordinary wood. Other tests during the month will include investigations with a "Mack" partition by Messrs. King and Co., and with another partition by the Fireproof Partition Syndicate, as well as several tests with doors and a fire blind; whilst a number of private experiments will also be undertaken. Reports will shortly be issued on a floor of wood joists with concrete filling and a match-boarded ceiling; and one of wood joists with concrete filling and plaster ceiling on expanded metal lathing. Reports will also be issued on a test with a floor by the Mural and Decorations Syndicate, Limited, some fire screens by Mr. R. Bugge, and a number of doors constructed in three thicknesses of deal, oak and teak. It will thus be seen that the Committee's programme this month includes a considerable amount of work. Regarding the question of obtaining some international basis for tests with fire-resisting materials with a view to arriving at comparative results, there are still considerable difficulties in the way. Mr. Edwin O. Sachs, the Chairman of the Committee, who has been inspecting, by invitation, the new Government fire-testing grounds at Berlin, finds that the proposed assimilation of the testing arrangements is the more difficult as the plant and methods of the Committee

are so far in advance of anything to be found on the Continent, where this form of research work is still carried on in a very incomplete and primitive manner. It is, however, to be hoped that in some of the technical details, such as measurements, recording temperatures, &c., the metric system and the centigrade system can be shortly adopted by the Committee, together with the usual figuring in feet and Fahrenheit.

SURVEYORS' INSTITUTION.

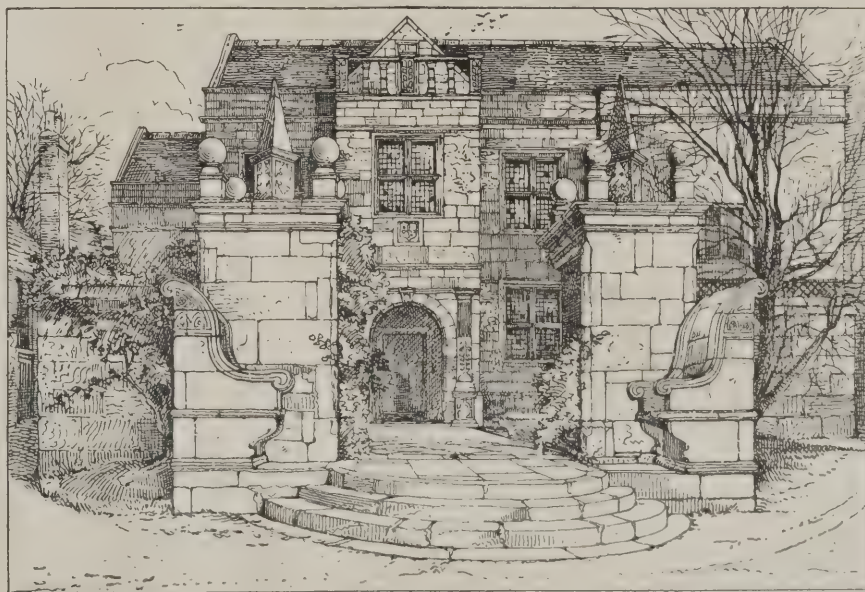
ANNUAL CONFERENCE AT LEEDS.

ON Wednesday last the annual conference of the members of the Surveyors' Institution was opened in the Council Chamber of the Leeds Town Hall. There were present



CHIMNEYPIECE AT THE SWAN INN, KNOTTINGLEY.

more than 100 members from various parts of the country. This Institution was incorporated by Royal Charter in 1881, and now has a membership of 3,100 Fellows, Associates and students, so that it is one of the largest professional societies in the United Kingdom. It has been invested with powers under various London Building Acts for many years past,



ENTRANCE GATES TO THE OLD HALL, KNOWSTHORPE.

and its leading members are frequently called upon to discharge important public functions in connection with Royal Commissions and Committees of both Houses of Parliament. Besides this members of the Institution are responsible for the management of nearly all the landed estates in England, as well as most of the great urban estates throughout the country. The Institution has erected a new building in Great George Street, Westminster, at a cost of nearly £40,000. Prior to three years ago its meetings were all held in London, but it was then determined to pay occasional visits to the provinces, and already successful gatherings have taken place at Manchester and Bristol.

An admirable feature of last week's proceedings was an exhibition in one of the rooms of the Town Hall of old plans, books, photographs, &c., relating to old Leeds, and showing the development of the city. It was arranged by Mr. Hepper, whose paper suggested the appropriateness of such an exhibition, and it was arranged so that the visitors might form some idea not only of the Leeds of the present but of the past. The Thoresby illustrated volume, recently purchased by the Leeds Corporation for £175, was on view. There were also some very interesting views of old Leeds, plans of buildings long since demolished, two views showing the elevation of both sides of Boar Lane before any street improvements were effected; a valuable book of plans of the Free School, Leeds, dated 1792; and views of Kirkstall Abbey, the old parish church, and other features of Leeds.

In welcoming the delegates, the Lord Mayor (Alderman Gordon) said the Corporation of Leeds recognised the importance of the profession in which their visitors sought employment. They knew from their own local experience how complicated and intricate the work often was with which surveyors had to deal. They also knew that, although the profession was an accurate one when it came to measurements and questions of that description, in many respects it was vastly a matter of opinion, especially when it came to a question of value. They knew how vastly surveyors could differ in their views upon the question of value, but they were also aware it was quite impossible for a man to rise to eminence in his profession unless he possessed a very strong will and a very high character, so that he might be unmoved in his views either by fear, favour, or even by fees. They also felt that probably no city in the kingdom of similar size was doing so much for surveyors as Leeds. People said several surveyors if they were not making their fortunes ought to be, by reason of the vast enterprises in which Leeds was engaged. Personally he was pleased and proud to welcome the members of the Institution, and hoped their gathering would be an immense success. The president returned thanks to the Lord Mayor, as representing the Corporation, and the business of the meeting was then commenced.

Old and New Leeds.

Mr. John Hepper, of Leeds, contributed the first paper, in which he dealt with the past and present history of Leeds. He pointed out that Leeds was described in the Domesday Book as having been a farming village in 1080, and then traced the various charters and gradual progress of Leeds down to 1893, when Queen Victoria, by her Royal charter, conferred upon the borough the title of "city." The superficial area of the city is now 21,572 acres, and the circumference thirty-one miles. "The city is almost entirely freehold," said Mr. Hepper, "and the instances of copyhold and leasehold and of freehold ground rents are so infrequent that we are sometimes in danger of overlooking them, and so unpopular are they that building societies and mortgagees are chary of lending upon them, and buyers discount them." Mr. Hepper next placed before his hearers some statistics to enable them to obtain a grasp of the progress and possibilities of the city, and enumerated the undertakings which the Council had under its control.

The rapid growth of the city had rendered necessary street improvements, transformation

of localities, and rebuilding to an extent previously unknown in its history. So far as street improvements were concerned, it was satisfactory to know that the plan of buying a greater depth than was actually required for dedication to the public user had had successful results; indeed, in one case, Vicar Lane, where the width had been increased from about 29ft. average to 75ft., the surplus land resold had almost recouped the great cost of the improvement, and a similar result seemed likely to accrue in other instances, without taking into account the enhanced ratable value which the improvements would occasion. The city improvements had in recent years been undertaken on a bold scale and with despatch, a matter of great importance to public convenience, minimising cost, ensuring larger returns of capital, enabling a quicker settlement of localities, and the earlier creation of ratable value. He had witnessed all the public improvements in Leeds for nearly fifty years—some executed in a tardy, niggardly spirit, others without a just appreciation of the immense potentialities of the city, and latterly with an enterprise and breadth of view which were conferring great benefit, with the result that business premises everywhere were being enhanced in appearance and generally in value, and were becoming more consistent with the requirements of a wealthier and better-educated population than that of former days. Of all the methods he had seen, he most approved, and heartily commended, the vigorous and broad-minded method now obtaining in the city, which he hoped would be continued on even grander lines for some years to come.

Back-to-Back Houses.

Dealing next with the subject of sanitation, Mr. Hepper showed the immense amount of work which had been done in this direction of recent years, and explained that the Leeds Corporation was now engaged in acquiring the property of an insanitary area of about 16½ acres on the east side of the city, which would probably cost £200,000 more than could be realised by resale, unless more than was at present intended were devoted to business uses. It was occupied by a population of about 3,800, for 2,000 of which it was expected provision would have to be made on the cleared area. The Board of Trade regulations did not allow back-to-back houses, which were so prevalent and popular in Leeds; blocks in flats on the London principle were contrary to Yorkshire habits and predilections. Upon the land at such prices as the Corporation was likely to want, and with such conditions as it would probably impose, speculators would not be able profitably to build; philanthropists did not seem inclined to venture on the field; the Corporation was unwilling to engage in a great building scheme; investors objected to public money competing with private capital; the people displaced were mostly poor and unable to pay the increased rents which would be required, and groaned at the hardship of being removed from their old haunts and contiguity to their spheres of work; and it was foreseen that the overcrowding of neighbouring districts would create other areas as insanitary as that from which they would be expelled. "I hope," said Mr. Hepper, "our Corporation will see how necessary it is in framing future by-laws to insist that streets in which back-to-back houses are to be built shall be more than 36ft. wide, or, better still, that they shall be 36ft. wide with a 6ft. area on each side, so that the houses shall be further apart and have more privacy than they possess when abutting upon the causeway. Of course, the effect of this will be not so much to increase the rent as to reduce the price which the landowner will receive for his land; and it seems to me that the increment of value to the land caused by the increase of population should not go altogether to the land-owner, but that some of it should be shared by the people in the form of increased open space, so that they may have more sun, more air, more room for movement, and so have better and more healthy conditions of life." The

death-rate for 1899, Mr. Hepper pointed out, was 19.1 per 1,000, or less than Edinburgh, London, Birmingham, Sheffield, Manchester, Liverpool, Glasgow, or Dublin. That which did so much to ensure the stability of Leeds and its freedom from sudden collapses of trade and employment was the large number and variety of influential manufactures which it possessed, and which kept all families more or less employed.

The cordial thanks of the members were passed to Mr. Hepper on the motion of Mr. W. J. Clutton, York, seconded by Mr. A. M. Fowler, Manchester.

Later in the day Mr. Hepper said many members of the Institution had spoken to him on the subject of the back-to-back houses in Leeds. Unless an Act of Parliament compelled them to withdraw them, he believed they would be compelled by the people to go on building them, as they were useful, healthy and cheap. Mr. Fowler said he was thoroughly convinced that the artisans' dwellings as now constructed in London and elsewhere were a great mistake. They were rookeries in the strict sense of the word. Having been engineer for Leeds for several years, he was thoroughly acquainted with back-to-back houses, and he was strongly of opinion that these were much preferable to the so-called artisans' dwellings elsewhere.

Nuisances and Sewage Purification.

Mr. Arnold Statham, barrister-at-law, contributed an exhaustive paper on "Nuisances and Noxious Trades." It was a résumé of the law relating to those manufacturing industries and trade operations which either vitiate the atmosphere, disturb the serenity, pollute the water supply, or otherwise invade the right of private individuals or the public to live or co-exist under conditions where they shall be free from molestation or annoyance. Whatever pride or interest they as professional men took in the interests of their respective clients who were seeking to expand their manufactories, they must not lose sight of the fact that they had other larger interests to consider, namely, to safeguard as far as possible the towns and cities of the United Kingdom from becoming little hells upon earth, and to the best of their humble ability to preserve untainted currents of air in public thoroughfares and unpolluted currents of water in urban watercourses, bearing in mind that if they were too freely sacrificed in the interests of the private manufacturer the British manufacturing products, of which they were all so justly proud, might be a curse instead of a blessing to humanity.

In the course of a discussion on the paper, the question of the purification of sewage came under review. The treatment of trade effluents, Mr. A. M. Fowler (Manchester) said, was becoming a very serious question. There were twenty methods of treatment which would purify sewage, but the cost of purifying and making the effluents passable into the river, to satisfy any Rivers Board, was so enormous in its cost, as Leeds found out in their early troubles, that it was simply beyond all reasonable means to carry such work out. Mr. J. H. Hanson (Huddersfield) said £300,000 was the very least sum that it would cost the manufacturers of the West Riding who were not connected with public sewers to deal with their trade waters. If the question of dealing with trade waters was to be carried out, it should be dealt with, first of all, through the law. All should be put upon one footing. If the manufacturer was to deal with his own trade waters, his mill premises, as such, ought not to be rated for treatment of domestic sewage. Mr. T. Blashill (London) said if a man could not get rid of his refuse, then it struck him that the site was not a fit one for a factory. But what were chemists for, if they were not able to devise some means of dealing with those waste products.

The members of the Institution and friends dined at the Hôtel Métropole, Leeds, on Wednesday evening. Nearly 120 gentlemen sat down to dinner, the president (Mr. Rickman) occupying the chair. The next day was devoted to excursions in the neighbourhood of Leeds.

ARCHITECTURAL ASSOCIATION.

COLOUR DECORATION.

By J. D. CRACE AND GERALD MOIRA.

A MEETING of the Architectural Association was held last Friday evening at No. 9, Conduit Street, Regent Street, W.; Mr. G. H. Fellowes Prynne, president, in the chair. The minutes having been read and confirmed, Mr. G. B. Carvill, hon. secretary, announced that the annual soirée of the association would be held on Thursday evening, May 10th, at 8 p.m., for which a play has been specially written by Mr. F. Dare Clapham, and music composed by Mr. Leonard Butler. The programme will also be given on the Wednesday evening for the special benefit of ladies. On his proposition a vote of thanks was then accorded to Mr. A. T. Bolton for presenting a bound copy of his paper on "The Dome as the Basis of an Architectural System," recently delivered before the association. Mr. Carvill then announced that the first meeting of the water-colour class would be held on May 12th, and that Mr. Forbes had been appointed successor to Mr. A. W. Weedon, who was unable to continue his position. Mr. J. D. Crace then read his paper on

"The Coloured Interior Decoration of Architecture."

as follows:—

When so large a subject has to be dealt with in so short a time it is necessary to select some one section or principle to which particular attention may be called, and in looking round to make such selection I find one upon which I have often laid stress before and which cannot be too often insisted on with regard to decoration. I mean its subservient relation to architecture; its duty of respect to the architecture it is to adorn.

Let us for a time put aside the average dwelling room with no features that can be classed as architecture. Colour can do much for it—can give it character, can give it proportion, and can make it lovely or unlovely; but the result after all is a matter which concerns only the owner and the decorator. They can try what experiments they are inclined to, or what fads they fancy, and they do no man wrong. If the result pleases their friends they have their reward; and if it does not they will be satisfied that this is due to want of culture in their friends.

But it is quite another matter if the building under treatment has other than domestic functions, or has received from its author some definite architectural expression—that is to say, bears some stamp of another man's thought.

When this is the case, it becomes the decorators' business to study that evidence of thought and to endeavour to enhance its value. In pursuit of this intention he has first to try to ascertain what lines or what features are really of the first importance in expressing structure and proportion. If he can find these he must never lose sight of them, for these are the features or lines with which nothing else must interfere.

However varied or however rich the decorative detail of the whole may be the final result of the coloured decoration of architecture should be lucidity of expression, and this is only to be obtained by allowing the due proportion of expression to each feature which has a place in the ideal scheme of structure. If such expression is really in due proportion, repose—that great element of beauty in all art, but most of all in architecture—is produced. For what is it that produces "repose" in art? It is the immediate satisfying of the mind's instinctive search for something; and in architecture that something is stability. Now, this stability which the eye and mind demand is not one of which scientific or practical evidence need be forthcoming. It is that of which an instantaneous conviction is borne to the mind by the continuity of suggested lines of strength in reasonable proportion to each other. And it is these lines of suggested strength which colour may do so

much to explain or to confuse. Nor is the explanation altogether so simple a matter. It is as harmful to over-accentuate any of them as to confuse them. The expression of each part must be relative. To exceed the due proportion of expression in any part is to disturb the balance. Blatant expression in colour is like shouting one's own language in the ear of a foreigner; it does not make things clear, and probably gives offence.

Another point which it is desirable to mention, because it is the subject of frequent misconception, is that lucidity of expression does not depend on the use or omission of detail. The most elaborate and delicate detail is compatible with perfect lucidity.

The one necessary thing in using ornamental detail is to take care that it does not interfere with the main scheme. Used with proper skill and knowledge, it should be able to assist materially in its development. On the one hand, it should assist to explain surface or to accentuate line; on the other, it is invaluable as a means of lowering tone and softening effect, without sacrificing purity of the individual colours. Further, it facilitates harmony by giving the opportunity of small "recalls" of colour—of importing, as it were, fragments of one colour into the field of another—one of the most essential conditions of complete success in harmony. This should be carefully noticed by students in examining the pictures of the best masters.

I have said just now that it is the first function of colour, when used in architecture, to assist in producing that "repose" which results from an instantaneous impression of stability. This means that the eye must be encouraged to recognise at a glance such features and proportions as indicate or suggest well-balanced structure, whether that be expressed in the architecture or not; for it must, and in fact does, often happen that structure is not outwardly expressed—at any rate, not to the extent that allows instantaneous conviction of its sufficiency. A flat ceiling is one example. In such cases colour steps in and suggests constructive lines of some sort, which, though they have possibly no relation to the actual invisible structure, suffice to satisfy the eye in a moment as to the balance and stability of the surface, on which it must otherwise have hesitated in doubt. Moreover, lines of some kind are indispensable to assist the eye and mind to travel over the surface of the building; and, whether by mouldings or by colour, it is the disposition of these lines upon which depends the impression of "repose." If simple, and suggesting the relation of one part to another, the eye grasps the meaning quickly and is at rest.

But if the lines expressed (whether by mouldings or colours) are inconsequent, purposeless, and without proportion, the eye becomes puzzled, restless, and dissatisfied. The eye demands a clear path, not a broken wilderness.

To touch on another branch of decoration, and a most important one, the use of pictorial art in connection with architecture. We are accustomed to hear the most transcendental talk over the idealism or symbolism of the subjects to be painted in this or that building. I am far from underrating the value of this quality in art. What I want to point out is that it is the building, as a whole, if it be a worthy building, which first has to be considered, and that it is the form, the tone, and the treatment or style that affect the building, not the "subject." For the harmony of the building it would not matter a jot whether the subject were "Cupid and Psyche" or "Moses in the Bulrushes."

But it may ruin the whole effect if the picture is in a badly proportioned panel, painted in too cold a key, or executed in a style too crude or too complicated for its surroundings. Not one in fifty of even very able English painters has been trained to look at art from this side, or to consider the necessity of keeping the whole tone of his own work in relation to the decorative result in the whole building. Look at the paintings in the Royal Exchange. Not one, or perhaps but one, is in tone with its surroundings; nor any two in tone with each other. I regret this

the more because I first suggested, in a report to the Gresham Committee dated October 9th, 1890, that these panels should be painted historically.

Undoubtedly painting in the studio instead of on the wall itself tends to enlarge the risk of want of harmony with the whole surroundings, though it certainly presents some advantages. To take one disadvantage alone, the difference of light; this is almost certain to be different in degree and quality, and more than likely to differ in direction. This being the case, there is only too much probability of a general difference of tone between the picture and its surroundings when finally brought together. Even the design or cartoon of the picture—colour apart—will often need some change, when tried on the spot, from what seemed satisfactory when viewed in the studio.

The coloured bands or margins, which in coloured decoration are so valuable, are more than ever useful when pictorial treatment is adopted in the panels. They afford the means of connecting the more forcible colouring of the picture panels with the rest of the work, and so preventing them from appearing as detached patches.

Apart from this function, they greatly facilitate and direct the passage of the spectator's eye over the whole work, and aid that prompt grasp of form and surface which I have already spoken of as inducing the sense of repose.

The matters which I have mentioned are practically "axioms" which are absolutely independent of style or fashion. The building may be ecclesiastical or secular, Classic or Gothic, simple or elaborate; it matters not. The general principles which should guide decoration are true for all. And it is this main point which it seems useful now to insist upon, because we find so many persons ready to substitute particular arrangements of colour or pattern for any real knowledge of art or principles.

Be sure of this, that just as sound principles are independent of style or fashion, of any special harmonies of colour or of any character of design, so no design, no arrangement of colour, no excellence of skill, can really enhance the value of the architect's work if the decorator does not carefully think out and follow those immutable principles which, whilst they allow of an infinite variety of treatment, have for their base the expression of the repose and stability of the architecture.

Mr. Gerald Moira then read his paper on

"Colour Decoration"

as follows:—In dealing with a subject like the one we have before us this evening is a very difficult matter, as there is always so much to say and equally so little. Decoration is a thing about which everybody from the very earliest period has had something to say, and, therefore, as there is nothing new under the sun, I am afraid nothing new will come from me; but, as you have kindly asked me to speak on this subject, I will endeavour to give you my ideas. There are one or two points I would like to put forward, especially about outside decoration, and more so about outside colour decoration, about which I feel very strongly.

Firstly, let us take the Greek work. I do not think it is necessary to go further back. Take the Parthenon, for instance; it was a great marble edifice. Now, the frieze round the building was in low relief and—I think I am right in saying—was coloured. And I fancy the capitals of the columns were also coloured or gilded, and that colour as an enrichment was, no doubt, used on other parts of the external ornament. If I knew more about the building, or as much as some of us present, I could tell you exactly what parts were coloured; but that is not what I want to point out at present. What I want to point out and what we want to know is—was the result when new a success? I say when new, as we all know what a delightful painter Old Time was and always will be. Well, was the result a success when new? I think it must have been, and principally why I think so is because of the glorious climate and perpetual sunshine, and that perpetual sunshine and clear atmos-

phere wants colour. You may be surprised to hear me say this, but I feel I am right. Why? Because the shadows are so cold, the sunlight so dazzlingly white, that there is practically nothing of variety of colour in the noon-day heat. As we all know it is only when we feel hot in the sunshine that we know it is hot, by that I mean the more dazzling the sun the more deadly white the building becomes and the more uncompromisingly blue the shadows are; the sky one expanse of pitiless azure, the trees in the landscape one uniform blackish green, and even the earth a parched grey monotony. Well, all this is cold in colour, is it not? and the old Greeks took this into consideration and recognised it, and I am certain that is why they put colour on their buildings. Do not think I am running down the sunshine; I am only trying to point out that where there is no cloud (and therefore scarcely any atmosphere) the less colour the landscape has. That is my reason for believing that the buildings required colour. If we come a little further north we see less colour on buildings, and when we do see it, it is not quite successful. Why? Because nature has more colour in it, and, therefore, a white building with a zinc roof comes as a relief. In the latitudes that embrace the greater part of Northern Europe we do not find so much colour outside buildings; but, again, higher up towards the Arctic, your coloured wooden reliefs have been and I believe are still used. This is no doubt for the same reason, only in this case it is the perpetual snow that requires relief. In medieval Italy, Spain, Portugal, Southern France, and even in Southern Germany, we find a great deal of colour, especially in Italy and the Peninsular. I attribute this to the Church as much as to the sun. The reason I do so is because the Roman Catholic Church has so many holidays and feast days. On those days the people come out in their best garments, and these best garments were always bright, nay, brilliant in colour, and then the art world of the day found that grey and white buildings did not suit so much bright colour, they wanted a note of it somewhere, and it was this that led to such buildings as Venice possesses, and to some in Spain and Portugal that one could no doubt name. Even in the present day the people of those countries do not look amiss because they are still in a great measure a holiday-making people in an everlasting sunshine. We in work-a-day England do not get much sun and precious few holidays, and therefore do very little else but work. Our wearing apparel naturally becomes natural tint, and as such we could not stand our buildings being highly coloured, they would be out of key. It is the commonplace things that have their effect even on art. It is the man's mode of living that rules his household, and a nation's mode of life that rules everything around it, and it is necessity that rules the world. Had I said this in the beginning, I need not have troubled you all this time. These are my ideas why colour was used on the outside of buildings. The inside is different and is therefore more uniform all over the world; that is, the same amount of colour and same treatment can be used in the north as in the south. Of course, one finds places that ought to have been decorated left undecorated, and *vice versa*; but this sort of thing is sometimes unavoidable. Take a church, for instance, that has been decorated in this period and in that from time to time. It looks well—at least, it hangs together. I believe it is dirt that does it, because it is the most dangerous thing to put a new painting or mosaic in an old building. Why? Because they are out of tone. The former has the best chance, as it will go down, but will not look well for at least half a century. The latter, like all materials that have a glazed surface, has no chance in a stone building, old or new, and therefore ought not to be used. It will remain blatant and bright for hundreds of years when the stonework around it is becoming yearly more toned down and mellowed. When we see an old church abroad that perhaps may have the roof painted some hundred or so years after it was built the man who painted the roof made no attempt to keep his work in the same style as the architecture, but to-day it looks

well, taking for granted that the man who painted it was an artist. Now that brings us to two questions: the first one is, "What is Style?"—the second, "Do we work for to-day or for the time to come?" Firstly, to my mind too much is thought and said about style to-day. An architect comes to the painter and says I have a Gothic building and want some Gothic decoration for such and such a part. Now that seems to me ridiculous; to start with, I don't believe the building is Gothic. We live in the twentieth century and when Gothic art flourished railway trains and quick-firing guns and a thousand and one other things did not exist, and all these things help to influence the Gothic building of to-day. It may be exactly right in proportion, even down to the very smallest moulding, but it won't have the spirit of the Gothic times. This is not quite the architect's fault, though, perhaps, he ought not to have tried it; the fault lies as much with the men he is obliged to employ, the stonemason and so on who only work with their hands, and whose one idea is either the dinner-bell or the bell for knocking off work. And it is the influence of the present-day times that prevents an architect being able to procure from the painter a Gothic decoration. The painter may be able to paint knights on horseback and saints in a way that perhaps to-day look mediæval, but in fifty or eighty years' time they will say, "There is one of those queer things painted at the end of the last century, which in those days was supposed to be quite mediæval," and to us now what was built sixty years ago and looked upon as pure Gothic, to-day we call it Early Wesleyan or Victorian and Albert, and there is every reason that in another sixty to-day's Gothic will be put down to to-day. So to my mind it makes very little difference in painting a decoration for the said Gothic building whether you dress your figures in the costume of the Gothic period or in the clothes of to-day. In fact, to-day's garments would be more honest and more in keeping with it, and if such a work be done by an artist it will keep its place and will look well for ever. I think the last words answer the second question. I have only said Gothic for the sake of a name.

I have just returned from Paris and while I was there I went to most of their public buildings that have been so lavishly decorated with great frescoes within the last thirty years, and I came still more to the conclusion that they have had one great decorator, Puvis de Chavannes. He was a man who thoroughly understood that his decoration was to be part of the building it was to be placed in, and he always regarded the wall he was dealing with as the flat surface it is, and in this way preserved the architectural features and the proportions of the buildings; and these are the points that go make a great artist. The rest of the men who have covered large walls in such buildings as the Panthéon and the Hôtel de Ville have had nothing else in their minds, it seems, but to do a *tour de force*, a thing that in some instances it is impossible to be in the same room with. One I remember very well; it was a ceiling with rolling clouds and blue sky, on which some cavaliers and ladies are dancing a minuet or something of the sort. To begin with, I should say it would be a most uncomfortable thing to dance on, leaving alone that it entirely throws the proportion of the room out, as it makes the ceiling an indefinite height. This is the style of work that makes architects very chary of giving decorative work, and goes to show that a man may be a very good portrait painter or landscape man, who has no idea of the qualities that go to make a decorator.

There also seems to me to be a common misunderstanding as to what is true decorative painting. The art of painting embraces three distinct styles: firstly, the purely pictorial or the representation of Nature in colour—realism; secondly, the decorative picture; and lastly, decoration pure and simple. We need not deal with the first or realistic style, but I think we should arrive at a definite comprehension of the difference between the two latter forms of painting, for I imagine that it is owing to this lack of understanding that much so-called decoration at the present time fails

in its intention. A picture is complete in itself, and has nothing whatever to do with its surroundings. This is proven by the fact that it is possible, with no worse effect than a bad headache, for one to go to an exhibition where some hundreds of pictures are jumbled together, each having not the slightest relation to each other, but no one has ever suggested that such treatment of a wall as employed, say at the Royal Academy, is a successful form of decoration. It is necessary for one to lay stress on this point to prove what I wish. The decorative picture, however good in itself, remains always a picture. And, as if by instinct, the artist feels himself when painting it more trammelled than he ought to be when engaged in decorative art. He takes, perhaps, an historical scene, and treats it in however peculiar a way he may feel. He may be a Burne-Jones, Rossetti, Ford Maddox Brown, Leighton, or any similar stylist, but the mere fact of his having to deal with a piece of canvas having no ultimate relation to any particular site, instinctive conventions, be he conscious of them or not, will cramp his power and for ever prevent his creating other than a decoratively pictorial effect, however fine in its way. It is, I conceive, hardly possible for a picture painter to break these bounds, try as he may (the only notable instances are perhaps the finest Japanese prints), and this, I feel, shows that a picture can never be successfully hung except on an easel, apart from anything else, and not placed to ornament a wall which it was never designed to decorate. A true decoration should be absolutely a decoration, and nothing else. That is to say, it should be the most appropriate enrichment of the space requiring it. That is what I meant when I said what I have of Puvis de Chavannes' work. Hence it is agreed that in *method* as well as in intention there should be little or nothing in common between the picture and the applied decoration. The best realism is that which, amongst other things, suggests atmosphere. In mural decoration the absence of any sense of atmosphere is its finest quality. There should be neither atmosphere nor any forced perspective to mar the effect of flatness, which should be the first aim. The wall is a constructional flat plane, and nothing should be done on it which will create an illusion that it is not flat. One has seen decorations painted on walls which give the idea that the painter had objected to the wall, and desired that the weight overhead should be supported by a hole through which one saw some scene or landscape, and this error was found by the analytical eye to be more or less entirely due to the introduction of atmospheric and perspective effects in the painting. Such work could never be accepted as true decoration, and the bare wall in these cases would better satisfy the eye of anyone who had the slightest education in architecture and its demands than any such painting, however clever in paint technique or strong in colour and subject. The Sistine Chapel painting, by Michel Angelo, certainly one of the finest accepted works of its kind, loses greatly, to my mind, by the introduction of violent perspectives and shadows, which destroy the flatness of the spaces, and cast a blemish on otherwise perfect work.

The decorative painter should find himself less trammelled than in any other branch of the art, yet one seldom finds that the opportunities afforded are made use of or even realised at all. He has, of course, certain rules and conditions to conform to, such as uniform scale, etc., but in the main he is a free agent. While he should conform to the laws of nature, he is not bound by nature in the photographic sense. The old sculptors and painters went to nature for their foliage, and yet each one in translation impressed his own individuality to a very marked extent, so that we find a large number of carvings and decorations by different men of, say, the vine-leaf, yet while each one is totally different in treatment to the next, they are all undoubtedly vine leaves. And here let me remark that in every case the spirit of the age—the date of the work—is indelibly marked. So it should be now and in the future. The decoration, no matter what subject or however

treated, should be contemporary in feeling. It is quite a false idea to imagine the twentieth century artist can possibly feel and work with the intention of the fifteenth-century painter. We live under entirely different conditions, and we must work in sincerity to our feelings if we wish to do honest and convincing work. I hope I have expressed what I mean by the few limitations only which are set to the decorative painter. For the rest, he has an entirely free hand to evolve beautiful shapes and use the richest schemes of colour, while his choice of subjects is seldom limited by conditions which render them impossible for the pictorial painter to translate into paint. A good design, first of all, should be the object of the decorator—fine line, happy placing, big masses, and equally fine empty spaces. Then the treatment of his figures, draperies, and accessories with beautiful outlines. For outlines form one of the chief difficulties and are one of the most important features in decoration. The realist may lose an outline here and there to a mere impression, but the decorative painter has to deal with hard-and-fast outlines, which the absence of atmosphere insists on. It is in this respect that I quarrel with what I term the pictorial decorators, and there are unfortunately many such who are engaged on buildings at this present time. Another error I think is to imagine that a richer decorative effect is obtainable by the employment of an intense, high-pitched key of colour. There can only be one really successful scheme for each one particular place, and it is the first object of the artist to discover what that is, what style of work, what scale of drawing, and what scheme and key of colour. This is where careful study and training as much as natural instincts will tell. For the rest it is not for me to say anything of my own methods; I doubt if I could. I have contented myself with dealing as far as possible with the main question as to what will and what will not lead to a successful decorative effect.

A discussion followed.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

R.I.B.A. Preliminary Examinations.

BRECHIN CASTLE.—THE DUFFER writes: "What is the usual age for those entering for the probationers' examination at the R.I.B.A.?"

The R.I.B.A. preliminary examination is usually taken at the first opportunity after entering an architect's office—that is, between sixteen and eighteen years of age.

G. A. T. M.

Book on Clerks of Works' Duties.

No Address—? PRETORIA.—KRUGER writes: "Kindly let me know the name of any book or book's dealing in a clear and concise manner with the duties of a clerk of works."

"The Conduct of Building Work and the Duties of a Clerk of Works," by J. Leaning, price 2s., will give our correspondent all the particulars he wishes on this subject. It can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C.

Sun-Prints.

IPSWICH.—TRANSPARENT writes: "I shall be glad to know of a simple, inexpensive and practical method of making an inked-in drawing transparent for sun-printing; also of another method for bringing back the drawing to its original state without injury."

It is necessary to make a tracing of the drawing, using a perfectly black ink and a transparent blue (not yellow) tinted tracing

paper. There is no method known of rendering opaque drawing paper sufficiently transparent for the purpose.

G. A. T. M.

French Architectural Journals.

OLDHAM.—X. writes: "I should be glad if you would name the best French architectural journal, either weekly or monthly, for an English architect to obtain."

LONDON, S.E.—R. A. writes: "I should feel much obliged if you could give me any information as to the best and most reliable French-English and English-French technical dictionary for the building trade, etc., and of whom it may be obtained."

The answer given on page 116 of our issue for March 21st last will, we think, give both of our correspondents the information they seek.

Mild Steel Stanchions.

RICHMOND.—P. R. S. writes: "I should be greatly obliged if you would tell me how to calculate the strength of mild steel stanchions of H-section."

The catalogue issued by Messrs. Dorman, Long and Co., Ltd., Middlesbrough, gives, at pp. 143 and 144, sections of various built-up stanchions and a table of the strength of rolled joists used as stanchions. They can also be calculated by Gordon's formula, viz,

$$R_e = \frac{A r_c}{l + a \left(\frac{l}{d}\right)^2} \text{ where } R_e = \text{safe resistance to}$$

compression of the pillar in tons; A = area of cross section in square inches; r_c = safe resistance to compression of the material per square inch; l = length of pillar in inches; d = least diameter of the cross section; a = constant deduced from experiments on the actual breaking of long columns.

$$\text{Both ends fixed} \quad \dots \quad a = \frac{1}{2500}$$

$$\text{Do. rounded} \quad \dots \quad a = \frac{4}{2500}$$

$$\text{One end rounded, other fixed,} \quad a = \frac{1}{1000}$$

It is usual to calculate stanchions as having both ends fixed. HENRY ADAMS.

Whiting Falling off Ceilings.

STAFFORD.—F. E. AND SONS write: "What would you recommend to prevent whiting falling off ceilings? We believe that when the plastering was done, some four years ago, salt-water was used. The ceilings have been whitened three times, always being well washed off and first given one coat of strong preparation. The whiting commences to fall off after being done about eight weeks, and continues to do so until the ceilings are perfectly bare."

Doubtless the cause of the whiting falling off the ceilings is due to saline matter in the plasterwork. The most effectual remedy would be obtained by stripping the existing plaster, and replastering with carefully prepared coarse stuff and setting stuff, gauging both with good coarse plaster to save time in waiting for the various coats to dry. A quicker way is to use fibrous slabs, which are nailed on to the joists, and the surface finished then with a thin coat of gauged putty lime or setting stuff. Parian cement may also be used for the finishing coat. Finished face fibrous slabs may also be used on the joists, and, as indicated by their name, no setting coat is required. If they are carefully fixed, and the joints stopped, the surface can be distempered soon after the slabs are fixed. If it is undesirable to replaster the ceilings, wash them thoroughly, and after they are perfectly dry paper them with strong paper, or give them one coat of good oil paint, and then whitewash them in the ordinary way.

W. MILLAR.

Finishing Coloured Cement Work.

DUNDALK.—COLOUR writes: "I should be glad to have some information on finishing coloured cement work. It is specified to be brought smooth with a trowel in a finishing

coat about $\frac{3}{16}$ in. thick in imitation of red terra-cotta. I once saw a finishing coat evenly mottled with black particles and brought to a good polished surface. How can the mouldings and stop-chamfers, etc., be finished with this polished surface?"

Float the surface in the usual way, using the cement and aggregate in their natural colours, as colouring matter is too expensive if used for the whole thickness; besides, it has no effect on the final coat, technically termed the "fining." The colouring matter must be thoroughly mixed with the cement before gauging with water. The finer the colouring matter and the cement the finer the surface and uniformity of colour. Use metallic oxides for the colouring, earthy colours, like Venetian red and umber, soon fade and have an indefinite tint. The quantity of oxide to be added to the cement depends upon the strength of the oxide, as some are much stronger than others. Five per cent. of a strong oxide will impart a close resemblance of the desired colour to the fining coat, but a weak oxide will require from 10 to 15 per cent., and even 20 per cent. to obtain the same colour. Portland cements vary in their percentage of lime, and as an over-limed cement will require more oxide than an under-limed cement, therefore, in order to test the power of the oxide and the cement, it is a safe plan to try various proportions of colour and cement, and to gauge small parts, laying them on a smooth and impervious surface—such as glass—and when set and dry selecting those most suitable for the desired purpose. Some of the oxides range in colour from scarlet or Turkey red and gradually deepening to chocolate; so that a medium red oxide would be most suitable for the desired purpose. A black mottled surface may be obtained by gauging neat Portland cement, previously mixed with the black colouring matter, and then spreading or rolling the mass on a clean bench until about one-eighth thick, and when nearly set cutting the slab into small cubes, and allowing the whole to set. The coloured cubes are then mixed in due proportion with the coloured fining material, and then gauged and laid. Great care must be exercised in laying so that the cubes will not be broken, and also that they do not project beyond the finished line, otherwise if broken the mottled surface will be irregular, and if they project the trowelling off will be difficult. Another way is to first lay the red fining coat and then insert the black cubes by hand. In this case the cubes should be inserted while the stuff is quite stiff, but not set. This allows the both stuff, red and black, to be freely trowelled without fear of breaking the cubes. The trowelling must be carefully done, using little water, but simply wetting the trowel with a brush. Allow the work to stand until the external moisture has disappeared. Repeat this operation until the desired finish is obtained. Use matt cement, coloured as desired for running moulding, and if the running mould is cut true and smooth a fine finish will be obtained.

W. MILLAR.

Manchester Housing and Allotments Scheme.—A Local Government Board enquiry has been held into the application of the Manchester Corporation for power to borrow £36,000 to enable them to purchase 237 acres of land at Blackley for housing and allotment purposes.

Designs for Leeds Police Stations.—At a recent meeting of the Fire Brigade Sub-Committee of the Leeds Corporation the City Engineer (Mr. T. Hewson) stated that in view of the number of police stations that it was intended to erect in different districts of the city his staff could not give that personal attention to the work which he should like, and he suggested that plans should be obtained from outside architects. The Committee decided that in all future structures this course should be adopted. With regard to the Chapeltown and Dewsbury Road police stations, which will be the first to be proceeded with, it was resolved that competitive plans should be invited from Leeds architects.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"Blessed is the man who has found his work."

—CARLYLE.

Our Inset Sheets.

THE screen for Seal Church, near Sevenoaks, in Kent, was designed by Mr. C. R. Ashbee, of Chelsea. It was constructed at the Guild of Handicraft, Essex House, Bow, E., and is meant to serve as a screen for the ringers in the tower. There are ironwork bars in the centre, surmounted at the junctions of the tracery with gilded bosses, the bars holding a dull-green glass, made for the screen by Powell, of Whitefriars.—The doorway illustrated is the principal entrance to the offices of a large limited company having premises in Old Street, E.C. The brickwork is in dark red salt-glazed bricks, and the stone is Portland; between is a deep cove in copper gold. Mr. H. V. Lanchester, of London, W.C., is the architect, and the sculpture has been executed by Mr. H. C. Fehr. Some particulars of Shakespeare's House will be found on page 235.

Improving Liverpool.

AT the present moment numerous street improvement schemes are being contemplated in Liverpool—perhaps there never have been so many before. Undoubtedly the most important of them is that connected with the George's Dock, a project which includes the filling-up of the dock, the carrying out of vast improvements in the approaches to the riverside by the continuation of Brunswick Street and Water Street to the Pierhead, and the doing away with that fruitful source of obstruction to vehicular traffic, including the tramway service, namely, the swing bridge over the entrance to the dock. And while considering the dock project, there is another improvement which seems to go hand in hand with it, if the river front is to be given that commanding appearance which the majority of people will agree ought to be obtained. Reference is made to the clearing away of the Goree Piazzas, which, while being practically an eyesore, are a great obstruction to the street traffic along the line of docks. Until these are removed, the improvement effected within the last twenty years in putting back the boundary wall of St. Nicholas' Churchyard and the demolition of certain buildings on the west side of what was then Prison Weint, remains incomplete. Passing from the George's Dock scheme reference may be made to the numerous improvements which it is desired to effect in the central portions of the city by the widening of thoroughfares at points where in many cases they are so narrow as to be a serious obstruction, and in fact a danger, to vehicular traffic. One of these schemes, which is to cost the city something like £100,000, is the widening of Berry Street and Renshaw Street, to meet the needs of the electric tram system. Nine other street improvements, rendered necessary by the introduction of electric traction in connection with the tramways, are included in the Bill now before Parliament, which it is expected will receive the Royal Assent in the course of a couple of months. The expenditure authorised by the Act for the purchase of lands and for the execution of the improvements is £280,000, of which more than one-half, or £150,000, will be swallowed up in carrying out that most necessary work of widening Scotland Road. The other improvements are too numerous to mention here, but enough has been said to show what changes the Liverpool Corporation proposes to make.

Italian Restoration Work.

MR. CHARLES L. EASTLAKE, writing to the "Times," from Perugia, says: "Much has been said from time to time by English critics respecting the injudicious character of architectural restorations in Italy. A few instances, perhaps, have furnished grounds for complaint. But there are

many others in which the necessary work has been executed with the utmost skill and fidelity. I have lately had an opportunity of re-examining that beautiful little example of Italian Gothic, the church of Santa Maria della Spina, on the Lung'Arno at Pisa, which some years ago was taken down in a dilapidated state and re-erected at a higher level, in order to protect it from the damp resulting from its original position. The task must have been a difficult one, but it has been admirably carried out. Not only has the masonry of the walls been replaced stone by stone in its proper site, but every fragment of the old carved work has been preserved and built in where it should be, while such small features as had entirely perished have been reproduced with an accuracy which should satisfy the most fastidious antiquary. Having drawn and measured the façade with most of its details more than thirty years ago, I gladly bear testimony to the excellence of this 'restoration' in Italy."

Ayr Town Hall.

IT is now about two years and a half since the Ayr Town Hall was burned down, and as it has not yet been rebuilt, a correspondent writes to a contemporary urging that the work should be proceeded with at once. The Town Council appear to be about equally divided as to the wisdom of rebuilding the hall in the old place, which was on an upper storey above two tiers of police cells, or building it apart from the municipal buildings on an entirely new site. A competition for plans was arranged for, and the strictest conditions were laid down as to limit of cost. Besides, the councillors who favoured putting the hall back in the old place have publicly pledged themselves that on no account shall one penny more than £9,500 be spent. Unfortunately, the Council limited the competition to local men, and also overlooked that the cost of building work since the old hall was burned has increased quite 35 per cent, and what could have been done for £10,000 two years ago will now cost about £14,000. Of the local architects, all but one withdrew from the competition, for one reason or another, but chiefly because the very stringent conditions as to cost foreshadowed the likelihood of the hall not being built at this time. The solitary plan was submitted to Messrs. Douglas, Hunter and Whitson, measurers, Glasgow, who estimated that to complete the buildings in a creditable manner would cost from £13,000 to £14,000. "Where now are the perplexed Town Council?" asks the correspondent. "They bring the only competitor and the measurer together, and try to talk the cost down, so that at any rate the building may be commenced even supposing the outlay ends at £15,000 and a shaky Common Good has to find the money." In reference to this letter another correspondent makes the suggestion that a smaller hall should be built on part of the same site, the remainder of the site being roofed in and used for municipal purposes.

A London Crypt.

AS has already been announced the crypt of St. John's, Clerkenwell, is to be restored. The crypt extends the whole length of the church, a plain building chiefly modern, but which stands upon the site of the choir of the church erected by the Knights of St. John of Jerusalem towards the end of the twelfth century. Of this building, however, little remains except the north and south walls and the fine crypt. The crypt is partly twelfth and partly thirteenth century work, and is the most important structure of its kind in London. It has been supposed that it formed the original church of the knights and was formerly above the ground level, but there are arguments against this theory. In the first place it has far more the proportions of a crypt than those of a church or chapel. The capitals of the columns or "responds" which support the vaulting are slightly below the level of the eye, which is very unusual in buildings erected above the ground level, and there does not seem to be any reason for supposing that the ground has risen to any remarkable extent in this neighbourhood. Fragments have also

been discovered of the bases of the upper building or church, which are of the same date (or nearly so) as the crypt itself. It is understood that the restoration will be strictly confined to necessary repairs, and that modern work will only be added where absolutely necessary. The upper church, as it now exists, is not interesting, and is mostly eighteenth and nineteenth century work. The nave has entirely disappeared.

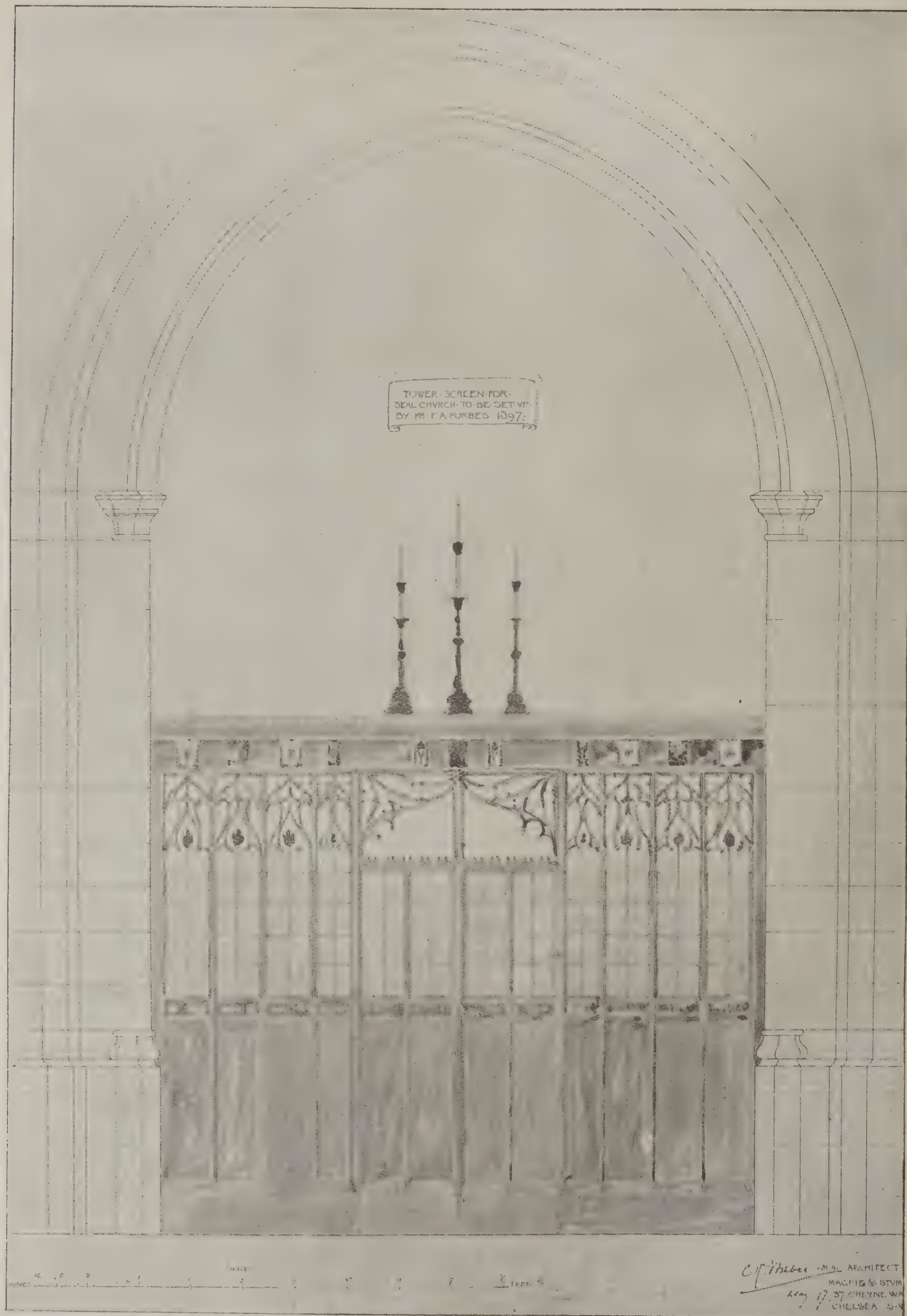
Fearn Abbey Church, N.B.

THE Abbey of Fearn, which has just been restored, is one of the few pre-Reformation edifices in the north still in regular use for public worship. Originally it was erected by monks of the Præ-Monstratensian Order. A colony of these migrated in 1236 from a place now known as Mid-Fearn, in the parish of Edderton, to the present site of the Abbey of Fearn. The earliest buildings erected by them were of clay, but in 1337 a movement was begun for the erection of new buildings, which were completed in 1372. Subsequently to that date, additions were made in the shape of an aisle, known as St. Michael's Aisle, remains of which, containing a recumbent figure in stone of Finlay Macfaed, Abbot of Fearn from 1442 to 1485, still exist, as well as two memorial chapels built at a later date, one on the north, the other on the south side of the main building. These two chapels, though now roofless, might at no great cost be restored. In 1771 it was found that the new church, as it was then called, had become unsafe owing to the state of the roof and walls, and the heritors decided to use the material available from it for the repair of the old church. Since 1773 it has been the church of the parish. The present restoration has been undertaken in order to make the building more comfortable for the worshippers, and also with the view of restoring, as far as possible, the original architectural features of the church.

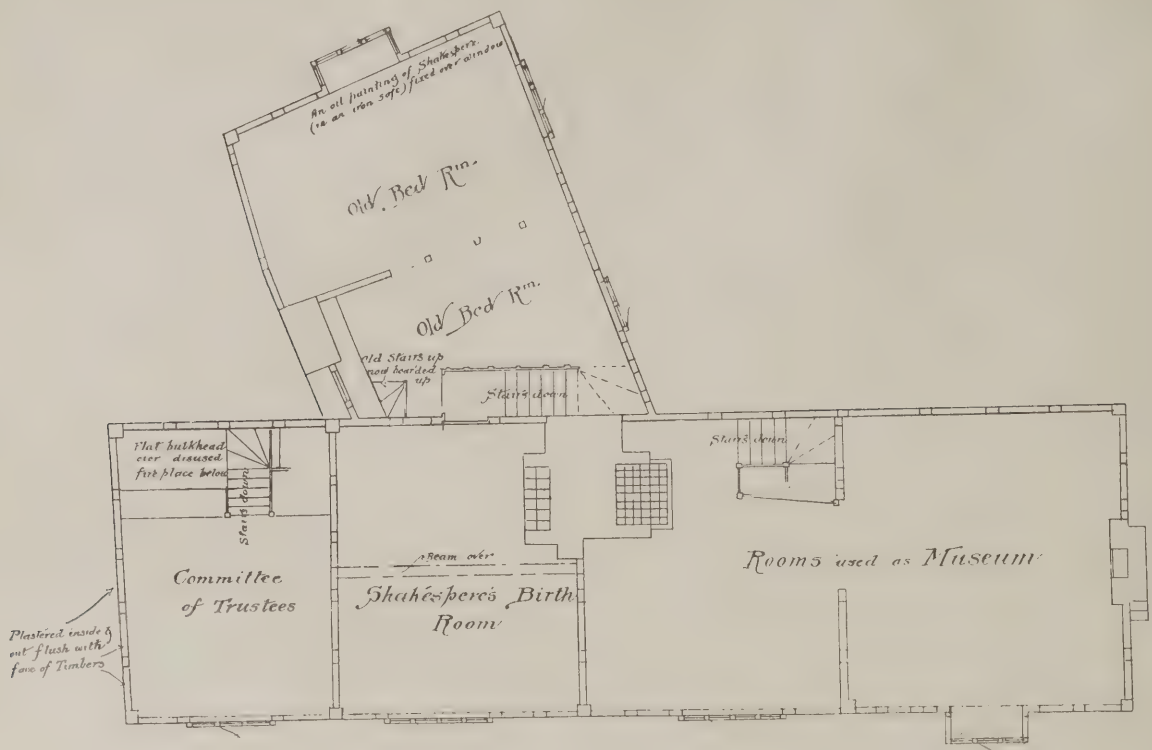
Joan of Arc's House.

DESPITE all protests, the municipal council of the City of Rouen have decided to destroy the house known as the "Maison Jeanne d'Arc," and to carry out further alterations in the Rue St. Romain (named after their city's patron saint) which will absolutely efface the picturesque and historical interest of this portion of the town. Since the fifteenth century these houses have given to the neighbourhood of the great cathedral its peculiar and distinctive charm, and the news of their demolition should appeal to every traveller in the most picturesque of northern French towns, and to every lover of the romantic past of English history. The houses that will now be pulled down have an intimate connection with our military history. They were standing when Henry V. starved Rouen into heroic submission. They were the dwelling places of most of the judges of Jeanne d'Arc. They sheltered also some of those workers in metal from Lorraine who originally lived within a few miles of the Maid's own Domrémy. The fatal passion for "alignment" has already ruined enough of the few ancient beauties that remain in modern cities. It is now rapidly destroying the whole meaning of the French cathedral architecture, an architecture which rose in springing lines from the houses that crowded round its closely decorated walls. But Rouen has still more claims upon our interest. It contains the only contemporary carving that exists of the Field of the Cloth of Gold. These invaluable records are peeling off the walls of the Maison Bourgtheroulde, and if the ediles of Rouen are bent on sacrificing the street that was under the protection of their own patron saint, we can scarcely hope that they will do anything to preserve a carving that is distinctively English in its associations, and that now forms part of the public courtyard of an estimable banking company. It is to be feared that nothing will save the house in question, though protests have been made from all directions, including one from our Royal Society of Antiquaries. Respect for beautiful old architectural work is fast dying out in a century of engineering novelties.

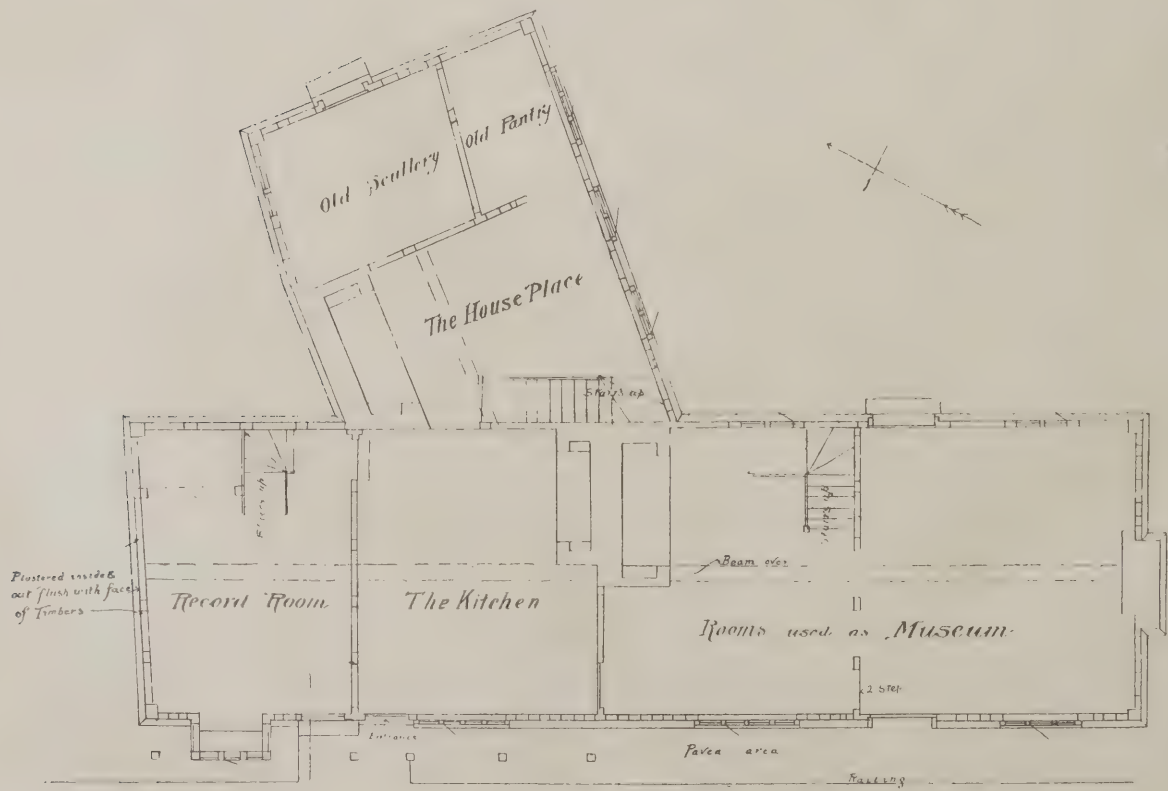
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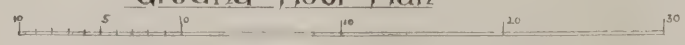
SCREEN FOR SEAL CHURCH, SEVENOAKS, KENT. C. R. ASHBEE, ARCHITECT.

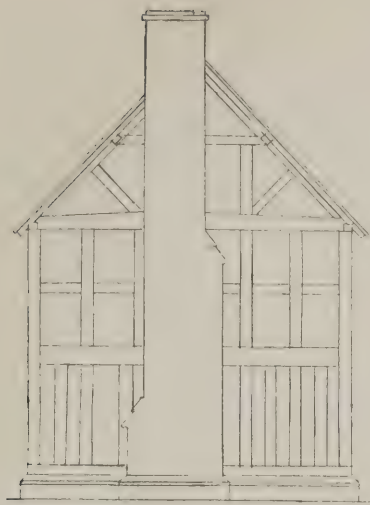


— First Floor Plan. —

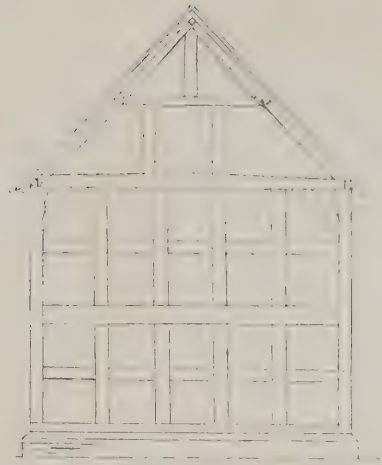


— Ground Floor Plan —





SOUTH ELEVATION.



NORTH ELEVATION.



EAST ELEVATION.



FRONT ELEVATION.

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for A LIMITED COMPANY
OLD STREET S. LUKE'S
H. V. Lanchester, Architect



DOORWAY IN OLD STREET, ST. LUKE'S. H. V. LANCHESTER, ARCHITECT.

STEWART & LUTHER
OF THE
LIBRARY OF CONGRESS

THE CITY OF OTTAWA.

THE inhabitants of Hull, a suburb of the city of Ottawa, the capital of the Dominion of Canada, which was destroyed by fire last week, number 12,000, and are there as the result of a settler named Wright building himself a house near the Chaudière, on the Ottawa River, towards the end of the last century. Ottawa was chosen as the administrative capital of Canada in 1858, and saw the assembling of the first Federal Parliament in 1865. Occupying a commanding position on the river—from which it takes its name—120 miles from its junction with the St. Lawrence at Montreal, Ottawa is nowadays a handsome, pleasant town, if it boasts no buildings of any extraordinary value from the architectural point of view. The most important of its public edifices are the Government Buildings, finely situated on Parliament Hill, looking over the broad river and distant scenery of much beauty. The foundation stone of this structure was laid by the Prince of Wales during his visit to Canada in 1860, and altogether, including the Library buildings and the Victoria Tower, 180ft. high, it constitutes a very handsome pile, the total cost of which amounted to more than £1,500,000. Other buildings of note are the Post Office, City Hall, and numerous banks, all of stone. The churches, too, are many. The Governor-General resides at Rideau Hall, an old-fashioned building of no architectural merits whatever, situated about a mile from the city. As one of the biggest centres of the lumber industry in the Dominion, it is not difficult to understand that a fire once started in Ottawa is likely to go far. All the lumber products of a huge stretch of country, extending as far as Lake Nipissing to the north-west, are carried down to Ottawa by means of the Ottawa River to the point at which the river forms the noble Chaudière Falls—these falls supplying the motive power for the numerous lumber mills, flour mills, factories, &c., along the banks of the river.

Gladstone Memorial at Liverpool.—

The new Gladstone Conservatory, erected by Mr. Henry Yates Thompson in Stanley Park, Liverpool, at a cost of £8,000, from the design of Mr. Bailie Mackenzie, of Edinburgh, was formerly opened on Monday in last week. The conservatory is 120ft. long and 50ft. wide.

SHAKESPEARE'S HOUSE.

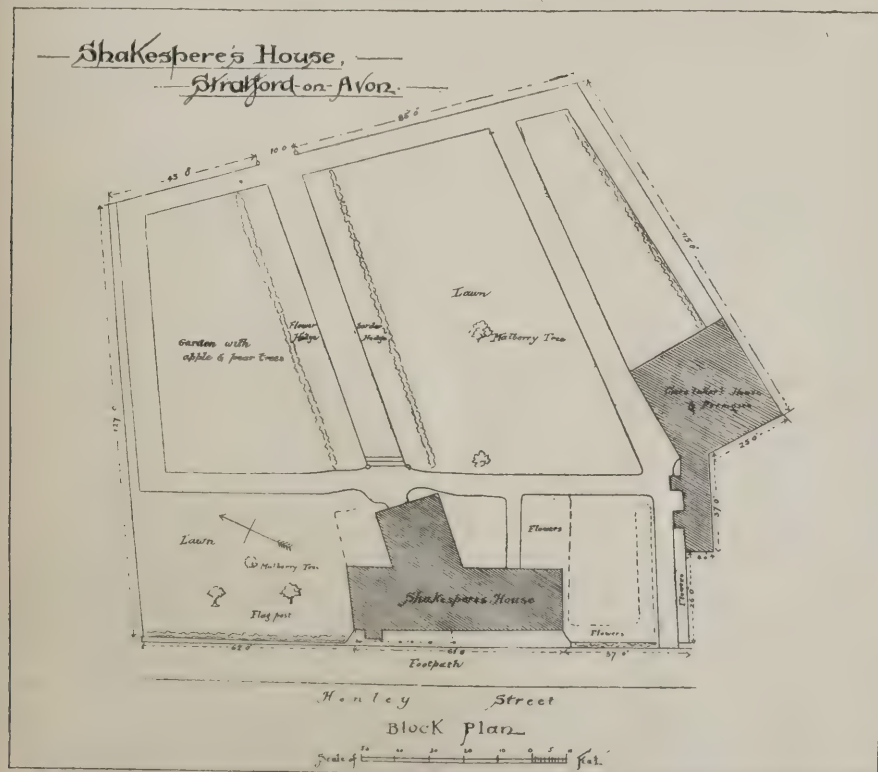
WE give on one of our inset sheets this week plans and elevations of the house at Stratford-on-Avon in which William Shakespeare was born (probably) on April 23rd, 1564, and on this page is shown a plan of the site. Most of the houses in Shakespeare's time had gardens at the back, and many at the sides also; and the space between the houses, combined with the unusual width of the streets, gave the town of Stratford an open, cheerful look, while the irregular line of gables and porches, of penthouse walls and garden palings, with patches of flowers and over-arching foliage between, still further varied the view. The house is plastered inside and out flush with the faces of the timbers. The measured drawings from which our reproductions are made were prepared by Messrs. Beazley and Burrows, architects, of 17, Victoria Street, S.W., for Sir William Ingram, Bart., who is the owner of the original drawings, and to whom we are indebted for the loan of them.

Professional Practice.

Belfast.—The new Mater Infirmorum Hospital, which was formally opened last week, has been erected from the designs (selected in competition) of Mr. William J. Fennell, M.R.I.A.I. The contractors were Messrs. Henry Laverty and Sons. The site has a frontage on the south of 230ft. to the Crumlin Road, and altogether contains an area of slightly more than one acre. It is composed of red boulder clay, with a gentle incline from north to south. The principal portions of the hospital may be said to consist of three distinct blocks facing the Crumlin Road, the centre one being the administrative building, flanked by a pavilion block on each side, that on the east being for males and the west one for females. These pavilions present their gable ends to the Crumlin Road, and extend backwards and parallel to the east and west boundaries about 146ft.; they are connected on the ground floor to the administration block by a wide corridor running east and west the entire length of the frontage, forming the main artery, so to speak, through the establishment. Each pavilion is three storeys in height, and contains two large wards on each floor, each of

these wards being provided with two sanitary chambers in towers, which branch off diagonally at the ends, and are separated by disconnecting corridors. The spaces formed outside the gable ends by the projections of these towers are utilised for verandahs for the use of convalescents. It might here be stated that the hospital is planned for 150 beds besides the cots for children, and that for each bed is allowed slightly more than 1,300 cubic feet of ward space, 9ft. of wall space, and 100 sq. ft. of floor space, some of the wards containing a little more. No provision is made for nurses' bedrooms near the wards. Once a nurse goes off duty she will proceed to the Home, where the nurses' beds and day rooms are, isolated from the scenes of hospital labours. The administration block contains on its ground floor the reception rooms, offices, and rooms of the resident medical officers. The first floor contains a number of rooms especially provided for patients who can afford to pay for special wards, and this has already been found to be a great boon, and is largely used. The top floor of this block is reserved for the use of the nuns who labour in the hospital. Behind the centre of the administration block, and separated from it by the main corridor, is the chapel for the use of the inmates and the patients. The chapel is flanked on each side by a corridor branching at right angles from the main corridor, off which are placed one-storey buildings containing the observation wards and "recovery" wards for patients' immediate use after operations. The east of these corridors also leads to the sacristy and the operating rooms, while the west one leads to the students' room and the lecture theatre and terminates in the disconnecting corridor between this portion and the kitchen range of buildings. This latter portion forms a complete range by itself, opening on the yard, and contains the usual kitchen appurtenances; off it are a number of stores filled with hospital necessities. It also contains dining rooms for the community and officials and members of the working staff. The buildings are of red brickwork with stone dressings, and will be heated by hot water and lighted by electricity; they have patent vulcanite flat roofing.

Birmingham.—Additions to St. Oswald's Church, Small Heath, consisting of west front, two adjoining bays, and south-east porch, have been made according to the designs of Mr. W. H. Bidlake, A.R.I.B.A., the sculptural work being executed by Mr. Martin, of Cheltenham. Mr. T. Rowbotham, of Small Heath, was the builder. It is now seven years since the eastern portion of the church, including the chancel and four bays of the nave and aisles, was erected on land given by Mr. C. Wriothesly. The new front contains a window of noble proportions and design, beneath which, on the inside, are five arched recesses. Two of these recesses are pierced by small lancet windows, and the centre one is filled with a memorial tablet in Connemara marble. The external doors are of massive oak, with wrought iron hinges of quaint design. The inner swing doors, the upper portions of which are glazed, are also of oak. The front is surmounted by a carved stone cross, beneath which, in a niche, is a life-size statue of the patron saint of the church—St. Oswald, Bishop of Worcester. When dedicating the additions, the Bishop of Coventry contrasted the beautiful with the simple in church architecture, and observed that it was at one time believed that the purest worship would be secured by the barest accessories, and we did ill if we spoke of those who so thought and planned as ignorant, or wanting in artistic feeling, or as men who grudged to give God their best. The spirit of Milton was quite as devout as the spirit of George Herbert, and Cowper was not less truly a worshipper of God than Keble. At the same time, it was equally unfair to speak of modern church restoration and adornment as a mere return to mediæval superstition. Beauty was not necessarily adverse to piety, nor was the love of it idolatry. Beauty was a reflection of the glory of God, and the beautiful could be, and ought to be, a help to devotion.



SHAKESPEARE'S HOUSE: PLAN OF SITE. FROM A MEASURED DRAWING BY BEAZLEY AND BURROWS, ARCHITECTS.

Dunston, Gateshead.—The Dunston Asylum is about to end its career, so far, at any rate, as its present purpose is concerned. In its place a new establishment has been erected at Middleton, between Darlington and Eaglescliff. Middleton Hall and the estate of 140 acres have been acquired, the Hall has been partly renewed, and extensive blocks of buildings have been erected on each side, all facing the south. The new institution has been designed by Mr. J. W. Dyson, of Newcastle, from whose plans was erected the new asylum of the Newcastle Corporation at Coxlodge, which is to be opened this month. A curious incident occurred during the reconstruction of the old Hall. While the roof was being removed the following sentence was found pencilled upon one of the timbers near the cornice: "John Lawson putt the cornish up, 24th July, 1815." That was just a month after the battle of Waterloo. The institution disposes of its own sewage.

Leeds.—The Freemasons of Leeds are about to provide themselves with a new hall, their old quarters at the back of the Town Hall having been sold. A limited company has undertaken the enterprise, and the estimated cost is about £6,000. The site selected is in Great George Street, opposite the new Pupil Teachers' College. There will be little distinctive in the architectural features. It will be a substantial building of three storeys in front and four at the rear, constructed of brick—brown glazed to the sills of the ground floor windows, red pressed to the first floor line, and buff pressed above—with red stone dressings. From a hipped roof, covered with green Westmorland slates, will rise an octagonal ventilating flèche or turret. The internal arrangement seems all that could reasonably be desired. The principal entrance in Great George Street will give access to an entrance hall, and this to two offices and a committee room, which, with the steward's room, will be situated in front. Behind will be a lodge room, 44ft. by 22ft. Such an institution would not be complete without dining accommodation, and of this there will be no lack. To that purpose the first floor will be devoted. Here will be situated a dining room 44ft. by 22ft., and another 61ft. by 30ft. with service room and lounge. On the second floor will be the principal lodge room, 61ft. by 30ft., and this, overlooking Great George Street, will have a circular ceiling with moulded ribs. Attached will be two committee rooms, an anteroom, and gentlemen's and ladies' cloakrooms. The kitchens will be located at the top of the house, and there also will be the caretaker's apartments. Lifts will likewise be provided. The accommodation, it is hoped, will meet the requirements of all the local lodges. Mr. J. Mitchell Bottomley, architect, of Leeds and Middlesbrough, has prepared the plans, and the principal contracts have been let as follows: Brick and stone work, Mr. J. T. Wright; joiners' work, Messrs. Craven and Umpleby; plumbing, Messrs. Braithwaite and Co.; plastering, Mr. J. Dobson; slating, Mr. James Season; and painting, Mr. A. Bateman. Twelve months will probably elapse ere the building is ready for occupation.

Mansfield.—The block of schools erected by the Mansfield School Board in Rosemary Lane, Mansfield, to meet the greatly increased demand for educational accommodation in the town, were formally opened on Wednesday last by Lord Belper. The land upon which the schools are erected was purchased from the Mansfield Grammar School Governors. In order to be thoroughly up-to-date, a sub-committee was appointed to visit the various modern schools in the neighbourhood, and after some consideration the Board, backed up by the sub-committee's report, decided to erect schools on the central hall plan to accommodate 800 children. The schools are arranged in two separate blocks, the larger (a two-storeyed building) finding room for 500 children (250 on each floor), and the smaller (a two-storeyed building) finding room for 500 infants; making the total accommodation 800, with an additional 120 in the

central halls of the boys' and girls' departments. The school is also provided with a small cookery department in the south-west corner, covered playgrounds, and garden. The various classrooms are arranged around the central hall, and in addition to the ordinary exits there are also provided doors for use in emergency. These open outwards and are fitted with patent panic locks. Special regard has, of course, been paid to the lighting and ventilation, the rooms being lofty and extensively windowed. The latest sanitary devices have been adopted; the rooms are floored with wood blocks having a foundation of concrete; and the classrooms in each block are separated from the central hall by movable glass partitions, which on special occasions may be thrown open. The architect is Mr. R. F. Vallance, F.R.I.B.A., of Messrs. Vallance and Westwick, and the contractors were Messrs. Gilbert and Gabbittas, of Nottingham, the amount of whose contract was £10,604.

Masters and Men.

The Carpenters and Joiners at Dudley have struck for an advance from 8d. to 8½d. per hour.

The Bolton Joiners have accepted a ½d. advance and abandoned the request for a reduction of hours.

The Tamworth Painters who recently struck for a ½d. advance have returned to work at the old rates pending the arbitrator's award.

A Joiners' Strike at Doncaster has occurred with the men employed by Messrs. W. S. Arnold and Son, contractors. The men number forty.

The Masons of Kilbirnie District have resumed work after being out on strike against a reduction of the rate of wages from 9d. to 8d. They have agreed to accept a reduction of ½d. till 1st July, when, if the Glasgow men are not then reduced, they revert to the old rate of 9d. an hour.

The Dunfermline Painters' Strike has been settled on the following terms: (1) That wages be raised from 8d. to 8½d. per hour. (2) That notice of any proposal to alter wages or rules should be given by December 31st. (3) That a conference be held on or before 1st February to consider the proposals made on December 31st. (4) That the settlement arrived at on February 1st come into force on April 1st.

Airdrie and Coatbridge Joiners' Strike.—At a meeting of the representatives of the masters and workmen held at Airdrie last week the following agreement was arrived at: That the men resume work at the old rate of 9d. per hour, that three months' notice be given on either side before 1st April for a conference, and that any rise or fall of wages then decided on should take effect on 1st June. A twelve months' agreement was signed to this effect, and work has been resumed.

Glasgow Masons' Wages.—A joint conference between the representatives from the Master Masons' Association of Glasgow and Neighbourhood and the United Operative Masons' Association of Scotland (Glasgow and Suburban Lodges) was held last week, when it was amicably agreed that the standard rate of wages for the ensuing year should remain the same as last year. The working agreement between both associations was also adjusted for another year, beginning on July 1st next.

Aberdeen Joiners' Strike.—At a conference between the masters and men last week it was agreed to refer the question of wages to arbitration, the point to be decided being whether there should be a reduction on the present standard rate of 8½d. The arbiters appointed were Mr. R. G. Wilson, architect, for the employers, and Treasurer Bisset for the men. At a previous conference it was proposed that wages should be reduced to 8½d. an hour. Pending the decision of the arbiters the men have resumed

work. Now the arbiters have failed to agree, Mr. Wilson being in favour of reducing the wages to 8d., and Treasurer Bisset in favour of 8½d. But ex-Lord Provost Mearns has been called in to decide between the two.

Joiners' Dispute in North-East Lancashire.—The six months' notice tendered by the joiners of Burnley, Nelson, Colne, Brierfield and Padiham for an advance of wages of from 8d. to 9d. per hour expired last Monday, and the men threatened to come out on strike yesterday, although the employers offered ½d. advance now and another ½d. in six months. The workmen demand a ½d. now, and offer to waive the other ½d. This the employers refuse, and also declined to submit the dispute to arbitration.

A General Joiners' Strike averted.—The dispute which has been proceeding in the building trade since November has been brought to an amicable conclusion. The branch of trade affected was the carpentry and joinery, and in November last the Amalgamated Society of Carpenters and Joiners notified to the Master Builders' Association that, at the expiration of six months, a general advance of 1d. per hour would be demanded, making the rate of payment 11d. per hour. The masters offered to meet the men half-way. This offer was eventually accepted. A conference was held between representatives of both sides, at which the offer was unanimously accepted on behalf of the men. At the same meeting a new conciliation clause was suggested.

Surveying and Sanitary Notes.

For Sewerage Works at Ruddington, the Basford Rural District Council desire to borrow £1,350.

Sanitary Institute Dinner.—Among the guests expected at the annual dinner of the Sanitary Institute to be held on May 11th; at which the Duke of Cambridge has consented to preside, are the Duke of Northumberland, the Bishop of London, Earl Egerton of Tatton, Earl Stamford, Lord Avebury, Mr. T. W. Russell, M.P., and the chairman of the London County Council.

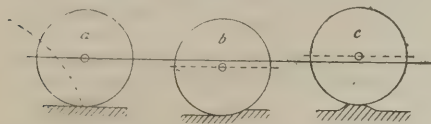
Improvements at Rhyl.—A Local Government Board enquiry was held last week into an application of the Rhyl Urban District Council for sanction to borrow £37,000 for the purpose of establishing a complete installation of electric light for the promenade, streets, and private consumers, for erecting a refuse destructor, and for the further extension of the West Promenade.

Wood Paving for Edinburgh Streets.—The Streets and Buildings Committee of Edinburgh Town Council recommend that the following thoroughfares should be paved with wood:—The Pleasance in front of the Deaconess' Hospital (cost £477); Princes Street from Jenner's westwards to Castle Street, along the side north of the tramways, the beech blocks which have been in use for about ten or twelve years to be replaced with Australian hardwood on a prepared concrete bed (cost £4,800); Queen Street, east end, in front of the National Portrait Gallery, the south half with Australian wood and the north side with stone.

Destroying a Small-Pox Hospital.—All that remains of the small-pox hospital on the garrison site at Hull will shortly be reduced to ashes. This wooden and brick structure, which, in the recent outbreak at any rate, was an admitted centre for spreading the disease, has been already pulled down, and the materials are piled in stacks ready for the torch to be applied. Everything has been thoroughly sprinkled with bi-chloride of mercury, and more than twenty-five tons of coal have been requisitioned to assist the conflagration. The bricks, too, have been stacked in with the wood, so that they will be thoroughly calcined before removal.

Public Abattoirs for Yarmouth.—Last week a Local Government Board enquiry was held into the application of the Yarmouth Town Council for a loan of £9,000 for constructing public abattoirs and a stock market on Caister Road.

Problem of a Wheel Rolling upon a Road.—In the course of a lecture on "Road Locomotion" read before the Institution of Mechanical Engineers on Thursday last, Professor H. S. Hele-Shaw said that, when a wheel with a hard rim rolls upon a level hard surface, every point upon the wheel follows a curve as shown in (a) in the illustration given below, and since each point on the tyre comes



in succession perpendicularly upon the surface beneath, there is no appreciable resistance to the motion. When, however, the surface beneath is either soft (b), or irregular (c), the wheel no longer rolls in the same way, and the invaluable properties which it possesses are in a greater or less degree destroyed. Now it is difficult, from any data at present available, to separate the amount of resistance respectively due to each of the two foregoing causes. But in the accompanying table are set forth, from

Tramways	.....
Asphalte	.....
Tram Rails	.....
Well laid Stone	.....
Best Macadam	.....
Paris Streets	.....
Ordinary Macadam (a)	.....
Ordinary Macadam (b)	.....
Dry Meadow	.....
Hard Dry Clay	.....
Cobble Stones	.....
Ordinary Road & Gravel	.....
Ordinary Cobble Stones	.....
Fresh Earth	.....
Sand if dry & loose	

Telford and Babage's data, the resistances to traction on roads of various kinds, and here it would appear as if a soft road involved greater resistance than an irregular one, and was more to be considered.

Leeds Street Improvements.—The Improvements Committee of the Leeds City Council sat for more than three hours on Wednesday last considering various schemes for carrying out street improvements. For the purpose of widening Guildford Street, Meadow Road, East Street, and Jack Lane, it was arranged to purchase properties in these localities; and to make a continuation of Easy Road through to the East End Park. The estimated amount to be expended is about £25,000. It was also decided to form a new street commencing at New Briggate near Merriam Street, and passing into Brunswick Street, and thence into Camp Road. The street will be 42ft. wide. The City Council, at its next meeting, will be asked to sanction this scheme.

Sanitation of Hull.—At a recent meeting of the Water and Gas Committee of the Hull Corporation the report was presented by the engineer (Mr. Bancroft) with reference to the proposed substitution of water-closets throughout the city for the present system of dry earth closets. If the recommendations of the Sanitary Committee with respect to the substitution of water—for earth-closets—were adopted, he estimated the additional quantity of water required per day for flushing purposes at one million gallons at least, on the low basis of ten flushes per day for each closet. It would probably be half as much again, or double, due to waste and defective apparatus. The estimated cost of one million gallons of water per day in the city is £12 10s., this being equal to £4,562 10s. per annum. If this quantity of water were sold at 6d. per 1,000 gallons the receipts would amount to £9,125 per annum.

Builders' Notes.

Barnoldswick Building By-laws.—At the Skipton Petty Sessions recently Joseph Wild was summoned for encroaching 3in. beyond the building line with a window of some shop premises he was erecting. A fine of 1s. and costs was imposed.

Extraordinary Destruction of Chimney Pots.—At the Salford Hundred Quarter Sessions recently Walter Cooper, 43, builder, of Manchester, was charged with having done malicious damage at Chorlton-cum-Hardy to seven chimney pots, a number of roof and paving tiles, three coping tiles, and twelve panes of glass, to the amount of £35, the property of John William Wood.—The prosecutor is the owner of some houses at Chorlton-cum-Hardy. He engaged defendant to fix "Mansfield patent tops" to seven smoky chimneys over his houses on the basis of "no cure, no pay." The chimney tops were to be paid for at £3 each, £21 in all, but payment was not to be made until six months after the work had been done, in order that it might be ascertained whether the treatment had proved successful. Mr. Wood, however, paid £8 on account of October 18th, shortly after the chimney tops had been fixed. The treatment was unsuccessful and the tenants complained, and Mr. Wood made representations to the defendant, who tried to improve matters, but failed. Being again expostulated with and refused further payment, on February 28th the defendant went with an assistant to the houses and hammered down the chimney pots, threw the pieces into the street, and broke glass and paving stones. He shouted to Mr. Wood, who stood below, "You have the law, but I have my revenge."—Defendant said that he understood that during the six months covered by the contract he could put on or off what he liked on the chimney pots as long as he made good any damage which he did.—He was found not guilty and discharged.

New Patents.

These patents are open to opposition until June 4th.

1899. Syphon Flushing Tanks and Cisterns.—6,528. F. M. SIMS, F. T. HARROP, and J. H. HARROP; all of Manchester. This invention relates to an automatic intermittent syphon flushing cistern or tank which acts without valves and similar appliances. Scientifically, it is the adaptation of the principle of the hydrostatic balance to cause a certain measured partial vacuum to be formed inside a syphon system, by which the resistance of the confined air to the entry of liquid is readily overcome and the syphon started.

Cast Marble.—9,360. J. GERNAERT, Brussels. The object of this invention is the production of any shade of veined artificial marble by a regulated fusion of certain substances. For instance, the following mixture when kept in the furnace until complete fluidity of the sand will produce a green marble veined with green: Sand, 51 per cent.; opaline, 22 per cent.; carbonate of soda, 19 per cent.; lime, 2 per cent.; bichromate of potash, 6 per cent. A beautiful deep-brown veined marble may be obtained from the following mixture: Sand, 35 per cent.; carbonate of soda, 54 per cent.; lime, 6 per cent.; oxide of copper, 2 per cent.; iron filings, 3 per cent.

Folding Rules.—10,711. J. G. LILLEY and F. W. LILLEY; both of Margate. In connection with each joint of the rule there is a sliding bolt working in a dovetail groove; when this is pushed across the two parts the rule keeps rigid.

Wall Hangings.—11,279. L. PREAUBERT, Nantes, France. A backing of canvas is first covered with tinfoil, fixed on with cement. This surface is then given the colour of gold or silver by the aid of varnish. An imprint in

size, cement, or varnish is next made, and cut or shorn wool of the desired tint blown on. Large panels can be made in this way.

Removing Pitch from Paving Stones.—11,302. R. WHITFIELD, Old Trafford, Lancs. The paving stones are placed in or passed through a heated chamber, where the pitch melts off and is carried away by channels for future use. It is claimed that this method is quicker, more efficient, and less costly than the method of chipping or scraping the hardened pitch off the stones.

Street Gas Lamps.—11,431. G. LIVESSEY, London, S.E. The lantern is circular, and it has three supporting bars so arranged that the shadows of the two side bars cross the curb at an acute angle, while the side of the lamp next to the roadway presents a clear front.

1900.—Stopping Leaky Gas Joints.—1,996. S. R. DRESSER, Pennsylvania, U.S.A. To repair it, a sectional clamp ring is placed round the joint and its nuts screwed up. This ring has an annular recess to receive a packing ring.

Taps for Geysers and Water Heaters.—2,714. H. T. FENLON, London, E.C. The water-supply tap handle has a holed cross-piece with which the gas-tap handle engages when the two taps are turned off, and by this means it is not possible for the water tap to be completely closed till the gas is turned off.

The following specifications were published on Saturday last, and are open to opposition until June 11th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—5122. BOULT (*Fondu*), machines for moulding articles from molten glass. 6,983. BRIDGE, movable partitions for dividing schoolrooms, lecture halls and other buildings. 7,042. HAMILTON, machines for sawing cold metal and stone. 7,208. JONES, apparatus for use in making drawings from models or other lineal objects. 7,863. CAZIN, electric incandescent lamps and their manufacture. 7,992. KANE, public baths. 9,375. BREADNER, white-edged copings or slabs for railway platforms. 9,909. BOULT (*Molet*), apparatus for the production of acetylene gas. 10,412. MAY, mechanical purification of effluents of towns, factories, &c. 10,531. WISE (*Wood*), mortising machines. 10,559. HIPKINS, steelyard weighing machines. 10,618. WILLNER, treatment of wood for the purpose of hardening and rendering it fire- and water-proof. 10,640. BAILEY AND CALDWELL, hinged doors and shutters of the kind used in connection with ventilators. 10,786. SCHRÖDER, apparatus for use in the production of acetylene gas. 10,830. ROSS, syphons for flushing cisterns. 10,905. PERRET, adjustable support for the scaffolding or framing used in building concrete floors. 11,005. LEGGOTT, apparatus for regulating fanlights. 11,066. BOARDALL, weather bar for windows. 11,333. SIMPSON, treatment of wood with solutions for rendering it non-flammable. 11,418. POMEROY, electric arc lamps. 11,544. ELBEERS, process of manufacturing mineral wool, also called "slag wool" and "silicate cotton." 11,594. J. AND M. CRAIG, LTD., and HIGHT, after-service devices for flushing syphonic water-closets. 11,662. MILLS (*Pagnon*), bricks, tiles, &c. 11,697. GRACEY, operating portable hinged screens or partitions for dividing large rooms into smaller ones. 11,707. WOODWARD AND COLLIER, apparatus for conveying sanitary pipes and other similar articles from place to place. 11,722. SANER, bolt-fastening device. 11,805. ROUSE, manufacture of concrete and artificial stone for building and paving purposes. 11,840. TURNER, firegrates. 11,847. CARPENTER, stopper for wire ropes or cables. 12,053. THORN AND HODDLE, apparatus for generating and storing acetylene gas. 12,077. MACKEAN, method of marking incandescent mantles. 13,363. KLEIN, ventilation. 13,748. GLITSCH, burner for vapourised liquid fuel for incandescent lighting or heating purposes. 15,947. TAYLOR, window sashes and frames. 20,301. SANDS, shop-window fittings and show cases.

1900.—187. WILLIAMS, coping tile. 2,356. SIEMENS BROS. AND CO., LTD. (*Siemens and*

Halske Aktim Gesellschaft), apparatus for regulating the electric lights on theatre stages. 3,452, LAKE (*Ferris*), nut-locks. 3,488, HYDE and BETHUNE, eraser to use in connection with pens or pencils. 3,669, KRAUS, machines for cutting veneers and boards from thick planks, round wood, &c. 3,685, ENRIGHT, lifting slings. 4,058, JÖRGENSEN AND POULSEN, centrifugal apparatus for raising water. 4,084, CONNOR AND CONNOR, mitre planing machines. 4,178, DIETERLE, locks and latches. 4,182, PRAGER, apparatus for automatically igniting gas lamps. 3,365, SHOOLBRED, translucent reflectors for incandescent electric lamps.

Keystones.

An Exhibition of Sir William Richmond's Works is to be held in the New Gallery at the end of this year.

A Cottage Hospital at Colne has been opened. It is in the Tudor style, and has half-timbered work in the gables.

At the new Parochial Hall, Lurgan, a new organ has been erected by Mr. James J. Binnis, of Leeds.

St. Ninian's, Castle Street, Aberdeen, is to be purchased at a cost of about £4,000 for the purposes of the Aberdeen Dispensary and Maternity Hospital.

Glasgow Art Institute Secretaryship.—Mr. Percy H. Bate, curator of the Art Museum, Bath, has been appointed secretary of the Glasgow Royal Art Institute. The salary is £300. There were nearly 300 applicants.

R.I.B.A. Conversazione.—The Corporation of London have granted the use of the Library, Art Gallery and Council Chamber in the Guildhall to the Royal Institute of British Architects for the purpose of holding a conversazione in June.

St. Stephen's Church, Paddington, is to have several alterations made to it at a cost of £6,000. It is proposed to take down the west end of the chancel, and to build an apsidal end, to take out the present window, and form a chapel; also to provide a new communion table and a new oak reredos.

New London Market.—The foundation stone of the rebuilding of Portman Market, Church Street, Edgware Road, was laid on Friday by Sir William Pollitt. The new buildings will occupy an area of 43,426 ft. super., and ample accommodation will be provided for cold storage. The cost will be £33,000. Messrs. Gordon and Gunton are the architects.

Additions to the Law Courts.—Plans have been prepared and passed for four additional courts at the Royal Courts of Justice. They will be erected on the ground at the west end of the building, at present laid out as a garden, and will be separated from the main building by the existing footpath. The new building will be connected with the old one by means of a covered passage or gallery.

London (Royal Free Hospital) School of Medicine for Women.—The new buildings for this institution, of which the first wing was opened by the Princess of Wales in July, 1898, are approaching completion. The last, or Hunter Street block, will be ready for use next October. It will contain a very large common-room, refectory, library and museum, besides eight sets of residential chambers, in which seventeen students can live. The total cost of the new buildings will be about £30,000.

"Mural Painting in Relation to Architecture."—We very much regret that several printers' errors crept into the article on this subject which we published last week. In line 22 in the first column on page 206 "Antium" appears for "antique"; in line 63 in the second column of this page "computing" is printed instead of "completing"; a little lower down "observe" is used instead of "obscure"; in line 21 in the first column on page 207 "decoration painting" should be "decorative painting"; and in line 46 in the same column "Triforium—but" should read "Triforium-belt."

Registration of Architects.—A meeting in connection with this movement was held at Birmingham on Friday under the auspices of the Society of Architects. Mr. T. Walter L. Emden, J.P., L.C.C., presided, and a paper was read by Mr. Ellis Marsland.

At St. Neot Parish Church, Liskeard, a rood and parclose screen, choir stalls, and a lectern have been erected. The screen was designed by Mr. Fellows Prynn, president of the Architectural Association, and is in teak with figures in pear wood.

New Church Schools at Kidderminster have been built in Leswell Street at a cost of £2,000. Messrs. Meredith and Pritchard were the honorary architects, and Mr. Henry Smith was the contractor. Accommodation is provided for 250 infants.

A Washington Statue for Paris.—A statue of Washington, the gift of American women to the French people, is to be erected on the Place d'Jéna, at the angle of the Avenue d'Jéna and the Avenue du Trocadéro. It will be about 22ft. high. Mr. Daniel C. French and Mr. Edward Potter, both Americans, are the sculptors.

Office of Grand Superintendent of Works.—His Royal Highness the Prince of Wales, Grand Master of English Freemasons, has been pleased to appoint Mr. Henry L. Florence, of 3, Verulam Buildings, Gray's Inn, W.C., to the office of Grand Superintendent of Works for the ensuing year, being the third year in succession that this office has been conferred upon him.

Competition for new "Waterloo" Board School, Oldham.—In this competition there were thirty-five competitors, and Mr. A. N. Bromley, of Nottingham, was the assessor. The plans under Notts, "Wellington" (Mr. Richard Holt, architect and surveyor, of Liverpool and Southport), were placed first, and the Board adopted his award and appointed Mr. Holt as architect.

The Royal Academy.—In view of the opening of the exhibition at Burlington House on May 7th, it is worthy of note that the Foundling Hospital is the parent of the Academy. The chief artists of the day sent pictures from their own easels to decorate the Foundling, and this collection, becoming at once one of the sights of London and a handsome source of revenue to the Hospital, suggested an annual exhibition of similar works on a larger scale.

Aberdeen Architectural Sketching Club.—At a meeting of this club held last week (Mr. Levie presiding) Mr. Kelly's award in the recent competition was given. Two prizes were offered for the best designs for a small country villa costing £1,500. Mr. Kelly placed "Esmond" first, "The Major" second, and "Toujours Pret" third. The design "Esmond" is by Mr. George Forsyth; "The Major" is by Mr. Alex. Meldrum; and "Toujours Pret" is by Mr. Fenton Bisset.

London County Council Tramway Scheme Rejected.—The Light Railway Commissioners held an important enquiry last week. The London County Council sought powers to construct for electrical traction the following lines of tramways (1) a line from Clapham Common to Kingston; (2) a line from Deptford by Shooter's Hill to Woolwich; (3) a line from New Cross by Lewisham to Eltham; and (4) from Archway Tavern, Highgate, to the county boundary. This scheme was rejected, as the Commissioners considered it incomplete.

Architectural Photographs.—An exhibition of photographs (mainly architectural) is now open from ten to four at the rooms of the Royal Photographic Society, 66, Russell Square, W.C. They are the work of Mr. F. H. Evans, and include details of Ely, Wells, Bourges, Lincoln, St. David's and Canterbury cathedrals, Beverley Minster, Kelmscott Manor and Church, and the tithe barn at Great Cokkeswell. Mr. Evans has endeavoured to make his photographs as artistic and as true as possible, and with this object in view has not produced that unfortunate microscopic detail which characterises so large a proportion of architectural photographs. The exhibition is well worth a visit.

A New Baptist Chapel at Hornsey has been built at a cost of about £11,000 from designs by Mr. George Baines. It is situated at Ferme Park.

The Policeman Painter, E. T. Jones, of the Leeds City Council, sometimes called "the modern Constable," has had another picture accepted for the Academy this year.

Land Registry (New Buildings) Bill.—The object of this Bill is to raise £265,000 for the purpose of acquiring property and building a permanent office in Lincoln's Inn Fields.

A Statue of Professor Huxley, by Mr. Onslow Ford, R.A., was unveiled by the Prince of Wales in the Natural History Museum on Saturday. It is of white Carrara marble and is larger than life-size.

The Value of Land in Fleet Street.—A building site in Fleet Street, at the corner of Fetter Lane, was let on lease last week for a term of eighty years. The area of the land is 1,550 sq. ft. The rent realised was £930 a year, being at the rate of 12s. per sq. ft. per annum.

The Norfolk and Norwich Archaeological Society held its annual general meeting at Norwich on Wednesday last, General W. E. G. L. Bulwer, senior vice-president, occupying the chair. After business and luncheon had been disposed of, the members paid a series of visits to buildings in the neighbourhood.

Northern Architectural Association.—The annual report for the forty-first session of this association states that the present membership is 173 (members 54, associates 68, students 51), and that there is a balance in hand of £54 9s. Mr. William Glover, F.R.I.B.A., is the president, Mr. Frank Caws, F.R.I.B.A., the vice-president, and Mr. A. B. Plummer, F.R.I.B.A. (13, Grey Street, Newcastle-on-Tyne), the honorary secretary.

Leeds City Buildings Expenditure.—About £10,000 have been spent in Leeds during the past municipal year on the town hall, municipal buildings, judges' lodgings, and so forth, and a somewhat similar expenditure is contemplated during the ensuing twelve months. This amount includes quite a variety of necessary items, e.g., cost of lighting, wages of servants, cleaning, repairs, and other charges for maintenance.

THE NEXT TWO NUMBERS

of the

"Builders' Journal"

will contain

SPECIAL ARTICLES

on

"Architecture

. . . at the . . .

Royal Academy."

THE CRITICISMS WILL
BE ILLUSTRATED BY

Mr. C. E. MALLOWS.

New Companies.

Gloucester Joinery Company, Limited.

This company was registered on April 14th with a capital of £2,000 in £1 shares to carry on the business of woodworkers, joiners, furniture manufacturers, &c.

The Fennia Timber Company, Limited.

This company has been registered in Scotland with a capital of £25,000 in £10 shares to carry on in Great Britain and Ireland and in Finland and Russia the business of saw-millers and timber merchants. Registered office: Marine Parade, Dundee.

Marl Park Land Company, Limited.

This company was registered on April 24th with a capital of £20,000 in £10 shares to acquire certain land at Llanrhos, Carnarvon, and to carry on the business of land owners, builders, &c. The first directors (to number not less than three nor more than seven) are Mrs. A. Ayling, O. S. Pilkington and R. Conway. Registered office: Llewellyn Chambers, Llandudno.

Oscillating Frame Cowl Company, Ltd.

This company was registered on April 18th with a capital of £1,500 in £1 shares to acquire certain patents from W. B. Ramsey, C. Davies and A. Lee, and to manufacture and deal in cowls, chimney pots, fire grates, ventilators, tools, machinery, &c. The first directors (to number not less than five nor more than nine) are to be appointed by the subscribers.

Engineering Notes.

The Lighting of Perth.—The Perth Commissioners propose to spend £50,000 in connection with the gas works, and £50,000 for the installation of the electric light.

Widening of Stockbridge Bridge.—The Streets and Buildings Committee of the Edinburgh Town Council have approved of a modified plan for the widening of the bridge over the Water of Leith at Stockbridge. The first proposal showed a width of 61ft. from parapet to parapet, and the modified plan 55½ft.

County Bridges and Electric Mains.—On Thursday last Mr. Ritchie received a deputation from the County Councils Association asking that County Councils should be protected from being responsible for damage to electric mains through necessary widening and repairs of bridges. Mr. Ritchie said that whilst not unfriendly to their principle, he thought any new legislation on the subject should not be retrospective.

Electricity on the Underground.—It is expected that the Board of Trade will shortly sanction the running upon the Metropolitan District Railway, between Earl's Court and High Street, Kensington, of a train propelled by electricity. The current employed is a continuous one, with a potential of 500 volts, and is made by Belliss-Siemens' generators in a temporary power-house at Warwick Road Junction. It is intended, however, to erect a generating station at Chelsea Creek, and Parliament will be asked to give the necessary powers.

New Water Filters for Troon.—The Burgh Commissioners have decided to accept the tender of Mr. James Osborne, Ayr, amounting to £2,310, for two additional filters at the waterworks, and of the Glenfield Kennedy Company, Kilmarnock, amounting to £83, for sluice valves, &c. The work has already been begun, and it is expected to be completed within the next three or four months. The present filterage capacity is 311,040 gallons per twenty-four hours, and when the increased accommodation is provided it will be 622,080 gallons.

Liverpool Engineering Society.—During the quarter of a century this society has been in existence it has proved a most useful institution to those associated with the various branches of engineering in Liverpool. During

the twenty-sixth session, just closed, no fewer than 119 members, associates and students have been elected, making the total on the roll 509. Both the city engineer (Mr. J. A. Brodie) and the city electrical engineer (Mr. A. Bromley Holmes) interest themselves in the society, the latter having occupied the position of president during the past session, in which office his immediate predecessor was Mr. J. A. Brodie.

New London Railway.—The inter-communication of the metropolis will be considerably improved on the completion of the Whitechapel and Bow Railway, a line which will form a junction between the Metropolitan District Railway's terminus at Whitechapel and the London, Tilbury and Southend line at Bromley. Instead of running into Fenchurch Street, almost the whole traffic of the latter line will be diverted to Whitechapel, where it will be in touch with the underground railways. The line passes under the Mile End Road and Bow Road from Whitechapel, and thence to Bromley. Stations are to be erected at Stepney Green, Burdett Road, and Wellington Road. Up to the present over half-a-mile of tunnelling has been completed.

CURRENT PRICES.

FORAGE.			
Hay, best	per load	£ 8 10 0	4 0 0
Sainfoin mixture	do.	8 15 0	4 5 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 6	1 8 0
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 8 0	1 9 9
Colza Oil, English	per cwt.	1 9 6	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lined Oil	per gal.	0 10 7½	0 0 7½
Petroleum, American	per gal.	0 0 6½	0 0 7½
Do., Russian	per barrel	0 9 0	—
Pitch	per cwt.	1 6 6	1 10 0
Tallow, Town	per barrel	1 6 0	—
Tar, Stockholm	per cwt.	2 2 0	2 2 3
Turpentine	per cwt.	1 2 10	—
Lead, white, ground, carbonate per cwt.	per cwt.	1 0 4½	—
Do. red	per ton	2 17 6	8 0 0
Soda crystals	per ton	2 18 0	8 1 0
Shellac, orange	per cwt.	2 18 0	8 1 0

METALS.			
Copper, sheet, strong	per ton	88 0 0	90 0 0
Iron, shafts, bar	do.	10 15 0	11 10 0
Do. Galvanized Corru.	do.	15 0 0	—
Lead, pig, spathed	do.	16 17 6	17 0 0
Do. do. English common brands	do.	17 0 3	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut, 3in. to 6in.	do.	12 15 0	13 0 0
Do. floor brads	do.	11 12 0	12 15 0
Steel, shafts, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	135 5 0	135 15 0
Do. English ingots	do.	139 0 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montagne	do.	27 7 6	—
Do. Spelter	do.	22 12 6	22 12 6

TIMBER.			
Soft Woods.			
Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 0 0
Do. Pitch	do.	3 10 0	4 15 0
Larch, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	23 0 0
Do. do. 4th & 3rd.	do.	12 15 0	14 5 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	17 15 0
Do. do. 2nd	do.	8 15 0	12 0 0
Do. do. Unsorted	do.	14 5 0	—
Do. do. White	do.	11 5 0	—
Do. Swedish	per P. Std.	12 0 0	15 5 0
Do. White Sea	do.	17 10 0	18 0 0
Do. Quebec Pine, 1st	do.	23 15 0	—
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	9 15 0	10 5 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	11 0 0
Hard Woods.			
Ash, Quebec	per load	8 17 6	4 10 0
Birch, Quebec	do.	8 12 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 3 15/16	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 4 2/32	—
Do. African	do.	0 0 3½	—
Do. St. Domingo	do.	0 0 5½	—
Do. Tobasco	do.	0 0 5 3/32	—
Do. Cuba	do.	0 0 6 31/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Waincoat, Riga (Bank)	do.	8 15 0	5 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

AMMANFORD.—For the erection of a chapel, Cape Hendre. Mr. J. W. Jones, architect, Gwily House, Llan-dilo:—
Henry Thomas ... £1,627 9
Brown, Thomas and ... £1,417 0
John ... 1,590 0
John Howells ... 1,588 0
Lewis Daves ... 1,500 0
Wm. Evans ... £1,417 0
David Thomas ... £1,397 0
John H. Vaughan, ... 1,380 0
Pantyllynnon* ... 1,380 0
George Vaughan ... 1,280 0
*Accepted.

HINDHEAD (Surrey).—For the works required in the alterations and additions to Blen-Cathra, Hindhead, Surrey, for the Rev. W. Richmond. Messrs. Newman and Newman, architects and surveyors, 31, Tooley-street, S.E. Quantities by Messrs. Selby and Saunders, 39, Victoria-street, Westminster:—

	School.	Chapel.	Dining Hall.	Total.
Balaam Bros.	£7,999	£883	—	£8,882
Samuel Page	—	—	584	584
J. A. Hunt	6,409	585	610	7,604
Chapman and Lowry	6,056	583	521	7,159
Botterill and Sons	5,483	—	462	6,473
Holloway Bros.	5,430	498	465	6,400
Tompsett and Co.,	—	—	—	—
Farnham*	5,345	470	450	6,265
Hutchinson	5,310	495	456	6,261

*Amended tender accepted, £6,358 ss. sd.
LIMPSPFIELD.—For infants' home at Limpfield, for the Church Missionary Society. Mr. John Norton, architect. Quantities by Mr. S. J. Thacker:—
Alfred Bush ... £6,288
Thos. Boyce ... £6,081
Perry and Co. ... 6,141
Lawrance and Sons* ... 5,985
*Accepted.

LLANDONNA (Wales).—For the construction of sea-wall, flood gates, &c., Wern, Red Wharf Bay. Mr. Joseph Owen, architect, Menai Bridge:—
J. K. Baker ... £2,375 15 0
John Griffith ... 2,500 0 0
Jones Bros. ... 1,469 0 0
Parry, Menia ... £1,457 0 0
*Accepted.

MELINCRYTHAN, NEATH.—For the erection of school buildings at Melincrythan, for the Neath School Board. Mr. J. Cook Rees, architect, Neath.
Evan Thomas ... £26,700 0
Lloyd Bros., Swan-sea ... £26,700 0
Seven Sisters ... 27,588 0
John Davies, Port Talbot ... 6,662 0
Thomas Watkins & Co., Swansea ... 7,107 0
H. Billings, Swansea ... 6,900 0
W. Francis, Bridge-end ... 6,900 0
J. Marles and Son, Swansea ... 6,887 0
Walters and Johns, Morriston ... 6,848 0
Barry Dock ... 5,566 10
*Accepted.

MENAI BRIDGE (N. Wales).—For the erection of schools and residences, Llan-yddall, Anglesey. Mr. Joseph Owen, architect, Menai Bridge:—
John Griffith ... £2,004 0
J. and R. Evans ... 1,575 0
Wm. Pritchard ... 1,398 15
Hugh Williams, Llan-yddall* ... £1,390 0
*Accepted.

MIDDLESBROUGH.—For the erection of a large block of business premises, South Bank, for the Middlesbrough Co-operative Society. Mr. W. G. Roberts, architect, 61, Albert-road, Middlesbrough. Quantities by Mr. Fred Cartwright, Foster's Buildings, 22, High-street, Sheffield:—
Murgatroyd and Sons ... £1,950 0 0
Alison Bros. ... 10,500 0 0
Wm. Thompson ... 9,776 11 8
J. T. Bulmer ... 9,750 0 0
G. Rodge ... 9,685 19 6
W. A. King ... 9,553 17 0
S. Coates ... 9,374 17 0
Perks and Son ... £9,346 9 9
Executors of the late J. Johnson, Middlesbrough* ... 9,264 0 0
Hudson Bros. (withdrawn) ... £9,258 0 0
*Accepted.

MIDDLESBROUGH.—For the erection of Ayresome Schools, accommodation 1,270 children, with caretaker's house, for the School Board. Mr. J. Mitchell Bottomley, architect, 28, Albert-road, Middlesbrough:—
Leeder and Son £15,253 1 1
S. Coates ... 16,918 8 1
Executors of J. Johnson ... 16,264 0 0
W. A. King ... 15,993 3 7
W. Pounder ... £15,721 15 4
G. Scales ... 15,994 0 0
Alison Bros., Middlesbrough* ... 14,724 0 0
*Accepted.

NORTHAMPTON.—For the erection of new box factory, St. James' End, for Messrs. Scott and Co. Messrs. Mosley and Scrivener, architects, Fish-street, Northampton:—
J. M. Panting ... £1,215 0
Wingrove & Stanley ... 1,198 10
E. Archer ... 1,195 0
Sharnham and Son ... 1,190 0
J. Garrett ... 1,156 0
G. J. Fisher ... £1,138 0
A. J. Chown ... 1,125 0
W. Beardsmore ... 1,108 0
A. P. Hawtin* ... 1,094 0
*Accepted.

OGBOURNE (near Marlborough).—For alterations and additions to bakery, for Mr. T. Dixon. Messrs. Ainsworth and Harwood, architects, Swindon:—
Parker ... £865
Liddington* ... £245
*Accepted.

PAIGNTON.—For the erection of stabling, coach-houses, &c., at "Stearfield," for Mr. Washington M. G. Singer. Messrs. Bridgman and Bridgman, A.R.I.B.A., M.S.A., of Torquay and Paignton, architects. Quantities by Mr. Vincent Catermole Brown, Paignton, Devon:—

	Time.
H. Drew (Paignton)	£4,270 10 months
R. Yeo (Torquay)	4,250 6 "
R. Yeo (Torquay)	3,997 9 "
Geo. Webber (Paignton)	4,000 6 "
Dart and Pollard (Paignton)*	4,000 3 "
Dart and Pollard (Paignton)	3,875 6 "
W. A. Goss (Torquay)	3,999 9 "
J. C. & W. Watson (Torquay)	3,880 7 "
S. Blatchford (Torquay)	3,700 7 "

*Accepted.
ROYDON.—For detached residence, to be erected for Mr. F. Bull, at Roydon, Essex. Mr. F. Child, surveyor 65 and 66, Chancery-lane, W.C.:—

	Extra for hollow walls.
Fred. Britton	£1,800 0 0 245 0 0
Wells and Sons	1,092 0 0 83 0 0
Elms and Co.	1,050 0 0 141 0 0
Glasscock and Son	1,008 0 0 not given
F. Hitch	949 0 0 119 10 0

SWINDON.—For the erection of a Primitive Methodist Church at Rodbourne-road, Even Swindon. Messrs. William Drew, M.S.A., and Sons, architects, Swindon:—
A. J. Colbourne £1,319 17 4
Tydemans Bros. ... £1,160 0 0
C. Wilkins ... 1,249 5 0
R. J. Leighfield* ... 1,151 0 0
J. Williams ... 1,217 0 0
*Accepted.

SWINDON.—Accepted for forming roads, laying in drains, &c., on the Even Swindon Estate, for Mr. James Morrison, J.P. Messrs. William Drew, M.S.A., and Sons, surveyors, Swindon:—
J. Williams, Swindon ... £1,655

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
May 4	Bernondsey, S.E.—Chimney Shaft	Vestry	F. Ryall, Vestry Clerk, Town Hall, Spa-road, S.E.
" 4	Abergavenny—Re-ajing Floor	Guardians	The Master, The Workhouse, Abergavenny.
" 4	Dewsbury—Shop	Mr. H. Squires	C. H. Marriott and Son, West Park-street, Dewsbury.
" 4	Huddersfield—Additions	Bentley's Yorkshire Breweries, Ltd.	J. Berry, 9, Queen-street, Huddersfield.
" 4	Murthy, Perth—House	Lucay Board	David Smart, Architect, Perth.
" 4	Bromley—Ambulance House	Bromley and Beckenham Joint Hospital Board	J. Ladds, 7, Doughty-st., Mecklenburgh-sq., London, W.C.
" 5	Wallsend—Sessional Court, &c.	Northumberland County Council	J. Cresswell, Architect, Moot Hall, Newcastle-on-Tyne.
" 5	Morpeth—Alterations to Business Premises	Ashington Industrial Co-op. Soc., Ltd.	Society's Branch, Newgate-street, Morpeth.
" 5	Buckie, Scotland—Additions	Mr. W. Mather	J. Perry, Architect, Buckie.
" 5	Hastings—Alterations	Corporation	P. H. Palmer, Engineer, Town Hall, Hastings.
" 5	Keighley—Houses		Barber, Hopkinson, and Co., Craven Bank-chambers, North-street, Keighley.
" 5	Kilkenny—Rebuilding		J. F. Reade, John-street, Kilkenny.
" 5	Middlesbrough—Alterations	Baths Committee	Engineer, Municipal-buildings, Middlesbrough.
" 5	Skircoat, Halifax—Villa		G. Buckley and Son, Architects, Tower-chambers, Halifax.
" 5	Sudbury, Suffolk—Additions		Headmaster, St. Peter's School, Sudbury.
" 5	Leeds—Additions and Alterations	A. Fenwick	G. G. Hoskins, Architect, Darlington.
" 5	Clydach, Wales—Church		W. W. Williams, 63, Wind-street, Swansea.
" 7	London—Stables, Cart Shed, Cottages, &c.	Hornsey Urban District Council	E. J. Lovegrove, Surveyor, Southwood-lane, Highgate, N.
" 7	Ca' stock—Hall		B. R. Alford, Calstock.
" 7	Halifax—Clubhouse	King Cross Working Men's Club	J. F. Walsh and G. Nicholas, Lancashire and Yorkshire Bank-chambers, Halifax.
" 7	Harrow—Houses		Harrow Land Co., Ltd., Hindes road, Harrow.
" 7	London, S.E.—Pulling Down	Bernondsey Vestry	Surveyor, Town Hall, Spa-road, S.E.
" 8	Chalvey, nr. Slough—Foundations at Pumping Station	Slough Urban District Council	W. W. Cooper, 1, Mackenzie-street, Slough.
" 8	Barking, Essex—School	School Board	C. J. Dawson, Architect, Barking.
" 8	Manchester—Cottages	Improvement Committee	City Surveyor, Town Hall, Manchester.
" 9	Margate—Extension of East Cliff House	Metropolitan Asylums Board	C. and W. Henman, 64, Cannon-street, E.C.
" 9	Portsmouth—Offices	Guardians	Rake and Cogswell, Prudential-buildings, Portsmouth.
" 9	Rawtenstall, Lancs.—Additions	Corporation	A. W. Lawson, Municipal Offices, Rawtenstall.
" 10	Bingley, Yorks.—Fire Station	Urban District Council	W. R. Nunn, Architect, Market-street, Bingley.
" 10	Minworth, Birmingham—Cottages	Drainage Board	J. D. Watson, Engineer, Minworth.
" 11	Mountain Ash, Wales—Chapel		Morgan and Elford, Architects, Mountain Ash.
" 12	London, W.—Church Hall		C. J. Mann and Son, 29, Great George-street, Westminster.
" 12	Romsey, Hants.—Infirmary at Workhouse	Guardians	J. Jenvey, Architect, Market-place, Romsey.
" 12	Bettws-y-Crwyn, Salop—Alterations	School Board	Mr. Brand, Board School, Weals.
" 12	Saintfield, co. Down, Ireland—Hall	Presbyterian Church Committee	The Manse, Saintfield.
ENGINEERING—			
May 4	Nelson, Lancs.—Condensers	Gas Committee	A. Allan, Gasworks, Nelson.
" 5	Glasgow—Meters	Corporation	W. A. Chamen, 75, Waterloo-street, Glasgow.
" 7	Barking—Light Railways	Urban District Council	G. Barker, 1, Victoria-street, Westminster, S.W.
" 7	Harrow—Machinery	Urban District Council	E. Lines, Council Offices, High-street, Harrow.
" 7	Harrow—Gas and Water Services	Urban District Council	E. Lines, Council Offices, High-street, Harrow.
" 7	Harrow—Ejector Station	Urban District Council	E. Lines, Council Offices, High-street, Harrow.
" 7	Jarrow—Footbridge		J. Petree, Borough Engineer, Jarrow.
" 7	Rawtenstall, Lancs.—Heating	Corporation	A. W. Lawson, Municipal Offices, Rawtenstall.
" 8	Lybster, Scotland—Railway	Highland Railway Company	W. Roberts, Company's Engineer-in-Chief, Inverness.
" 10	London, E.C.—Engines	Great Indian Peninsular Railway Co.	The Company, Copthall House, 48, Copthall Avenue, E.C.
" 12	Warrington—Pipe Laying	Corporation	J. Dees, Bank House, Warrington.
" 12	Leominster—Storage Reservoir	Corporation	J. Budd, Borough Surveyor, Town Hall, Leominster.
IRON AND STEEL—			
May 5	Wolverhampton—Rails, &c.	Corporation	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
" 7	Bexhill, Sussex—Wrought-iron Fencing, Gates, &c., to Cemetery	Urban District Council	G. Ball, Engineer, Town Hall, Bexhill.
" 7	Bernondsey, S.E.—Galvanised Iron Pails	St. Mary Magdalen's Vestry	F. Ryall, Vestry Clerk, Town Hall, Spa-road, S.E.
" 7	London, E.C.—Steel Material	Burma Railways' Co., Limited	Company's Office, 76, Gresham House, Old Broad-st., E.C.
" 9	Enfield—Pipes	Urban District Council	R. Collins, Court House, Enfield.
" 10	Darenth—Iron Caps and Ties to Destructor Furnace	Metropolitan Asylums Board	T. D. Mann, Board's Offices, Carmelite-street, Embankment, E.C.
PAINTING—			
May 5	Alnwick—Painting		J. Cresswell, Moot Hall, Newcastle-on-Tyne.
" 5	Gosforth, Northumberland—Painting		J. Cresswell, Moot Hall, Newcastle-on-Tyne.
" 7	Fleetwood, Lancs.—Painting	School Board	J. H. Kean, School Board Office, Fleetwood.
ROADS AND CARTAGE—			
" 4	Ashford, Kent—Broken Granite	Urban District Council	W. Terrill, Surveyor, North-street, Ashford, Kent.
" 4	Pudsey, Yorks.—Street Works	Urban District Council	J. Jones, Council Offices, Pudsey.
" 5	Melford, Suffolk—Granite	Rural District Council	W. Carter, Surveyor, Suffolk-road, Sudbury, Suffolk.
" 7	Bexhill, Sussex—Cemetery Works	Urban District Council	G. Ball, Engineer, Town Hall, Bexhill.
" 7	London, E.—Wood Paving	Limehouse Board of Works	S. G. Ratcliff, Clerk, Board's Offices, White Horse-street, Commercial-road East, E.
" 7	Cleethorpes—Road-making		T. Lamming, 43, Victoria-street, Grimsby.
" 7	Jarrow—Road Works		Borough Engineer, Council Offices, Jarrow.
" 8	Lewisham—Road Material		The Surveyor, Town Hall, Catford, E.
" 8	Rothwell, near Kettering—Materials	Board of Works	W. T. Pearson, Market House, Rothwell, near Kettering.
" 8	Tottenham—Making-up	Urban District Council	P. E. Murphy, 712, High-road, Tottenham.
" 9	Ormskirk, Lancs.—Materials	West Lancs. Rural District Council	C. Law-Green, 50, Hampton-road, Southport.
" 9	Ormskirk, Lancs.—Paving	West Lancs. Rural District Council	C. Law-Green, 50, Hampton-road, Southport.
SANITARY—			
May 7	Erith, Kent—Sewers	Urban District Council	The Surveyor, Council Offices, High-street, Erith.
" 7	Armagh—Sewerage Works	Urban District Council	J. F. Peddie, 36, Scottish Provident-buildings, Belfast.
" 8	London, E.—Sewers	London County Council	Engineer's Department, County Hall, Spring-gardens, S.W.
" 8	London, E.C.—Removal of Dust, Refuse, &c.	Corporation	Town Clerk, Public Health Department, Guildhall, E.C.
" 8	Chesterfield—Sewerage Works	Rural District Council	H. Walker, Albion Chambers, Nottingham.
June 1	Brisbane, Queensland—Scavenging, &c.	Municipal Council	Town Clerk, Brisbane.
TIMBER—			
May 7	London, S.E.—Paving Blocks	Camberwell Vestry	W. Oxtoby, Vestry Hall, Camberwell.
" 8	Wolverhampton—2,000,000 Wood Paving Blocks	Tramways Committee	J. W. Bradley, Borough Engineer, Town Hall, Wolverhampton.
" 15	London, S.W.—120,000 Wooden Casks	Admiralty	Director of Navy Contracts, Admiralty, Whitehall, S.W.
" 14	London, W.—Wood Blocks	Paddington Vestry	Surveyor, Vestry Hall, Harrow-road, W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
May 8	Stanwix, Carlisle—Greenhouse		The Curator, Cemetery, Stanwix.
" 31	Honiton, D von—Supplying Town with Water	£21, £5 5s.	Town Clerk, Honiton.
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhamsted—Girls' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamsted.
" 30	Baviera—Villa for Sir William Ingram	£75 15s., £26 5s., £5 5s.	"Architectural Review."
July 16	Falmouth—Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk Falmouth.



MAY 9, 1900.
No. CCLXXIV.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

The Pendulum of Art Criticism.

It is interesting to watch the growth and decay of one school of art criticism after another. For a long time John Ruskin held the field, but there are signs of a revulsion against some of the principles most closely associated with his name. It is true that this latter-day tendency is most noticeable among the painters, for of all the arts, painting, from the versatility and variance of its motives and aspects, has been least amenable to the doctrines of Mr. Ruskin; and for many years Mr. Walter Armstrong, and, in a less direct manner, the late Mr. R. A. M. Stevenson with other art critics, have taken a standpoint diagonally opposed to that of "Modern Painters." It is, however, of architecture we have here to speak: the subject to which Mr. Ruskin first applied his poetic instincts, and upon which his influence will be, assuredly, most lastingly felt. This may be said advisedly, for it must seem a logical conclusion from any comparison of his writings with the peculiar qualities of architecture as differing from the kindred fine arts. It is often and rightly observed (indeed, the saying has become a truism with us) that architecture deals in abstractions; that it is a presentative art, as distinct from representative; and when we recognise how the real value of Mr. Ruskin's work lies in its abstract teaching, in the spirit of its philosophy, and by no means in its concrete examples and specific figures and illustrations, we have good reason for believing (even did we not know it by a hundred subtle and convincing intuitions and manifestations) that the present revulsion of critical feeling in certain quarters will not readily spread to include architecture. If anything is to be regretted of the noble books that have come from Mr. Ruskin's pen on the subject of architecture, it is a too frequent divergence from his purely abstract lessons; and the pages wherein these lapses occur will always be of least value for us. We may well conceive this if we compare his works with those of a contemporary writer with whom he had much in common—Thomas Carlyle. Even in the essays written in criticism of the politics of his day, Carlyle contrives to keep clear of specific recommendation, of direct advice or practical suggestion: and it is his strength. Mr. Ruskin, on the other hand, is ready to enlarge upon the technical utility of the nail in the same page upon which he has invoked the Divinity. Too often, also, he runs his philosophy to ground. In his "Poetry in Architecture," for an example,

there is a fine passage on the woodland cottage, emphasizing the reliance of the beauty of a cottage upon its coincident fitness with country, the scene, and the locality of the site. From these he advances that whenever the pitch of the roof agrees with the angle of the surrounding tree clumps, this unison of effect is expressed; and advises this should be considered in the designing of the cottage. Lastly, he gives a diagram, showing, by letters A, B, and C, how this angle may be obtained from the line of the tree-tops, and plotted to fit with the dimensions of the intended roof. The chapter is a retrogression from the sublime to the ridiculous. Like Samuel Johnson, Mr. Ruskin had a butt end to his pistol, and he

fairly be considered detractors from the inherent value of Mr. Ruskin's writings on the subject of architecture, should, however, rather add to, than detract from, the appreciation of his books; because, though they impinge upon, yet they do not form part of his central lesson. For this reason, and for the reason of the purely *presentative* nature of his subject above referred to, the changing fashion of criticism in the kindred fine arts will not readily be applied to architecture. Indeed, it may also be said that the case of the architect is reversed with the painter; and that the latter finds the technical and specific phase of Mr. Ruskin of greater value and interest for him than the rhetorical and philosophic.

B. C.



CHATEAU DE BLOIS. DRAWN BY C. E. MALLOWS.

was all too ready to avail him of this great power of derision of his; not as Carlyle would affect it, but in just such specific terms, as we have shown, he will make application of his theories, and by one phrase banish the conviction his earnestness and persuasion have established in the mind of his reader. To term St. Stephen's "a foolscap in freestone"; to say vermiculated rusties are like "worm-castings" by way of condemnation of them; to revile the west window of Winchester Cathedral because, as a climax, it has "two pleasing interstices in the shape of carving knives"; and such other conceits, must always detract from the dignity of his personality and purpose. To recognise these characteristics, which may

An Old Coaching Town. OUTSIDE the range of Gothic, ecclesiastical, and domestic work, relics of a long by-gone habit of thought and phase of manners, few experiences are more charming than the happening upon one or other of those old coaching townlets which arose from their previously humble status of country villages at the period when the coaching era set in. Cathedral cities, and ancient towns which owed their rise to the fact of the neighbourhood of abbeys and priories, have an interest apart from the conduct of life as we know it, but the old "thoroughfare" towns and villages that depended upon the road-travel of from two hundred to some sixty years ago are not too

far removed from our own time for their buildings to have a keen interest for the student of domestic architecture.

It is the especial charm of these places that, since railways came and left the roads deserted, they have remained unaltered, save in the fact that their streets are now silent, instead of informed with the noise and circumstance of travel. Such a place is Bawtry, in Yorkshire. Coaching days made it a busy townlet on the great road from London to the North, and brought coaches, post-chaises, and lumbering road-wagons to jostle in Bawtry's now empty street, a street whose width is a revelation of the space once considered necessary and now altogether superfluous; just as the long pillared range of stable-yards beyond the old coach archway of the "Crown" has now become.

Bawtry to-day is a great emptiness. Four square red-brick houses of a certain modishness, being indeed built on the model of the town house, look across the void roadway, with a kind of patronising air, upon the peaked, timbered, or lath-and-plaster gabled cottages that border the opposite side of the street. Much older they are, those old cottages, and more akin to the country. They were built long centuries before the coaching age came, bringing a greater prosperity and consequent expansion to Bawtry, and for a time they were quite put out of countenance by the new-fangled brick houses, with their classic porticoes and brass knockers and impudent red faces. But a period of eighty or ninety years, at the most, saw the beginning and the end of this expansion, and the fashionable air of those houses has altered to an aspect of old-world dignity. Both the gabled cottages and these Georgian houses would feel greatly degraded if confronted with examples of the way in which the small country builder runs up his tasteless structures nowadays, but happily Bawtry has nothing of this type to show, and the white stuccoed elevation of the "Crown" alone hints at a later phase in building taste, typifying the dawn of the nineteenth century and the course of taste in its earlier years. This white-painted frontage marks the close of Bawtry's busy days. Soon afterwards the place ceased to lived a pulsing everyday life of business and activity, and began to merely exist. There are shops here—old bow-windowed, many-paned shops—which have long seen their best days go by. They came into existence under the influence of the beatific Law of Demand and Supply, when all the inns were full of travellers who wanted the thousand and one necessities of civilisation. They did a brave trade in those times, and continued it until the railway snuffed it out in 1842. Since then no one has come to buy, and their stock must contain many curiosities. Probably the stationer has still some of that goffered and perfumed pink notepaper on which the young ladies of sensibility wrote their love-letters in the long ago, together with a goodly supply of the wafers with which they were sealed; and, doubtless, those who seek could find flint and steel and tinder-boxes elsewhere. Bawtry, in fine, is a monument to the Has Been.

C. G. H.

On Reflection.

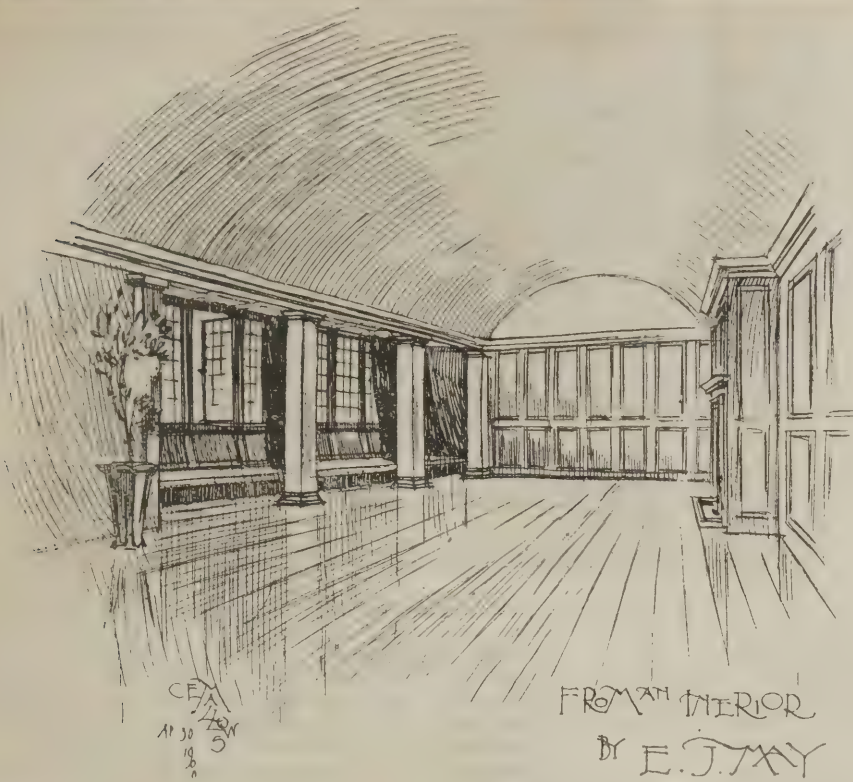
Chimney Pots. HAS it ever struck the reader what an ugly array the chimney pots of our cities make as they stand outlined against the sky? Probably it has, if the reader happens to have the slightest interest in or care for the architectural merits of the houses around him; but there are numbers of builders and so-called architects who seem to think that because the chimney is high up, and its use is to carry away smoke, there is little need to trouble about whether it harmonises with the building it serves or not. And no doubt this is why the chimney pots are massed in their present order, or rather disorder. They may be long and tapering, wide and short, square or round—no matter what their form, they are generally so arranged that they look as unsightly as possible. There is no good reason for doing this, though the cause is not far to seek. Draught is responsible for all the evils. Everything makes towards the production of good updraught, and the prevention of bad downdraught, and rightly so. But this is no reason why great lanky zinc pots, with bends and twirls, surmounted by cones in all positions, hoods and vanes, need be placed in such amazing numbers over the roofs. In London this is perhaps seen most markedly. Take a walk around some of the west-central squares, for instance, or along some suburban streets, and you will see that the lavish and awkward way in which these zinc chimney pots are disposed is positively disgraceful, spoiling all the sky lines. Builders and architects might very well devote a little more attention to this matter.

For Preserving the Old.

It sometimes happens that a deed or a work that eventually has a most important and extensive bearing is done or begun in an unostentatious manner, and the public whom it particularly concerns, being attracted by greater or more showy matters, are not aware of its existence till it reaches its zenith, when they look back at its humble, though admirable, progress, and wonder how it is they have been so ignorant. Or sometimes they see the result of its work, admire it, yet are perfectly unaware or unsuspecting of the power behind. An example of this is given in the case of many old castles and abbeys that are now made tourist spots. Buildings of this kind, and, in fact, all ancient remains, have, however, received considerably more care and attention in Ireland than in England, for while a vote of something under £100 is all that the latter country devotes for the preservation of the pre-historic monuments in charge of the State, thousands of pounds are at the disposal of the Irish Commissioners of Public Works for the maintenance of disused churches and abbeys, about £50,000 being provided by the Irish Church Disestablishment Act. The sphere of the Commissioners' work was, moreover, extended in 1892 by the passing of an Act which brought "any structure, erection, or monument of historic or architectural interest" into the fold. Taking advantage of these powers, the Irish Office of Works (with which the late Sir Thomas N. Deane is inseparably connected) has done good service, and has intervened to save many precious fragments which would otherwise have fallen into ruin. But the English Office of Works has quite a different story to tell, though it is to be hoped that things will shortly be much improved. A Bill dealing with this matter, which was introduced by Lord Balcarras, has passed the House of Commons, and will shortly be brought by Lord Avebury (formerly Sir John Lubbock) before the House of Lords,

who, it is hoped, will not stand in the way of its being put on the Statute Book. This Bill is of great interest, and its main aim is to bring the English Board of Works up to the Irish standard. It extends the Irish Act of 1892 to Great Britain and will enable such a building as Tintern Abbey to be placed (the owner's consent being given) under State control, and there could then be no talk of wealthy Americans carting off the grand old ruin stone by stone and re-erecting it on Yankee soil. In addition, it will place county councils in England and Scotland in the same position as that now occupied by the London County Council as the result of the power it obtained some little time ago for preserving historic structures or places in the metropolis. But there is still another item, that of empowering the Commissioners of Works and county councils to receive voluntary contributions towards the cost of maintaining or preserving any monument, and it is only necessary to remember how most valuable additions to open spaces in London have been made in this way to appreciate the value of the provision. In fund-raising for this purpose the Natural Trust for Preserving Places of Interest and Beauty has long been busy, and the Bill provides for co-operation between this little-known-of Trust and county councils. From the foregoing statements it will be seen that every lover of archaeological, architectural or historic remains will be in hearty accord with the spirit of the Bill and be a warm wisher for its sanction by the House of Lords.

The Vatican. As buildings used by large communities must necessarily conform with the requirements of an age of improvements, it is not surprising that even such a conservative institution as the Vatican cannot escape the general progressive reforms that have made such changes all around us. Some time ago it was stated that an American had offered to bear the expense of having St. Paul's Cathedral wired for the electric light, then a London morning newspaper said that this was not so, a statement which a leading electrical journal promptly denied. So far as we know, the work is still in hand; but the Vatican has undergone much greater changes. First of all, the Pope had steam heaters installed in his apartments; then those mystery-haunted passages, the Catacombs, were made brilliant from end to end with electricity; then the Apostolic Palace was similarly treated; and now a dispute is in progress as to whether the candles in the apse behind the high altar shall be replaced by glow lamps. Of these candles there are about 20,000, which burn from nine in the morning till five at night, being supported by about 1,000 candelabra (two of which hold 800 candles each) hung from the roof. The substitution of the electric light in this part of the great Italian cathedral would not, we think, be a wise reform, however much trouble of lighting it might save, for there is something in the twinkling of the candle flame which has no counterpart in the never-changing electric light, a something whose absence detracts considerably from the total effect. The idea of switching on the lights to an altar is as repugnant to one's sense of fitness as would be the suggestion to take away the present benches in Westminster Abbey and replace them with tip-up chairs covered with blue velvet. The "advanced" party ought always to be on the look-out that its latest reforms do not do violence to the sentiment of sanctity, which, in the minds of many, attaches to the traditional accompaniments of public worship, and it is to be hoped that electric lamps will not take the place as altar illuminants of their more troublesome, but certainly more beautiful, predecessors.



ARCHITECTURE AT THE ROYAL ACADEMY.

FIRST NOTICE.

THE architectural room at the Royal Academy retains much of its usual character and aim. Year after year we find complaints made as to the constitution of this exhibition and the laws which seem to govern it, and suggestions are thrown out as to its improvement, but it still goes on much as usual, and presumably it always will.

One has to take into account, when judging it, that it seems to make no pretence to be a collection representing the highest and the best that architects of the present day are capable of producing; but rather a collection of those things which a kind or unkind fate has permitted or forced them to produce or to perpetrate. And the difference is vast.

The Academy, no doubt, is the best judge of its own affairs, but all the same we cannot help wishing that it would devote itself a little more to fostering high ideals and magnificent impossibilities, and that architects might find here a chance of exhibiting, and a certainty of a sympathetic appreciation, of the best they are capable of imagining or creating, quite regardless of the fact that such schemes may never be executed. There is too much in this yearly exhibition of work which may be of importance from a commercial or a social point of view, but which, from the artistic point of view, is of little worth.

Of practical every-day productions which satisfy practical every-day needs, practical every-day people are possibly the best judges and the warmest admirers, and artists will always find outside these walls adequate, and more than adequate, encouragement for this class of work; but of the purely artistic work that a man might be capable of producing, if he had the chance, of the aspirations and ideas that sweeten the drudgery of every-day life, and keep alive the lamp of art, and which sometimes take form in those visions which too rarely haunt the soul—of these artists should be the better judge. Where, if not here, can such things be appreciated? and to whom would an artist wish to appeal for sympathy and support if not to his brother artists? and what better work can an Academy perform than to cherish this spirit of art and feed the sacred flame? What one does feel is that here, if anywhere, designs should be accepted purely on their merits as art, and

without any reference to the importance of the building, or the position of its producer. The interest which an academy of arts takes in a building should be an artistic interest, and that alone; but the contrary is so notoriously the case that it is well understood that an ideal design has a much better chance of acceptance if it has a misleading title, which

gives the impression that it has been, or is to be, executed. This is not as it should be.

If we come to think of it, we naturally should suppose that the work which an academy would be expected to encourage would, in the nature of things, be academic, in the real meaning of the word, if there is any meaning in a name. The work it exhibits should be true in principle, should carry on the best and the highest traditions of art, and should show a knowledge of all those things which are capable of being taught, and which are the outcome of experience. By making its selection on some such lines it would help to raise and maintain a high standard, and so would do a real service to architecture.

It may possibly be the fact that it is convenient and useful to architects to hold an annual exhibition of those things which they have actually carried out during the past year or so with no reference to their value as works of art. Such exhibition may be of great interest to themselves and their clients, and even, to some extent, to their brother architects, but it is of little interest to other artists, and still less service to art, and the last place in which one should expect to find it would be an academy of arts. But here it is, and we must take it as we find it.

On entering the room we find right in front of us a design by Mr. J. Belcher, for the Eastern Telegraph Co., which, to some extent, illustrates our remarks, for we think that no one would hesitate to say that the importance of the building commercially, and the position of its designer, outweighs its merits as a work of art. Neither can it in any sense of the word be called academic, though this, in the present state of public feeling, would not be looked upon as a reproach. What strikes one most forcibly is that the designer has made up his mind to treat the Renaissance style in a novel manner, and has gone out of his way—and out of the way of the best art—to do it. The Renaissance—and, for the matter of that, any style—is a complete language, which has been



evolved, like any other language, to enable mankind to express its ideas and feelings. It has, therefore, its mutually agreed upon laws of grammar, of structure and composition. Every feature has its appropriate place, in which it is generally recognised as meaning certain things, and it is so understood by the student of that particular language. By means of this generally accepted language artists have been able to express themselves freely, without the necessity of inventing new words and a new language for every poem which they wished to write. Had this been necessary no poems would ever have been written, and if they had been no one would have understood them. This is rather our position on looking at this design; we do not understand it, we cannot make out what it is the artist wishes to say, or realise what it is he feels. It may be our own fault, but, at the same time, a really great work of art makes something of its meaning clear even to the meanest intelligence, while this fairly baffles us. The artist seems to be using a particular variant, or dialect, of a bygone language, which, as far as we know, has been invented by himself; and his principal energy seems to have been spent in so doing. This, to anyone not thoroughly conversant with his dialect, is confusing. The mind has already become accustomed to, and is, generally speaking, more or less acquainted with the general structure of this particular language, and has got used to seeing certain features which perform certain functions, and which, in certain positions, mean certain things; as a column, or a corbel, or the antefix on a pediment; or, again, the relative value and distinctive character of a main cornice, and an attic or basement cornice. The difference of character in every feature is easily appreciated, its appropriateness recognised, and what the artist is trying to do is fairly understood; but, when one sees a building into which all these features have been introduced, in what seems a haphazard fashion, without any apparent reason, and often in a way that destroys their original meaning, one gets lost and puzzled, and the design does not appeal.

Take, as an example of this, the treatment of the first-floor and other windows, which have slight pilasters, or strips, running up each side and terminating in brackets, which carry a cornice over the window openings. This cornice returns round the projection of the brackets, and runs along the wall, over the window, for about a quarter of the width of the window, where it returns on itself against the wall, leaving a gap of about half the width over the centre of the window, where there is nothing in the nature of a hood mould. We must confess we entirely fail to see why this has been done. We understand the meaning of a Renaissance cornice, or a Gothic hood mould, over an opening, where it serves its practical purpose of protecting the opening from the weather, and of throwing off the water; and we can appreciate its æsthetic value in softening the otherwise violent contrast between the plain wall and the void, and its use in helping to give the opening any proportion or relative value that may be desired, or in obtaining a line of a desired weight at this particular spot; but the treatment we find here we do not understand, and it seems to us to be wrong in principle. If a window, or a door, needs any protection from the weather, it needs it most of all in the centre. If these windows needed any protection, why was the cornice not run through? And if they need none, why is it there at all? There are other features in this building to which objection might legitimately be taken, did space permit.

We do not wish to be misunderstood. We do not for a moment maintain that the artist must be bound down by arbitrary rules, or that he may not express himself as freely as he pleases. It is open to anyone to improve on the proportions of a classic column. But, if he finds the Renaissance too limited a language for free expression, why does he adopt it at all? If no known language is free enough, why does he not create one?



WOODTHORPE HALL.

But if he does deliberately adopt this or any other settled and recognised language we think he is bound to respect its general spirit and style. To do otherwise, and to use it as far as convenient, or as far as his knowledge may take him, and then, when some modern idea or requirement has to be expressed, or when knowledge of the language fails, to distort the construction of a sentence, or to pervert some word from its original meaning, or invent a new one, is to produce the dog-Latin with which we are occasionally amused by Mr. Punch, but which, if taken seriously, would cause every artist to deplore the mutilation of an old and perfect language in which some of the most beautiful ideas of humanity have found expression.

It may be that an artist who is struggling after a new and more free expression is bound to lose purity of style. But where such an attempt is genuine and sincere we generally find that every feature introduced has been suggested by necessity, and does, at any rate, attempt to perform and express its function, whatever it may lack in harmony or distinction of style.

SOME OLD DERBYSHIRE HOUSES.

By JAMES R. WIGFULL.

THE country surrounding Cartledge Hall, near Sheffield, has been described as a bleak and desolate moorland. It is hilly, but the land is, with the exception of the wooded portions, entirely under cultivation, and within a radius of a mile and a quarter are nine or ten examples of old domestic work. These show traces of the great variety of styles which are included in the term English Renaissance. Possibly these buildings are not so ornate as some to be found in other parts of the country, but they possess an interest to us as architects in that they show the honest use of local material and a restraint and avoidance of fussiness in detail and design; their builders worked in the traditional style of their forefathers, into which they gradually introduced some traces of that new manner of building which, coming from abroad, was eventually to supersede our national style.

It is interesting and instructive to take the buildings of a particular district and note the manner in which the various features of the new style made their appearance; usually the doors and chimneys betray the first traces. Early evidence is also found in the gate-posts and mantels, if by good fortune these remain. For a long time the windows in this neighbourhood retained their plain chamfered mullions, slightly recessed from the wall face, after the rest of the work had become quite Renaissance in detail; but eventually these gave place to

plain square mullions. While these changes in detail were taking place, there was another, and very important one, gradually making itself felt—this was the accentuation of the horizontal lines of the buildings. This emphasis of the horizontal lines is, as you are aware, one of the distinguishing marks of the Renaissance style, and its gradual introduction into the simple domestic work of the seventeenth century, while at the same time the gables were as gradually eliminated, make the buildings of this period of exceptional interest for the purposes of study.

I have selected the buildings of the district lying between Totley and Unstone for the purpose of the present paper. Not only are the buildings of this district of exceptional interest to us as students of architecture, but their former owners played an important part in the history of their day; especially was this the case during the time of the Civil War. This, however, is scarcely within the scope of our present subject, although it cannot be ignored entirely in any description of the buildings. Before considering these in detail, it may perhaps be advisable to direct attention to certain points common to all, or nearly all, of them.

The plans show buildings narrow in width with projecting wings. This system was no doubt due in a great measure to the materials used in roofing; the use of stone slabs, or grey slates as they are known locally, is universal. The valleys formed by the intersection of roofs are worked in the same material; lead for this purpose is quite unknown; some few instances occur where it is used for gutters behind parapet walls, but its absence generally is noticeable. I have referred to the windows having either plain chamfered or square mullions. So far as I am aware, there is only one example in the district chosen where a moulded mullion is to be found. This is at Horsleygate, where an ovolo mould replaces the chamfer. The chimneys, too, express the local type admirably. They are always placed centrally over the ridge, and frequently form the crowning feature of the gables. Two varieties are to be found, one, where on a square base one or more square shafts are set diagonally, the junction between the base and shafts being formed by plain chamfers the shafts having moulded caps crowned by a blocking course. The other type, and, perhaps, the more common one, consists of a plain square stack, usually with a chamfered plinth and having a neck mould, cap mould and blocking course. The string courses, or weather moulds, over the windows are very similar in section throughout the district.

A special feature to which I would direct attention is the walling. This consists of square stones laid in courses varying in thickness from 2½ in. to about 7 in., with thick mortar joints, and having dressed quoins at the

angles. In a few examples larger stones with a dressed face have been used, notably at Cartledge Hall and in the later work at Holmesfield, but this class of work forms the exception rather than the rule. I propose to deal with the buildings in the order in which they would be seen during the course of a day's walk. The best point from which to start is Totley Station.

The first building to be reached is Woodthorpe Hall, situated on the hillside just below Holmesfield Wood. It might well be taken as a type of most of the houses in the district. The plan is L-shaped, only one wing being now inhabited; the other is used as a barn, &c., a fate only too common with portions of these houses. The building is two storeys high to the eaves, with a third storey in the roof, having windows in the main and smaller gables. These latter windows have been blocked up, possibly with a view of escaping the window tax. The gables have a plain chamfered coping, which returns a short distance horizontally over a projecting knee-stone; the detail of this latter is very characteristic. The chimneys are placed centrally over the ridges, but these, together with the roofing, have been renewed in recent years. The windows are without transoms and are of one, two, and three lights, with the weather mould carried along the two outer sides of the building as a string. The positions of the doors have been altered, but the old ones were placed near the ends of the two wings. They were exceedingly simple, having nothing beyond a chamfer on the jambs and head. There is a quiet, homely feeling about this building, coupled with a good proportion in the various parts which have always appealed to me very strongly.

A short distance along the lane from Woodthorpe is Fanshawgate. Little remains of the original homestead, but interest centres on two small buildings at the side of the garden. One of these is of three storeys and is approached from two levels, the lower from the field and the centre one from the garden; the upper storey appears to have been a dove-cote. Part of the old garden walls remain, together with the gate-posts, the outer pair of which are curious. The upper portion is carried on four balls of stone, and although it has stood for so many years there is a feeling of instability about it which is not desirable in such a position. The remaining posts are much better, and quite worthy of a sketch. Although so little now remains, Fanshawgate was once of much greater extent. Its owners, or their descendants, were of considerable importance in their time, one, Thomas Fanshawe, Remembrancer in the Court of Exchequer in the reign of Elizabeth, leaving money to found the Grammar School of Dronfield.

About a mile from Fanshawgate is Horsleygate. The Hall is quite a modern building, but, close at hand, there is another and smaller house interesting from the fact that in some cases the window mullions are moulded. There is a large barn here of an early date which is worthy of examination. Many of these old farm buildings present admirable examples of the use of simple materials, and should not be hurriedly passed in the search for those interesting bits of detail which are so dear to the heart of the average student.



UNTHANK HALL.



FANSHAW GATE.

Unthank Hall is also close at hand; it presents no features of exceptional novelty, but there is a picturesqueness in the grouping of the various buildings which renders it of interest. The chimneys show a very good example of one of the types I mentioned, that with the diagonal shafts. The interior contains some good plasterwork, of late character, but simple in design.

Near Unthank lies Barlow Woodseats. The house, now used as a farm, is large, and is stated to have been built by Arthur Mower, who died in 1652; the walls have been almost entirely covered with rough cast, and many alterations have been made from time to time. All traces of the original doorways have been removed. The windows are in some instances of five lights, with transoms, and many contain the original glazing, the glass in which is rough and uneven in texture and would not be clear enough to meet the wants of the present day. The proportions of the windows are good in themselves, but they appear small in relation to the wall surface; this may be due in a measure to the rough cast which covers the jointing of the walling, and further to the large scale of the gables as compared with the other buildings in the neighbourhood. The single chimney crowning one of the gables looks insecure, and its position in the design is far from happy. I understand there is an old oak staircase in the house stated to be in good preservation, but time did not permit me to make an examination. The old farm buildings also remain, and with their long unbroken ridge and broad wall surfaces they form a pleasing background to the more broken lines of the house. The yard is enclosed by high walls; at either end are large gateways having simple posts of good design. There is in existence a document which purports to be a copy of the original conveyance of Barlow Woodseats in 1360; it is short and to the point, and might be of interest to our legal friends.

About a mile and a half from Barlow Woodseats on the way towards Holmesfield is Cartledge (see inset sheet). Here there are two houses close together, the Hall and the Grange. The Grange entirely blocks the view towards the south from the windows of the Hall, and is stated to have been erected by a member of the Jolley family to spite a relative who then had possession of the Hall. This certainly seems a reasonable explanation for the existence of a house having its back set towards the front of another of earlier date, and at a distance of only thirty yards. The Grange does not present any special features of interest except, perhaps, the stone eaves-spout, erected to carry the rain-water away from the doorway. The effect of the windows is entirely spoilt by the heavy modern glazing. The house was unoc-

cupied at the time of my visit, and had a bare cold look as compared with the Hall adjoining it. This latter is perhaps the most complete example of old domestic work in the neighbourhood, certainly the most perfect in the district under review. It belonged to, and was erected by, the Wolstenholme family, probably, during the late Tudor period. Built of a coarse gritstone, having a dressed face and laid in deep courses, it presents a marked contrast to the usual walling of the district. Perhaps the most striking features of the exterior are the two large chimney-stacks on the west side. These project from the wall, and are reduced by weathering courses below the gables to oblong stacks each carrying two square shafts set diagonally: these shafts have been renewed, but the bases appear to be the original ones. There is a parapet wall connecting the two stacks with plain stone gargoyles to conduct the water from the roof; this is covered with stone slates and has a long gutter through the centre, a detail in which it differs from other and later buildings. The gables are in some instances devoid of coping, and the roof timbers show on the outside of the walls, a rather unusual feature in the neighbourhood. The windows on the ground floor have transoms, and these and the mullions have a small fillet at the inner edge of chamfer. All the windows are filled with lead lights, glazed in diamond panes, and have square iron bars on the inside. Pleasing as is the exterior of this house, it is inside where the greatest charm is experienced. The rooms almost throughout the lower floor are panelled in oak. This panelling is simple in design, and in some cases the upper panels are long and narrow and have low relief carving introduced. In the room which is entered directly from the porch, there is an old clock case, which is designed to form part of the panelling. The inner doors are in all



BARLOW WOODSEATS.

cases low, that in the drawing-room being not more than 6ft. in height. This room is in a very good state of preservation. The ceiling is divided down the centre by a beam having modelled ornament on the soffit and the cornice mould returned along the sides; one end of the beam is supported on a bracket extending the depth of the frieze. One compartment of the ceiling retains its moulded ribs; the pattern is good and is enriched by a profusion of modelled ornament, in which Tudor roses and twisted snakes are to be found. Round a portion of the room there is a modelled frieze, in which oak leaves appear to form the basis of design. Squirrels are also introduced, but the effect of successive coats of colour-wash renders the exact pattern a matter of conjecture. The lower parts of the walls are panelled. The room is low, being only 7ft. 6in. in height, but, in spite of modern regulations, this seemed sufficient for appearance. Perhaps the general proportions and panelling account for the feeling of satisfaction experienced.

There is an oak mantel in this room surrounding the moulded stone jambs and head of the fireplace. Two flat pilasters, carved with a conventional pattern of vine leaves and grapes, with caps of the Corinthian type (now, however, much mutilated) support an over-mantel. This contains two ranges of panels, the upper ones being long and narrow and carved in low relief. The lower panels are separated by flat pilasters; one of those on each side of the centre panel is carved with

a representation of a female figure, with a snake entwined around the body. The pilasters forming the outer edges of the design are carved with representations of men covered with hair and carrying clubs. The side panels of the lower range have moulded ribs enclosing a medallion in the centre, with four outer panels. The latter are carved in low relief, but the medallion is now plain; possibly at some time it contained the name or coat of arms of its first owner. The centre panel contains a richly-carved representation of the Temptation. In the centre is the tree with the serpent entwined around the trunk; on either side stand Adam and Eve. Ribbons containing inscriptions run up the side of the figures. That by the woman contains the words, "The serpent beguiled me," while the other states, "The woman gave me of it, and I did eat," in spite of which statement Adam appears to be helping himself to the fruit. At the foot of the tree sit two monkeys busily eating apples. The sides of the panel contain conventional vines, into which are introduced snails, squirrels, birds, and a dog or talbot. Across the top are wavy lines representing the sky; the sun occupies the centre and at the sides are stars. At some time this mantel has been blackleaded, a fate which frequently befel oakwork in this district.

On the upper floor is another room with panelling on the walls, and having a richly-decorated ceiling. This is coved in section,



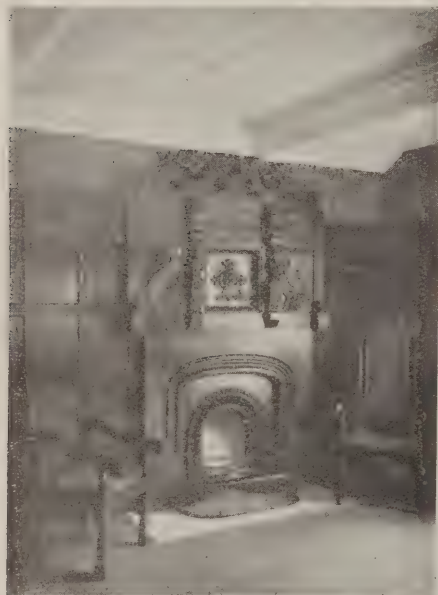
CHIVERTON HOUSE, DRONFIELD.

lights with square mullions on the outside, although the chamfer is retained inside. A flat architrave of slight projection surrounds the windows; it has a hollow chamfer on the inner edge. The windows to the left of the door are built up, and as the staircase cuts across them at the inside I imagine that has always been their condition. The chief feature of interest is the doorway; this is very good in detail, and is surmounted by a segmental broken pediment, from which rises a large shield having twenty quarterings; above this are three helmets bearing crests of the Burton family, and from the centre helmet the mantling spreads and forms a finish to the design. The manner in which the carving of the helmets is executed is surprising. It is scarcely credible on first sight that they have been carried out in stone, the amount of undercutting is so great. The mantling is rich and bold in design, and forms an excellent relief to the finer carving of the coats on the shield. This doorway is executed in a finer-grained stone than the rest of the front. Below the shield on a ribbon is the motto "Virtus ardua vincit."

The back of the house still retains traces of an earlier date. It appears as if the south front were simply an insertion by the then owner to bring his house into the fashionable style of his day. Whatever the reason of the alteration, it has afforded us an example of the work of the period which is almost unique in

this neighbourhood. It is stated that before this alteration the house possessed a projecting wing on this front. The manner in which the design of the ceiling of the end room is cut into by the front wall certainly supports this theory. This ceiling is divided by beams into large panels. The cornice runs round them, and the flat has corner ornaments and a centre piece; these vary in design. The soffits of the beams have been richly ornamented, and had medallions at their intersections, but this ornament has in most instances disappeared. The walls are panelled in oak. This looks rather patchy, and has evidently been cut to fit its present position, probably when the room was altered. There is a fine overmantel, which has been treated in a barbarous manner and is now all daubed with paint. In spite of this, however, sufficient remains to show the design. The room contains many examples of old furniture and china, and is evidently a source of pride to the present occupants of the house.

About half a mile from Holmesfield is the village of Dronfield Woodhouse. The Hall, now a farmhouse, has a neglected appearance. It has undergone many alterations, some of the more modern of which are far from satisfactory. This house was formerly the residence of the Barlow family. Many of you, no doubt, remember the alabaster tomb in Dronfield Church, having on the top an effigy of a knight in armour. This was erected in memory



A CORNER IN HOLMESFIELD HALL.

and is ornamented by ribs in flowing lines, having modelled ornament in the spaces thus formed. There is great variety both in the ornament and contour of this ceiling, which removes it entirely out of the ordinary run. It may be instanced as an example of how a difficult situation was grappled with by these old builders and rendered an object of beauty instead of the abortion it might have become in the hands of less competent designers.

About a quarter of a mile from Cartledge, and close to the church, is Holmesfield Hall, at one time the residence of a branch of the Burton family. They were of considerable importance in the seventeenth century and furnished High Sheriffs of Derbyshire on several occasions. There is a date, 1613, in one of the rooms, and this may probably be taken as that of the original building. Many alterations have been made to this house from time to time, the last and most important being the rebuilding of the south front some time in the early part of the eighteenth century. This work is quite classical in feeling; the walling is of dressed stone laid in deep courses. There is a good moulded eaves-cornice, chopped off flush with the ends of the building; the roof was hipped at the same time. The windows are of three and four



HOLMESFIELD HALL.



HALLOWES HALL.

of Sir Richard Barley, or Barlow, of Dronfield Woodhouse. At a later date the house passed to a branch of the Eyre family, of Hassop. In spite of its neglected look, there is much of interest still connected with this old house. The lights of the windows are long and narrow, and are without transoms, except in the case of a wing added at a much later date. The principal feature of interest is the garden. On two sides of this are high brick walls against which fruit trees are trained, doors in these walls giving access to the garden; at the end opposite the house is a sunk fence, segmental in plan. In the centre of the garden is the pedestal of an old sundial, supported on two circular steps. It is extremely pleasing in proportion and design, and is a relic of the time when the architect was allowed to invade the garden, and was not merely supposed to prepare a shell for others to finish. Traces of the old paths exist, now grass-grown and neglected, but in spite of this sufficient remains to show their original design.

The road from Dronfield Woodhouse to Dronfield does not present any features of interest. It is not until the latter town is reached that buildings having any pretence of architectural treatment are found. Dronfield is familiar to most of us on account of the very fine chancel of its parish church, but apart from its church there is much in the town to interest the architect. In the upper part is the Manor House, a somewhat plain building having a hipped roof and a bold eaves-cornice. The windows on the front appear to have had their mullions and transoms removed, and sashes substituted. Those at the side retain these features. This house, like all the others I propose to deal with in Dronfield, is designed on symmetrical lines. The front has a central feature, in this case a projecting porch, and the two sides balance exactly. I understand that the house contains a fine oak staircase and also some ornamental plasterwork.

Quite close to the Manor House there is a small house which is now used as an inn. The plan is simple, an oblong 40ft. by 20ft., with a projecting wing at the back containing the staircase. The front is symmetrical, with a door in the centre and two windows on either side, a range of windows over, with single windows in the two gables. Parapet walls exist towards the front, from the gutters behind which the water was discharged by gargoyles. The principal feature is the doorway, which has raised and moulded blocks on the jambs. Inside there is a good staircase with turned balusters and square newels. The risers are only 6in. in depth, and the whole has a solid and substantial appearance. Unfortunately, at some time the oak has been covered by successive coats of paint. Close to the station are two buildings almost side by side, and both fronting towards the south. The one nearest Sheffield is Chiverton

House, a long, narrow building of two storeys to the eaves with a third storey in the roof. There are gables at the ends and a further one in the centre; at the ends of the front are small projecting wings with flat roofs; there is a further wing at the back containing the staircase—this is of oak and of a simple design, with square newels and a bold handrail. The rooms extend from front to back of the building, and all face towards the south; in the centre of the ground floor is a large hall, now used as a drawing-room. The outer door opens directly into this; a similar arrangement exists at the adjoining house. The two lower ranges of windows are of two lights, and have transoms, and from the detail appear rather late in date. The outer door of the kitchen has the initials, J. B. A., and the date, 1712, in a shield on the head. I am told that this is an insertion and that the building is much older, but there is nothing in the detail of the building which prevents the acceptance of this as the date of erection. There is a small court in front of the house approached by a flight of steps, the railings and gates are modern, but the posts, now covered with ivy, are no doubt the original ones.

The house adjoining Chiverton, and known as Rose Hill, was erected in 1717. It, like the others, has a symmetrical front, in which are two gables united by a parapet, with an open balustrade in the centre. The plan is simple, consisting originally of a long and narrow block in front with two projecting wings at

the back. The original doorway is in the centre of the front and leads into a square hall, now used as a sitting-room; at some time the space between the two back wings has been enclosed, and a new entrance formed at the end. The original doorway has a semi-circular pediment, in the tympanum of which is the date; probably at one time there was also a coat of arms or monogram, but all traces have now gone. The windows are long and low, and, with the exception of the one on the staircase, are without transoms. Many of the mullions have been removed, and wooden case-ments have in all cases been inserted. The openings diminish in width in each storey, but in each case the height is equal to twice the width. The label moulds are carried along as strings, and give a horizontal feeling to the whole. The chimneys are good examples of their type, that consisting of a square stack with plinth, necking, cornice and blocking course. They are placed centrally over the ridges, and have a weathered and throated string below the plinth to throw the water clear of the lower part. The general effect of the house when seen from the garden is not so good as I anticipated from the views previously obtained from the railway. The detail of the windows is thin and wiry; it may be that the stonework has been redressed at some time, but it has not the character of that found in the earlier examples. There is a simple staircase having flat-cut balusters, but apart from this little of interest is to be found inside the house.

Scattered about the town are numerous traces of work of a similar kind; there are also examples which illustrate almost the last stage of the use of windows having mullions and transoms. Quite close to the Manor House is one having a flat front with an open parapet or balustrade extending across its width. The windows have square mullions and transoms, and the proportions of the lights are bad. It looks like the work of a man out of sympathy with, or having an imperfect knowledge of, the style in which he attempted to build. The workmanship differs from that in the houses previously described, and I mention it as an instance rather for the purposes of comparison in the use of materials than as an example to admire. Close to the railway there is another house of similar date, but here a certain picturesqueness of grouping has crept in; possibly the natural instincts of the builder rose superior to the style of his day.

On the hill behind Dronfield is Hallowes Hall, or farm. The present building was erected in 1657 by the Morewood family, the initials of one of the members, probably Andrew, who died in 1678, appearing over one of the doorways. The plan of the building is like the letter H, the cross-piece forming a large entrance hall, with a door on each side; the one towards the south-west contains the date



ROSE HILL, DRONFIELD.

and is contemporary with the building, while that on the other side is of much later date and is a good example of the perfected Renaissance style. The broad flight of steps leading to this door, and extending across the space enclosed by the wings, gives great dignity to the approach. The detail of this doorway is almost identical with that at Holmesfield, and is probably the work of the same hand. In the tympanum is a coat of arms showing Lathom impaling Morewood. As a member of the Lathom family married the heiress of the Andrew Morewood previously mentioned about the year 1700, it is probable that this doorway dates from the early part of the eighteenth century, yet it is much superior in detail to others in Dronfield of that date.

The house differs slightly in character from those already described. The gables seem to have too much wall in proportion to window space to be altogether pleasing. Some of the rooms have their ceilings divided into panels by plastered beams, and until recently one of them was panelled in oak. This was removed some years ago, and accounts differ as to its ultimate destination.

The old garden walls are in position and traces of terraces may be seen. The ground rises from the south-west side of the house, and parallel with this front is a terrace wall having a semi-elliptical flight of steps opposite the centre of the doorway. These have a very pleasing appearance, and are probably contemporary with the doorway on the opposite side of the house. On one side of the lawn is a small square garden house having a hipped roof with a stone finial; there is a bold eaves-cornice and a short flight of steps leading to the doorway. The garden is now used as a paddock, but sufficient remains to afford suggestions for the treatment suitable to a sloping site.

About a mile from Hallowes is Unstone Hall. It lies close to the railway line and the back at least will be familiar to all. The portion now remaining was erected in 1653 by a branch of the Bullock family, whose coat of arms appears over the doorway. An older portion of the building, which has long been in a ruined state, has recently been pulled down to make way for some much-needed additions to the house. The roof is in one span with gables at the ends; on the projecting wing towards the west further gables rise from the eaves. The chimneys have the shafts set diagonally on a square base, one has four shafts and forms one of the best examples of this type in the district. The windows vary in design. Some on the ground floor have transoms, but these form an exception to the rule; the label moulds turn down and return a short distance along the walls in the manner customary in late Gothic times. Many of the windows retain their old lead glazing, and in some cases the old casements remain. The doorway is interesting, partly on account of the treatment of the jambs, where



UNSTONE HALL.

the manner of arranging the stones shows early evidence of Renaissance feeling, but more especially on account of the old oak door. This is studded with nails, and has its original wrought-iron hinges intact. The grouping and proportions of this house are excellent, and much may be learnt from the simplicity and restraint of the design, and from the manner in which the materials are used.

In conclusion, perhaps, I may be permitted to tender to the younger members of the architectural profession a few words of advice, not altogether out of place at the present day when cameras are so universal. I would urge them to rely more on measuring and sketching for the purposes of study, and less on the camera. The latter has its uses, but young students had better leave photography severely alone. Its practice is extremely fascinating, and tends to relegate the more useful measured work entirely into the background. It is by measuring and drawing to scale that we are able to analyse an old building, and see why its proportions appeal to us. I also strongly recommend that all measured work should be drawn to scale on the spot. This is imperative in the case of mouldings and ornament, and by no other methods can the details of jointing be accurately obtained.

The West Ham Picture Exhibition has been transferred to Stratford Town Hall, E.

Keystones.

New Church Buildings at Hirst, Morpeth, are being erected from the designs of Mr. Osborne Blythe by Mr. J. W. Braithwaite at a cost of £700.

For laying out an Estate at St. Albans an open competition was recently held, in which the first premium has been awarded to Mr. C. J. Fox, architect, of Newport, Mon.

A Spectacular Exhibition at Halifax is to be held during July and August next, and the first sod was recently cut for the lake (300ft. in length) which will be one of the chief features. The buildings are being pushed on with all speed.

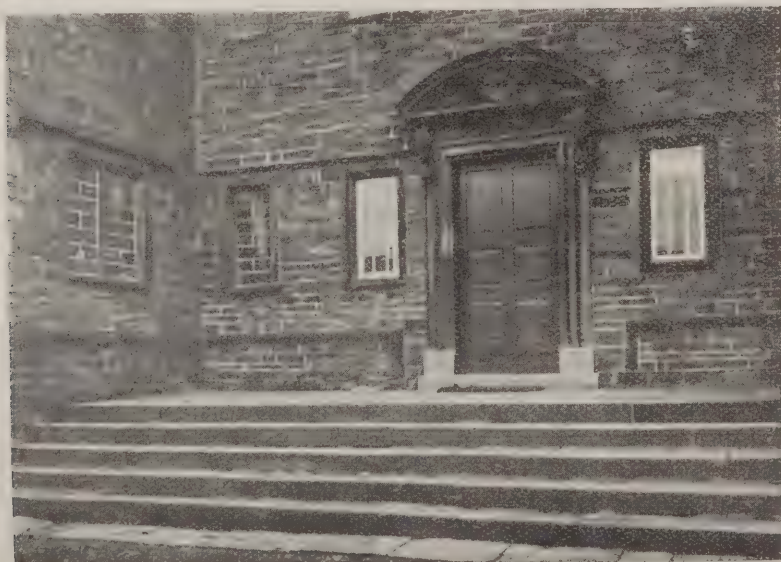
A new Presbyterian Church at Whitley is being built from designs by Mr. Henry Gibson, of North Shields. Accommodation will be provided for 450 worshippers, and the walls are to be faced with red Ruabon bricks with black joints and Denwick stone dressings. Messrs. W. A. Fishburn and Co., of North Shields, are the contractors.

Extending the Wharves at Sydney, Australia.—As a precaution against the plague, the Cabinet has decided to resume the wharves from the head of Darling Harbour to Dawes Point, Sydney, about a mile and a half long, with a depth of 300ft. inland from the water-line. This includes about forty wharves and buildings. The cost is roughly estimated at £2,000,000.

A new Organ at Chelmsford Parish Church has been built by Messrs. Norman and Beard, of Norwich. A new roof for the nave is also contemplated. Mr. Chancellor has (gratuitously) acted as architect for the new roofs and other works which have been erected at the west end of the church, Mr. H. Potter, of Chelmsford, being the contractor, and Mr. Polley, of Coggeshall, the carver.

New Y.M.C.A. Premises at Totterdown, Bristol, have been built at the corner of Bushey Park from designs by Messrs. La Trobe and Weston, of Bristol. The buildings include branch premises for Messrs. Lloyd's Bank, Ltd., and have cost £6,200. In the public hall of the bank is a mosaic floor, the design of which is based on that of the recently discovered Roman villa at Brislington.

"The Architectural Review" for May will be a special number dealing with Architecture and Crafts at the Royal Academy. In order to make it as complete a record as possible, and to secure illustrations which otherwise it would have been necessary to omit, it has been thought well to delay publication until the end of this week. Subscribers will admit, we think, when they see this month's Review that it was worth waiting for.



DOORWAY, HALLOWES HALL.

Our Monthly Review.

Architecture (New York) for April is a somewhat better number than the previous one. The notes are of the usual chatty, interesting nature. We see that the bill to regulate the practice of architecture, prepared by the New Jersey architects, passed the legislature by a vote of 38 to 5, but, owing to its reaching the Senate during the last week of the session, was "held up." This means that by the absurd American political system the work will have to be done over again next year. The New Jersey architects have embodied in their bill the following: "But nothing herein contained shall be construed to prohibit students, or employees of licensed architects, from acting for or upon the authority of such licensed architects, or to prohibit any person in this State from acting as designer of any building that is to be constructed by himself or his employees." This section is stated to give them the support of all the small builders and country carpenters. It would, perhaps, be better if some such clear statement were made to this effect in the Bill promoted by the Registration Committee in this country, rather than let it remain in the indefinite character it has at present. In Canada the architects in the Province of Quebec have received recognition, and architecture is now a close profession; a licensing bill is being pushed in the Province of Ontario, and the Society of Civil Engineers also has a bill before the Ontario legislature to close the ranks of the profession to all but duly qualified persons. The Californian architects have a licensing bill before the legislature, the initial cost to be 25dols., and 5dols. per annum thereafter. The almost unanimous demand for licensing is, however, opposed in Cincinnati, Ohio, by the Local Chapter of the Institute of Architects, the arguments against registration being practically the same as those advanced by some old and zealous members of the R.I.B.A. here, that the Institute is capable of doing wholly within the limits of the profession all that the advocates of a licensing law propose to do by statute. Of course, this is as much a fallacy in this country as in the United States, where the American Institute is out-numbered by the members of local architectural associations by ten to one. The illustrations are greatly better than in the previous number. Swateley Hall, Uxbridge, and Ham House, Petersham, two well-known old country mansions of ours, are illustrated; but the garden at Bowood, Wilts, has an unpleasant air of artificiality. The Pratt Mausoleum at Glen Cove, L.I., is a dumpy, heavy-looking structure. The interior seems somewhat impressive in the illustration, which is too dim to show the detail; but as the roof is probably mosaic, with a large amount of gold, the actual effect would be appalling. The illustrations of interiors in the Court House, Appellate Division Supreme Court, Twenty-fifth Street and Madison Avenue, New York (Mr. James Brown Lord, architect), should be a revelation and a reproach to our governmental authorities. The work is most sumptuous for a public building, and on the whole successful, but the large panels in the Court Room are not quite architectonic—the atmosphere and perspective gives them the appearance of openings in the wall.

The American Architect for March 31st contains nothing of great interest in the matter of letterpress. The buildings illustrated are on the whole better than usual. The house in East Seventy-ninth Street, Corner of Fifth Avenue, New York, is a nightmare of Gothic forms, without the slightest glimmer of the Gothic spirit. St. Gabriel's College, Camberwell, S.E. (Mr. Philip A. Robson, architect), is a happy attempt at simplicity, without any attempt at the usual "architectural effect." The depot at Seattle, Washington, for the Northern Pacific Railway Company (Cass Gilbert, architect), is a neat little French Classic erection, the only thing against it being the detail, which is, however, small, and the iron and glass utilitarian shelter on the front—we are still waiting

to see this feature dealt with in an architectural manner. The number for April 7th contains much interesting information. "It is rather curious," says an editorial note, "that an American city of the size of New York should be decorated with so few pieces of bad statuary. We do not mean few in comparison with the number of statues actually erected, but few when one considers how many more bad ones there might easily be." We wish this sensible comment were equally true of London. Mr. Wallace C. Sabine gives in this number the first of a series of papers on "Architectural Acoustics" that promises to be of considerable value. Illustrations are given of the West Ham Technical Institute by Gibson and Russell, architects. The house, No. 923, Fifth Avenue, New York, shows a beautiful and suggestive use of caryatides in the top storey, but below the same careful taste has not been used. The first floor window treatment shows a fault somewhat common at the present time—the decoration of constructional members doing work, or presumably doing work. In this case panels have been carved in somewhat high relief in the pilasters on the piers; this use is passable in very low relief, or in parts visibly doing no work, but is generally better left plain. The Botanical Museum, Bronx Park, New York, is an instance of want of scale, produced by the use of a large order extending up two storeys; there is plenty of precedent for this but no excuse. The balustrading with the crossed members in the form of Union Jacks, is also distressing. The house at Jamestown, R.I. (Creighton Withers, architect), is a good instance of the pleasing effect to be derived from the mere use of proportion and mass without traditional forms. The issue for April 14th illustrates the Hackney Branch of the London and Provincial Bank, a heavy, ungainly structure, full of dumpy columns, giving evidence on every hand of striving after effect and "novelty." The design for the Church of the English Martyrs, Walworth, is to be commended as Gothic, but—if we might say so—too much of it, with the row of roofs over the shrine and the buttresses starting from over the arched entrance. In the issue for April 21st the second part of the paper on architectural acoustics is given. The illustrations are of interest, and include views of two commonplace houses at Nottingham and one at Putney.

Feilden's Magazine for May concludes the articles on compound and four-cylinder locomotives in England and France, modern appliances in gas manufacture, pneumatic tools and appliances, and the building of the Great Central Railway extension to London. In view of the interest aroused of late in regard to municipal tramways, and also in regard to electric traction, the article on the tramway system of Glasgow and its transition from horse to electric traction by Mr Benjamin Taylor, F.R.G.S., will be of special interest. The usual number of interesting paragraphs and short articles are given, but call for no special comment, except that we may recommend manufacturers to take the advice given in the note on some British commercial characteristics to heart.

The Journal of Decorative Art this month contains a valuable article on the manufacture of furniture in Italy by Professor Alfredo Melani, and an address delivered by Professor Baldwin Brown on "John Ruskin and William Morris," with other short notes on subjects of interest to painters and decorators. The design for a vestibule wall given away as a plate in colours is about equal to the general house-painter's idea of decoration, but perfectly horrible.

The Irish Builder for April 15th and May 1st contains an article on the high death-rate in Dublin by Mr. J. P. Doyle, M.D., but it cannot be said that it brings the solution of the problem any nearer, while the plentiful vituperation bestowed upon Trade Unionism, the Poor Law system, and the public spirit displayed by persons in endeavouring to be on the local authorities is quite irrelevant, and destructive of any attention that might have

been paid to the author's opinions on the technical side of this question. Mr. Middleton's articles on "Classic Details and their Application," are continued, and the notes on current matters are of usual interest. St. Carthagh's Church, Lismore, illustrated in the number for April 15th, is good in mass but very bad in detail, and the stone dressings are distressing.

The Church Builder.—The April issue of this quarterly gives the finance reports of the Church Building Society, with accounts of the building works contributed to. Illustrated descriptions are given of Thaxted and its Church; St. Mark's Church, at Harrogate; and St. Luke's Mission Church, Cobholm Island, Great Yarmouth. A number of appeals for funds for new churches, restorations and repairs concludes the number.

The Furnisher.—One does not look to a trade journal as a rule for matter of artistic interest; but the "Furnisher" is an exception to the general rule. The April number contains, with a great deal that is of exclusively trade interest, several articles that should appeal to all who are interested (and who is not?) in furnishing and decoration. Mr. F. Hamilton Jackson writing on "Museum Specimens as a Help to Designers and Manufacturers," gives some hints on the sources of inspiration which are open to all manufacturers, and which it is devoutly to be wished they would more generally and more wisely use. Several photographs of interesting examples at South Kensington Museum illustrate this paper. Mr. Oscar Parker calls attention to what he calls "The Renaissance of Wood Bedsteads"; he recognises the superior artistic possibilities of wood as compared with metal, but judging from the illustrations accompanying his article, these possibilities have as yet been very imperfectly appreciated by manufacturers and designers. Mr. Parker concludes with a very sensible and practical warning, which may well be laid to heart by those who wish to foster this excellent innovation in house furnishing: "If wood bedsteads are to have a vogue again," he says, "they must not only come into competition on the merits of their designs, but every care must be taken in their framing. Firm, unyielding joints are a *sine quâ non*, for a crevice means an inviting domicile for vermin. The best chance for wood lies in the fact that brass bedsteads have reached an almost prohibitive price; but if manufacturers take this perhaps transient condition as an excuse for placing on the market ill-constructed wood bedsteads, which will prematurely fall into decay, they will not lay the foundations of a growing trade. Nor will they appeal to the best taste unless they fully break away from the traditions that so long ruled bedstead designing, and realise that wood must be treated after its kind, and with a direct reference to the purpose of its use."

St. George, the Journal of the Ruskin Society of Birmingham, is a little quarterly that always contains something of genuine artistic or literary interest. The papers read before the Birmingham Society are never wholly banal, and they often—as in the case of Professor E. York Powell's address on John Ruskin in the current number—reach a very high standard. Professor Powell's appreciation is the more valuable that it is not an indiscriminating eulogy; he would have us follow the Master, but studiously, sanely, not as blind, unreasoning zealots. "Faults, shortcomings, errors, and prejudices he had, of course; are they not set forth in his writings? But in what man of his intellectual rank are these faults so little hurtful, so easily recognised, so simply avoided, for sure as he was of the business he had to do, he lets us see everywhere in his work that these dust specks on the mirror are but momentary blurs in its clear reflections." Prof. Powell's article, and the succeeding one by Sir Wyke Bayliss on "The Master and his Creed," should be read by every young and enthusiastic Ruskinian; both writers are devout admirers of Ruskin, but both see clearly that the best discipleship is not the acceptance of all the opinions of the Master, but the assimilation of his spirit. The present issue is

a "Ruskin Memorial Number," and contains, in addition to the two articles mentioned, poems in memoriam by Mr. A. E. Fletcher and the Rev. Canon Rawnsley (these have already, we think, appeared elsewhere), an article on Ruskin by S. D. Paoletti—an interesting expression of an Italian view of "The Apostle of Beauty"—a note on a very successful experiment in conducting a modern business on Ruskinian principles, and several other interesting items.

The Antiquary this month contains articles on the Churches of Farmagusta, the font of Lenton Priory, and other articles of antiquarian interest. The font of Lenton Priory, Notts, is now in use at the new Church of the Holy Trinity at Lenton, which had been built and was consecrated in 1842, at which time the font, which had previously been in the garden of Lieut.-Col. Stretton, was given to the church by him. Lenton Priory dates from the reign of Henry I.—1100-1135—but there are now no remains of it except a base of one of the massive round pillars of the nave, and upon it three courses of the masonry and this old font.

The Birmingham Magazine of Arts and Industries this month has articles on the Governors of the City of Birmingham, the brass foundry of Messrs. James Cartland and Son at Birmingham, and the leading Gunmakers of Birmingham, with a number of reviews of books and exhibitions. The illustrations are extremely well produced.

The Slate Trade Gazette for April makes its appearance again after an interval of five months, due to financial difficulties of the printers, in whose hands were the blocks, &c., which could not be obtained without great delay, notwithstanding appeals to the official receiver. The illness of the editor, Mr. J. Townsley, also has been responsible for a short further delay, but it is his intention to issue the subsequent parts in quick succession. This number has an article on Mr. Joseph Borthwick Johnson, a well-known member of the slate trade, and a report of the Seventh Annual Congress at Liverpool, with various other notes of interest. We would call attention to the fund opened to raise £1000 for furthering the objects of the National Association of Slate Merchants and Slaters. The Gazette announced that the fund has now reached £410 12s. 6d.

The British Clayworker for April continues the articles on brick-earths of Northamptonshire, and brick drying. A short article deals with peat coal, a new artificial fuel, the advantages claimed for it over ordinary coal being: (1) That it is easier to handle; (2) that it is easily lighted and requires less draught; (3) that it burns with a long flame and gives greater heat, and in consequence of rapid combustion will raise steam more quickly; and (4) that it gives less smoke and no fumes. Some brickwork by the late W. Butterfield is dealt with and illustrated. The advice to architects to study the advantages of different kinds of bricks is well worthy of attention. A number of other short articles and notes make up a most interesting number.

The House.—The articles in the number for May that are likely to concern our readers are illustrated accounts of some furniture sold at Christie's, some Old English silver and French china. The decoration of the dining-room at the Palace at Darmstadt, designed by Mr. M. H. Baillie Scott is illustrated, and in the section devoted to Home Arts and Crafts a number of designs are given for stencilled friezes, overmantel, cupboard, art needlework, art metal work, leather or poker work, and wood carving. The article devoted to "Pretty Rooms and what they Cost," shows some interiors of the usual riverside-bungalow type—a few wicker chairs, a pillow or two, a Japanese fan and lantern, and a few china or earthenware pots and ornaments—a bric-à-brac medley.

The Journal of the British Institute of Certified Carpenters has issued its first number for April. This number contains a goodly number of short articles and paragraphs on practical, and other subjects of an

interesting and useful, character. Mr. S. Wickford Potter writes on some improved materials used in modern sanitary work; Mr. Henry Phillips on the duties of a building surveyor; Mr. James Marsden on the materials we build with; Mr. James Clark on Graphic Statics; and Mr. T. M. G. Lloyd gives some notes on East Anglian Churches. Mr. William M. Dixon gives a design for a half-timbered gable, and a note on the late President of the Institute, Professor Banister Fletcher, is illustrated with a portrait. The price of the journal to non-members is 4d.

The R.I.B.A. Journal for April 7th contains in full the papers on working-class dwellings, read before the institution by Mr. John Honeyman, Mr. Henry Spalding, Mr. W. E. Wallis and Mr. Owen Fleming, summaries of which have already appeared in our columns. The number for April 28th gives in full the paper on "The Protection of Public Buildings from Lightning," by Mr. Killingworth Hedges, with illustrations.

The Engineering Times this month continues the articles on modern methods of saving labour in gasworks, and on the history and development of motor-cars. Mr. A. Wynter Blyth makes a contribution to the much-discussed question of the disposal of sewage; and there is another article somewhat in relation to this on the destruction of town's refuse. Mr. John Wilson writes on a very entertaining and novel feat above the clouds—the transportation of a twin-screw steamer from the yard of Messrs. William Denny and Bros., engineers, at Dumbarton, and its subsequent rebuilding on Lake Titicaca, the sacred lake of the Incas, 13,000ft. above sea-level.

The Quarry contains illustrated articles on the porphyry quarries of Lessines, and the mineral industry of Yorkshire, with a coloured plate showing the strata. The article on cranes and other lifting and transporting machinery and appliances is concluded.

The Artist this month has a new feature that makes it extremely interesting. This feature is the reproduction of a large number of studies for pictures now in the Royal Academy exhibition or intended for the New Gallery and other Spring exhibitions. A study is always interesting, but these are very opportune, and the idea of publishing them is a novel one. There are also in this issue illustrated notes from various art centres, and a paper by Mr. A. G. Paulson Townsend on design for embroidery.

Carpentry and Building (New York) has in the May number articles on wood-turning, making of wood patterns, protection of iron construction from corrosion, and on stone cutting. There are also a number of designs and details for a window frame for a circular tower, small wood-working shops, floor and roof truss construction, a cow barn, a frame barn, and other constructional work.

The Galeries de la Charite, Paris, which have been erected to replace the ill-fated Bazar de la Charité, have just been inaugurated. The building is situated at 25, Rue Pierre Charron, close to the Champs Elysées, and has a certain architectural analogy to the palace constructed by the Comte and Comtesse de Castellane in the Avenue du Bois de Boulogne.

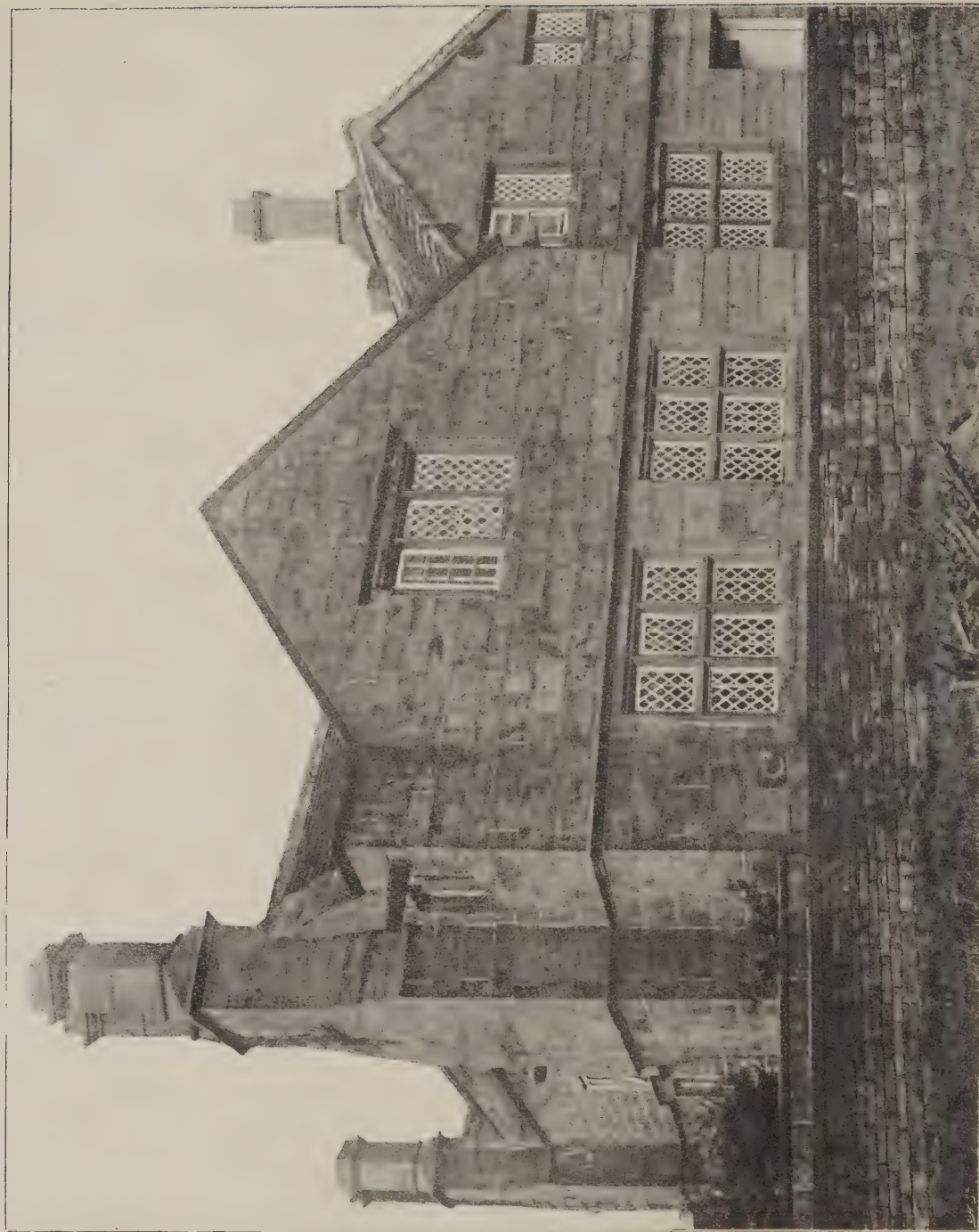
Messrs. Adams and Williams is the style of the firm which has been formed by the partnership of Mr. Hal Williams with Professor Henry Adams, M.I.C.E., M.I.M.E., F.S.I., &c., of 60, Queen Victoria Street, E.C., (which will be the address of the firm). Mr. Williams was for some time with the Haslam Foundry and Engineering Co., Limited, of Derby, and has recently been with Messrs. Sir Frederick Bramwell, Bart., and H. Graham Harris, consulting engineers, of Westminster, to which firm he was principal assistant. Messrs. Adams and Williams are prepared particularly to report and advise on power for factories and workshops, electric lighting and power installations, brewery work, refrigeration and drainage and water supply.

FOOTWAYS and CARRIAGEWAYS.

AN INTERESTING CASE.

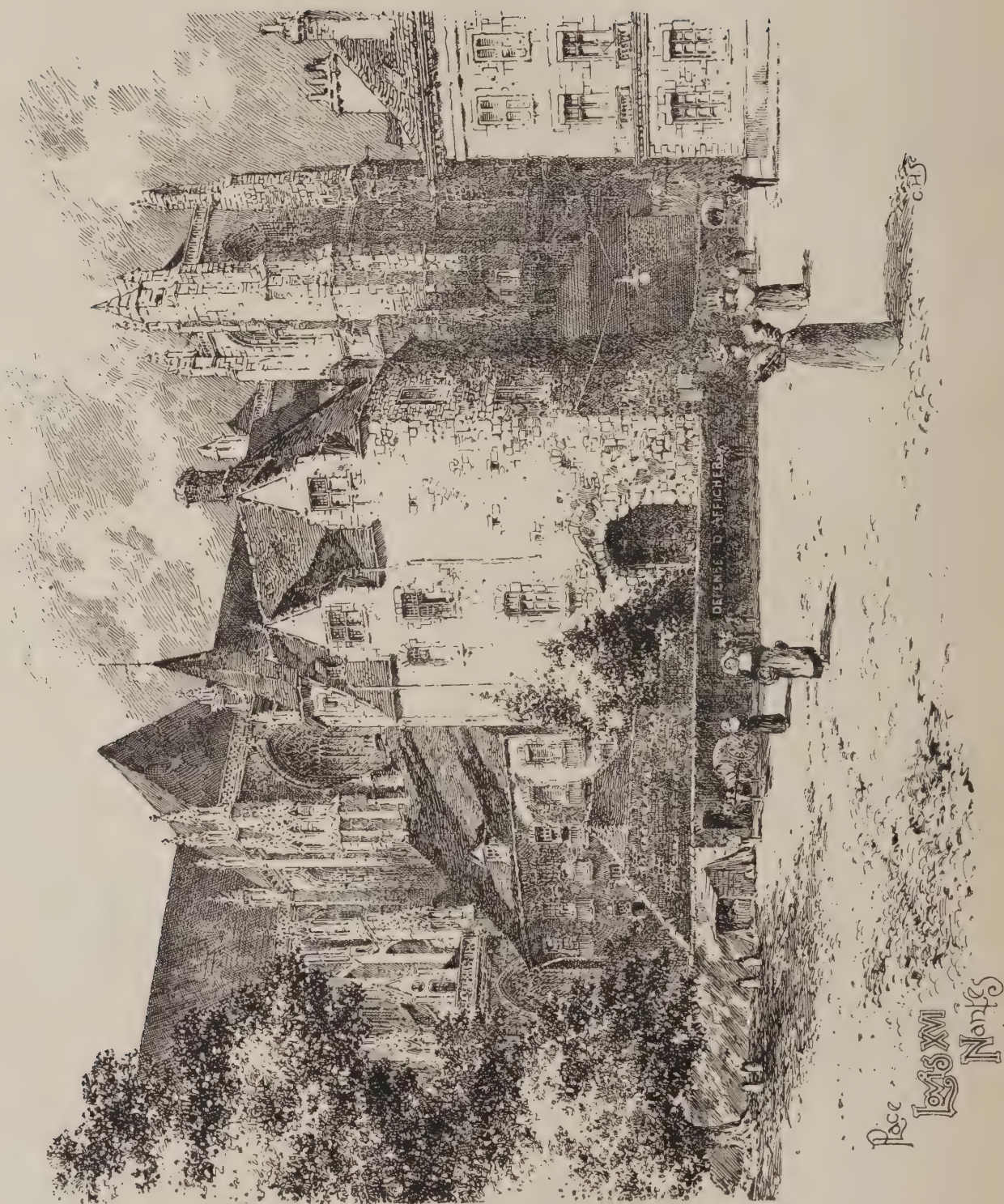
THE case of *Robertson v. The Mayor, &c.*, of Bristol, which was heard in the Court of Appeal on May 1st, was the plaintiff's appeal from a judgment of Mr. Justice Grantham in an action tried before him without a jury at Bristol on February 23rd, 1899. The plaintiff claimed an injunction to restrain the defendants from removing certain kerbing and paving laid by the plaintiff in Robertson Road, St. George's, a suburb of Bristol, and formerly under the jurisdiction of an urban district council. The plaintiff was owner of a building estate in St. George's, upon which he had laid out a wide road called after him Robertson Road. The by-laws of the Urban District Council prescribed that an owner laying out a building estate should submit plans showing roads of a width of 36ft. in all, including the carriage-way and two footways, each of the footways being one-sixth of the total width; in other words, that the carriage-way should be 24ft. wide and each of the footways 6ft. wide. The plaintiff deposited plans, marking out Robertson Road and showing it to be of greater width than 36ft. Part of that road was in fact designed to be of a width of 45ft., having a carriage-way of 30ft. and two footways of 7ft. 6in. each, and the remainder of a width of 40ft., having a carriage-way of 27ft. and footways of 6ft. 6in. each. These plans were submitted to the Urban District Council in 1891 and 1892, and were approved by the Council. The road was laid out and dedicated to the public, but had not been taken over by the highway authority. On October 31st, 1897, the Bristol Extension Act came into operation, and by that Act the district of St. George's became part of the City of Bristol, and came under the jurisdiction of the defendants, who were minded to take over the roads in that district and to make them repairable by the public under section 150 of the Public Health Act, 1875. They accordingly served notices on the owners of houses fronting Robertson Road, but not on the plaintiff, annexing to the notices plans which showed their intention of turning part of the footways into the carriage way. Having served these notices, the defendants commenced the work and began to alter the footway as notified. The plaintiff thereupon threatened proceedings, and subsequently issued a writ claiming the injunction as above stated. The defendants justified their action under section 150 of the Public Health Act, asserting that the right and duty of deciding how much of a public road should consist of footway and how much of carriage-way were vested in them as the highway authority. Section 150 of the Public Health Act, 1875, enacts that, where any street within an urban district (not being a highway repairable by the inhabitants at large), or the carriage-way, footway, or any other part of such street, is not sewered, levelled, paved, or made good to the satisfaction of the urban authority, such authority may, by notice to the respective owners or occupiers of premises fronting such parts as may require to be made good, require them to make good the same within a time specified in such notice. If the notice is not complied with the urban authority may execute the necessary works themselves. Mr. Justice Grantham gave judgment for the defendants, holding that when a local authority takes over a street they have power under section 150 of the Public Health Act, 1875, to deal with the carriage-way and the footways as they think best in the public interest. From this decision the plaintiff appealed.—It was contended for the plaintiff that there was no power given to the defendants by the Public Health Act to change a footway or any part thereof into a carriage-way. The road must be taken over as it was dedicated. The soil of the road was still vested in the plaintiff as owner, and if an owner chose to dedicate a footway there was no power, except by an order of quarter sessions, to convert it into a carriage-way.—The Court of Appeal allowed the appeal. Lord Justice A. L. Smith, in giving judgment,

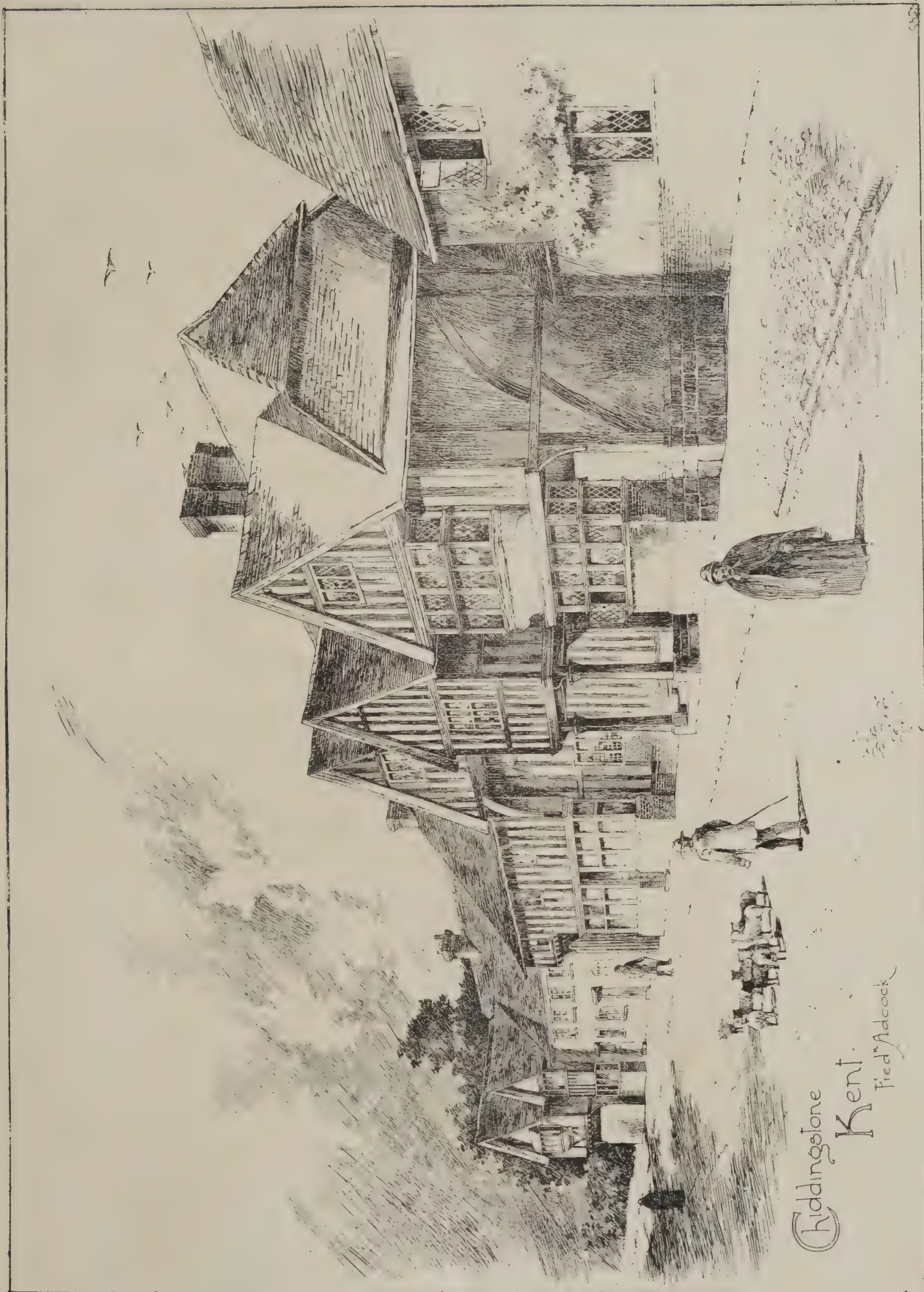
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CARTLEDGE HALL. (See page 243.)

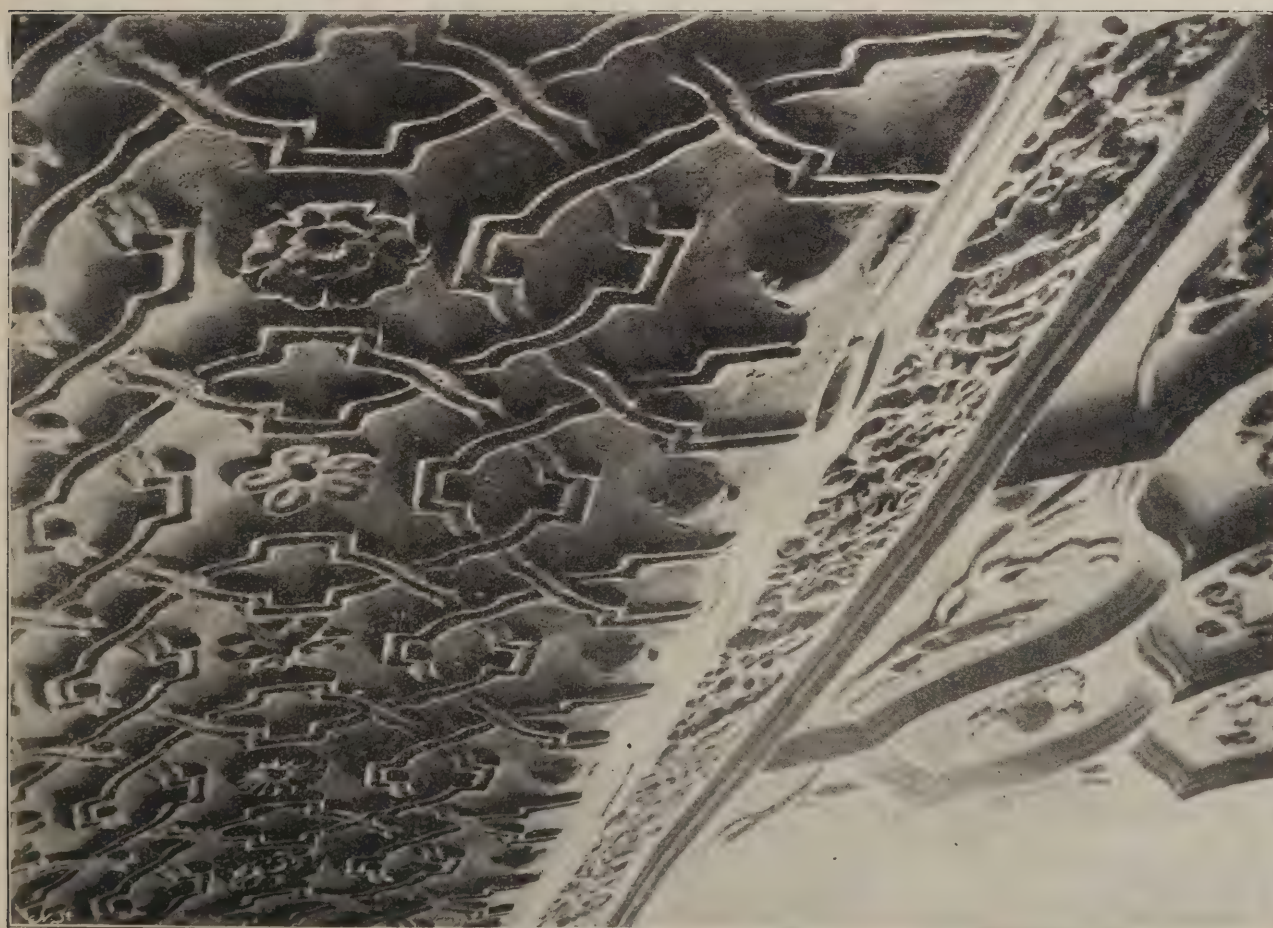
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CEILINGS AT CARTLEDGE HALL. (See page 243.)

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said that the plaintiff had an undoubted right to dedicate a footpath 7ft. 6in. wide; but the Corporation contended that section 150 of the Public Health Act, 1875, justified them in altering the road as dedicated, and enabled them to dedicate to passengers by carriage what the plaintiff had already dedicated to foot passengers. Section 150 gave no such power as the defendants claimed, or in any way enabled them to change a footway into a carriage-way, or a carriage-way into a footway. Mr. Justice Grantham had held that when a street has been laid out and taken over by a local authority that authority had power to deal with it as they might think best for the public interest; but no such power was to be found conferred by section 150. Under that section the local authority must deal with the street as they found it. That was the street which they were empowered to sewer, metal, pave and make good. In this case plans had been deposited showing the relative proportions of footways and carriage-way, and these plans had been approved. It was the street laid out in accordance with those approved plans that the Corporation had power to make good, and no section gave them power to alter the respective proportions and make good a street different from that which they had approved. The appeal must therefore be allowed.—Lord Justice Vaughan Williams and Lord Justice Romer delivered judgment to the same effect.

THE OLD MASTERS AND THEIR LIMITATIONS.

IN the school of art of a great commercial city like Glasgow, said Sir John Stirling-Maxwell, M.P., at the recent prize distribution at the Glasgow School of Art, their thoughts naturally turned to other commercial cities of the past and their schools of art. They thought of Florence, of Venice, and even of Greece and Athens, and as these cities grew in power and wealth they grew also in their produce of works of art. Now the power and wealth had gone from these and many other cities famous in their day, but their work remained as a precious legacy. When attempting a comparison between the past and the present he could not help asking the question whether the schools to which we looked for our monuments of works of art realised anything like the same conditions under which the great masters of former times grew up. He would not attempt to answer the question, as that would take up too much time; but there was one single aspect of the question at which they might glance for a moment. It would be fair, he thought, to divide the multifarious subjects which found a place in the schools into two heads—the practical, and what he would call the historical, the study of the works of art of the past. Of the value of the practical side there could be no doubt. Every hour that was spent with brush or pencil, graver or needle, chisel, or any other instrument, or the time spent in studying anatomy or the antique, or in the more interesting and difficult struggle of the life school, was not wasted. But when they came to the other part, which formed part of the curriculum of the school, grave doubts might perhaps assail them. It was not too much to say that what with casts and books and photographs and engravings, every work of art of the past which survived, and a great many which did not now survive, were within the reach of the students in a well-equipped school like Glasgow's. That was an advantage which was not possessed by any of those whom they called the great masters of the past. And he could not help asking whether that new advantage was really an advantage. Confining his attention to painting and sculpture, Sir John said let them compare a student modelling here with Phidias, the famous Greek sculptor, whose works adorned the Parthenon. That work had never been surpassed, and if these new advantages were advantages, what a tremendous gain the students of to-day had over him. The present-

day student had all the work that had been done by Phidias and all that had been done since, which, he supposed, included nearly every work of sculpture which we admired. Besides that, the student had also a great deal of that which existed in the days of Phidias, and which in all probability Phidias never saw. He had the sculpture of the Hittites and the Assyrians, which had certain merits that were never surpassed by the Greeks, he had the sculpture of Egypt, and he had also that of the Buddhists of India. In these circumstances he thought he was justified in saying that we now probably knew more about Archaic Greek studies than Phidias himself. That was a curious contrast, and there was no doubt it led one to the opinion that Phidias must have depended mainly on Nature and upon the human form divine, and though he must have learned something from those who went before him, he must for himself have made and found out many of those generalisations, those additions and omissions, which made the difference between the Greek statue and a petrified human being. If they turned to painting the same would perhaps be even more true. For the sake of comparison he would take Raphael—a painter of recognised merit—and when they thought of the amount of work that had been done since his day by men like Titian, Velasquez, and Turner, and when he remembered the work of Italy, those paintings and mosaics which were buried under the lava of Vesuvius, and those casts which had been disinterred in Egypt, he felt how much there was within the grasp of the modern student which was entirely cut off from men like Raphael, who, there was reason to believe, had not seen anything like all the great works of his contemporaries. He thought they might fairly say that the great masters of the past, down through all the ages till the beginning of this century, produced their great works of art with great skill and infinite pains but with a very limited knowledge of the works of others; and the high ideals at which they aimed, and the extraordinary advance which many of them made in their comparatively short lives must be due to the fact that they always turned their eyes to that unattainable but inspiring standard which Nature always held up to the eye of the true artist. When he came to consider what had been the result to our own generation of all that accumulation of the works of art of other times he came to the conclusion that for some all these models would be a great advantage, and for others a great disadvantage. He believed they had been a great disadvantage to what he might call the small fry. He thought there were a great many people who could produce very good work if they were left to themselves, but many of them got swamped in all those riches and were weighed down with the knowledge at their hand. It was a comfort to know that there were great spirits who could choose what they wanted and cast aside what they did not want, and who could take such short cuts as enabled them to do more in the short compass of their lives than other artists would be able to do. He implored the students to look after their own individualities. If they felt strong enough to stand alone he would ask them not to be tempted to lean upon anyone else; and if they did not feel strong enough to stand alone then he would ask them to make up their minds what support they were to take, and lean on one person and not on everybody; because the bad stuff that had been produced in our generation had mostly been produced by a bad combination of things that ought not to have been combined.

New Leeds Restaurant.—The Midland Railway Company have provided an up-to-date restaurant in the new wing which has been added to the Queen's Hotel at Leeds. The restaurant is 40ft. long and 30ft. wide, and on the walls are some panels executed by Mr. Kutzon M. Borglum. The whole room is Louis Quinze in character. It is the intention of the Company to completely re-organise the interior portion of the whole building by the construction of an Italian Renaissance lounge in marble, &c.

STRENGTH OF TIMBER AND HOW TO TEST IT.*

By T. HUDSON BEARE, B.Sc., M.I.C.E.

SCATTERED through the older text books, through the proceedings of various societies, and in other works will be found an immense mass of experimental results of mechanical tests of various kinds of timbers, including all the various timbers used in constructional work. Unfortunately many of these figures are not very reliable, and if used in any calculations require to be used with the utmost circumspection and caution. The reasons for this statement are that:—(1.) The tests were in almost every case carried out on specimens of very small sizes, and often it is quite clear the specimens were selected with great care and freedom from all knots and blemishes and were thus by no means fairly representative of the average quality of the particular timber experimented on. (2.) From the unfortunately very loose way in which various timbers are named on the market it is sometimes impossible to know now what the timber was which was tested. (3.) In no case, as far as I know, were any observations made to determine the amount of moisture in the timber at the time of the test, in most cases not even the time of seasoning was given, nor time of felling, &c. Now the moisture condition is the vital factor in determining the mechanical properties of timber.

The first tests in which careful observations were made, both as to moisture, condition and previous history of the timber, were those made by the late Prof. Bauschinger at Munich, in 1883, the results being published in "Mittheilungen aus dem Mechanisch-Technischen Laboratorium in Polytechnischen Schule in München," 1883 and 1887. He investigated very fully the influence of moisture on the strength, both as regards crushing and cross-bending, by drying the specimens in a current of dry, warm air at a temperature of 101 deg. C. (= 214 deg. F.) for about eight hours, and finding the loss of weight by careful weighings. He eventually selected 15 per cent. as a standard of moisture to which all results should be reduced. (Timber in a dry, well-warmed house has probably about 10 per cent. of moisture). The law of relation of strength to moisture was readily determined by making three tests of the same stack of timber, the three specimens cut from it being of different degrees of dryness.

The next great series of tests were made on behalf of the Forest Department of the Board of Agriculture of the United States from 1891-1895. The experiments were made as to the mechanical tests by Prof. Johnson, while all the timbers were examined carefully as to their cellular structure, at Washington, by expert botanists. As in Bauschinger's tests, to whom entirely belongs the credit of establishing a rational system of timber testing, very careful determinations were made of the moisture conditions of the tested bars, and it was again found that the moisture condition was the vital one in determining the strength of the timber.

Johnson's crushing tests of similar material seem to show that the greatest strength is reached, not when the wood is absolutely dry, but with some 3 or 4 degrees of moisture. It is somewhat difficult to ascertain this with perfect accuracy, as absolutely dry wood rapidly re-absorbs moisture from the air; it is, however, not a point of practical importance, as such dryness condition as 3 degrees is never found in actual practice.

Another point, however, of much greater practical importance brought out by these tests was that re-absorbed moisture has the same effect in weakening the timber as the original sap. He found as a general rule strength with 12 degrees moisture was with all species 75 degrees greater than when "green." This, of course, is of importance in such cases as timber in use under ground, in damp situations where no means are taken to

* Summary of paper read at Carpenters' Hall, May 3rd.

prevent the absorption of the water. The results of these tests for variation of strength with variation of moisture indicate clearly enough that increase of moisture beyond a certain amount has little effect, the reason being that we are then merely filling the cells themselves; and similarly when drying the strength begins rapidly to increase when the walls themselves begin to dry; this occurs in the case of pines at about 33 degrees moisture.

Another question investigated in these tests was whether or not "bleeding" or tapping for turpentine the so called "pitch pine" had any harmful effect upon its mechanical properties; the experiments showed as a result of over 1300 separate tests no such result—the mechanical properties were apparently not in any way injured. The effect of rapid seasoning was also investigated, and here again no injurious effects were produced by this process as usually carried out with currents of hot air.

Tension Experiments.

Tension experiments are very difficult to carry out, owing to the fact that the specimens so frequently give way in shear by drawing out the part held in the shackles. The results of different experiments vary very much, partly from this cause, and partly because the specimens being necessarily small, great influence of original differences in quality are shown. The tenacity, however, appears to be relatively great, especially when one considers the porous nature of timber.

Bauschinger found that the Elastic Limit practically coincided with the breaking-point; while apparently the influence of time of felling soon disappeared.

Compression.

It is much easier to carry out crushing tests, easier to make specimens, and easier to get concordant results.

Bauschinger concluded that when the average quality of a timber (as in enquiries as to effect of time of felling, soil, climate, &c.) was being determined, then pressure tests were best. He advises cutting 3 discs from the two ends and the centre of a log, then dividing each of these into 4 sections and from each of these cutting a square prism of length about $1\frac{1}{2}$ times its side. These prisms should be crushed at a standard dryness of 15%, and their density determined by weighing and measuring. For pine woods the strengths of short columns gives the crushing strength in tons = density $\times 6.35 - 6.35$.

In Lanza's Tests, a large number of posts 7in. and 10in. diameter, mostly 12ft. long, all gave way by pure compression.

Another big series made at the Watertown Arsenal in the U.S.A. on struts of considerable length show markedly the same condition of affairs as with iron and steel, in that there is an enormous reduction of strength with increase of length. These Watertown tests were apparently on green timbers, but data are not known. In several cases three pieces were bolted and keyed together to act as one, but in no case did they show a greater strength per square inch (they were all 15ft. long) than single pieces, though they ought, according to strut formulae, as they had their least dimension increased—in fact they buckled out in same plane as a single one.

Johnson cut off pieces 8in. long from four sticks (ends of sticks tested as beams). He noted that after the shearing in of one end, its strength is only 80 per cent. of original strength. He advises a factor of safety of 8 for dry, 5 for green.

Not many experiments have been made to determine the crushing strength across the grain, such as frequently happens when a piece of vertical timber stands upon a horizontal piece, thus transmitting a load to it. It is, of course, rather a matter of judgment to decide what is the crushing load, i.e., what indentation to take as the limit; some give $\frac{1}{8}$ in.

Johnson takes 3 per cent. compression as working limit, or $\frac{3 \times 12}{100} = \frac{36}{100}$ in. in a foot-thick bar, and 15 per cent. as destructive, = $1\frac{1}{2}$ in. in a 12in. bar. He only worked with specimens

2in. to 4in. thick. He found a value in the case of pines on an average of 1,400 lbs. per sq. inch, as against 7,000 lbs. with green, or only $\frac{1}{5}$. With American oaks the figures were 2,300 lbs. sq. inch and 7,500 lbs. per sq. inch, or about $\frac{1}{3}$. These figures prove the extreme importance of paying attention to this point in designing any structure or temporary timber erection.

Cross-Bending.

This is a favourite form of test, partly because very large pieces with big spans can be readily tested without requiring very big loads; in fact it is a test which can be readily carried out on a job with but little trouble or expense. Two knife edges, or supports, a cradle to carry weights, and some pig iron or other lumps of iron for weights are required, while a stretched cord and a 2ft. rule readily enable the strains or deflections to be measured.

It is perhaps well to point out here that the calculated stress in the outer fibre deduced from the ordinary formula for beams is only the real stress in the case where the load does not exceed the elastic limit, beyond that the formula does not hold.

Johnson has shown by cutting up his large sticks into smaller ones, that under conditions of moisture of same character, little sticks have the same strength as big ones; only the temptation to pick out specially good small samples is usually too great to allow such tests to be fair averages.

One general result of Bauschinger's tests, verified also by Johnson, was that strength is much affected by the ratio of summer (solid) to spring (open) growth in each annual ring—or in other words, that the specific gravity is the determining factor. Bauschinger from his results deduced the law that B (crushing strength in tons per sq. in.) = 6.358 (density) - 6.35 at 15 deg. moisture.

Johnson similarly found that for all timbers dealt with in his experiments (except in case of oak, which, from its complex cellular structure, seems an exception), the strength rises steadily with density, i.e., with increase of specific gravity.

Shear.

In large numbers of beam tests, the beams actually give way by shear along the neutral axis, which may become very great. In Lanza's tests eleven beams gave way like this, the shear stress per square inch being equal to the stress in the case of those which actually tore fairly across, so apparently they may in case of soft woods give way in either fashion.

Johnson's results were somewhat higher, these being accounted for by a special shear test, fixing breakage at a particular section, while in beam it selects the weakest plane near the neutral axis.

Time in Testing.

I always find in bending tests and crushing tests that when a certain load is reached material will go on steadily yielding, i.e., the strain goes on increasing, and no doubt rupture would occur at loads less than the final one, if the load was only left on long enough. Prof. Thurston in a striking series of tests on bars 1in. square on supports 40in. apart found the centre breaking load rapidly applied 375lbs., the deflection being 1.8in. On three bars he had 250lbs. placed upon them, and all broke in from 6,000 to 11,000 hours (= 250-460 days), with a deflection of 2.5in. With less weight than that rupture did not occur under prolonged testing. From these results we see that 60 per cent. of the final load will produce rupture.

In conclusion, I would say that in most cases where much timber is to be used, it is better and safer to make fresh tests of the actual stuff to be used, rather than to rely upon old figures.

The Grand Palais des Beaux Arts at the Paris Exhibition was opened on May 1st. It contains three separate exhibitions. The first is an exhibition of French art during this century, the second is an exhibition of French art during the last decade, and the third is an exhibition of foreign art.

"BUILDERS' JOURNAL" SHILLING FUND.

WE propose to close our subscription list on Monday, May 21st. We shall be glad, therefore, if those of our readers who still have our collecting forms will send them in before that date. Our fund now amounts to 2728 shillings, and we are very desirous of reaching 3,000 shillings before closing the lists. Will our readers make a final effort to enable us to achieve that result?

We have received a few further subscriptions since the publication of our last list, and these will be acknowledged in a future number.

In view of the frequency with which the general decorative upkeep and repair of buildings owned by charities is neglected, a special *matinée* is now being arranged at the Theatre Royal, Drury Lane, for May 15th, with a view of collecting a few thousand pounds to be invested with the specific object of creating a fund from which sufficient moneys can be drawn annually to keep the homes presented by the building trades in a thoroughly creditable condition. Her Majesty the Queen, who takes a great interest in the Building Trades' Scheme, immediately ordered a row of stalls, whilst Mr. Cecil Rhodes paid £500 for a box, and the Duke of Bedford sent £100 for the box which he really owns as the landlord of the theatre.

The programme of the *matinée* is not yet complete, but we are enabled to announce that "Trial by Jury" will be given, in which Lady Bancroft, Misses Lucille Hill, Phyllis Broughton and Florence St. John, Mesdames Belle Cole and Fanny Moody, Messrs. W. S. Gilbert, Rutland Barrington, Walter Passmore, Sydney Grundy, Eric Lewis, C. Hayden Coffin, Charles Hawtrey and others will appear. Mr. George Alexander and Company will present a special scene from one of the St. James's plays, Mr. Beerbohm Tree and Company will present a scene from "A Midsummer Night's Dream," and a Greek play will be performed by boys of the Westminster School. Misses Marie Tempest, Margaret Macintyre, Winifred Emery, Connie Ediss and Katie Seymour, and Messrs. Plunkett Greene, Charles Magrath, Cyril Maude, Huntley Wright, Edmund Payne, Lewis Waller, Herbert Campbell, and Fred Wright, jun., will contribute songs, dances, recitations, &c. The "Nellie Farren" Harlequinade and a bicycle lance ride will be given, and the *matinée* concluded by a military spectacle. Seats can be obtained from the hon. secretary, Theatre Royal, Drury Lane, at the following prices:—Boxes, from 10 to 100 guineas; stalls, 5 guineas; grand circle, 3 and 2 guineas; balcony, 15s. and 10s. 6d.; pit stalls, 3 guineas; first circle, 2 guineas and 1 guinea; and amphitheatre (unreserved), 5s.

The executive of the Building Trades' Gift to the Nation inform us that the building operations will now be immediately commenced, and the executive is putting itself into communication with the various donors as to the delivery of materials, &c. In order to facilitate delivery and save cartage a special siding has now been laid from Bisley Station right on to the site of the Homes, the necessary permission for this having been granted by the War Office and the National Rifle Association as adjoining owners. Hence all deliveries originally intended for Brookwood Station should now be made to Bisley Station.

The Birmingham School of Art has now 4,268 students.

The late M. Munkaczy, the famous Hungarian painter who recently died, planned his picture "Last Day of a Man Condemned to Death" at Dusseldorf. Against the advice of his artist friends he painted it and sent it to the Paris Salon of 1870; and it brought him at once a medal, a fortune, and a future. The painting by which he is best known in this country is his "Christ before Pilate," which was bought by Mr. Wanamaker, the well-known "dry-goods" storekeeper at Philadelphia, the price being said to be £20,000.

R.I.B.A.

ANNUAL GENERAL MEETING.

THE annual general meeting of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being taken by Mr. William Emerson, the president.

The Annual Report

states that during the past year seventeen meetings of the Council have been held, exclusive of meetings held by committees. In the course of the year, 30 Fellows have been elected, 38 Associates, 1 Hon. Fellow, 1 Hon. Associate, and 1 Hon. Corr. Member. Of the 30 Fellows, 10 have been elected by the Council under the proviso to by-law 9, 4 being presidents of allied societies and 6 having been unanimously recommended by the councils of allied societies. The total number of subscribing members is 1,676. The following tabular statement, showing the growth of the Institute during the last fifty years, will be found of interest:—

Year.	Fellows.	Associates.	Contributing Visitors.	Hon. Associates.	Total.
1850	120	95	—	—	215
1860	173	139	12	—	324
1870	275	235	10	—	520
1880	346	335	—	115	796
1890	519	768	—	80	1367
1900	618	1013	—	45	1676

The only hon. corr. member elected is the Comte de Suzor, of St. Petersburg. Death has robbed the Institute of several members of high distinction—the Duke of Westminster and John Ruskin from the class of Honorary Fellows; William Simpson, whose ever ready help in Oriental questions is a great loss to the JOURNAL, from the class of Honorary Associates; Sir Arthur Blomfield and William White from the class of Fellows; and Paul Sédille, the famous French architect, who for many years had been an hon. corr. member of the Institute. The total losses by death during the past year are as follows:—*Fellows*: Charles Bell, Sir Arthur Blomfield, Thomas Elworthy, Benjamin Edmund Ferrey, Professor Banister Fletcher, Thomas James Flockton, William Kidner, Edward John Lowther, Thomas Cooke Nicholson, William Willmer Pocock, Richard Reynolds Rowe, Frederick William Stevens, William Wilkinson Wardell, William White, Stephen William Williams. *Retired Fellows*: Alexander Kendall Mackinnon, Francis Thomas Dollman. *Associates*: William James Anderson, Henry Hockey Burnell, Charles Henry Purday, James Hewitson Shaw, Ely Emlyn White. *Hon. Associate*: William Simpson. *Hon. Fellows*: The Duke of Westminster, John Ruskin. *Hon. Corr. Members*: Paul Sédille, J. von Egle, Michele Ruggiero.

The Examinations.

Preliminary and intermediate examinations were held in June and November, 1899, in London, Birmingham, Bristol, Cardiff, Dublin, Glasgow, Manchester, Newcastle (in June only), and York, and final examination in London. The results were as follows:—

Preliminary Examination: Exempted, 59; examined, 286; passed, 189; relegated, 97. *Intermediate Examination*: Examined, 119; passed, 63; relegated, 56. *Final and Special Examinations*: Examined, 84; passed, 37; relegated, 47.

It will be seen that during the year 248 gentlemen have been registered as probationers, the number of whom now stands at 1,283, and 63 as students, the number of whom now stands at 333. The Council takes this opportunity of drawing attention to the great increase in the number of candidates in 1899, the fees received amounting to £992 5s. as against £783 6s. received during 1898.

The Council greatly regret to say that the Arthur Cates prizes for the best sets of

testimonies of study (supplemented by certain specified sheets of drawings) submitted by students for admission to the final examination have not been awarded this year, no student who had passed the examination having observed the conditions.

The Council are in the midst of preparations for an architectural congress to be held in London during the week commencing June 18th next. The programme, as soon as it is completed, will be placed in the hands of members. It will include papers and discussions on architectural questions, visits to places of interests, the presentation of the Royal Gold Medal, a conversation at the Guildhall (by the kind permission of the Lord Mayor and Corporation), and the annual dinner. A General Committee of distinguished persons, architects and other artists, has been formed, which includes the names of Lord Windsor, Lord Strathcona, the Right Hon. A. Akers-Douglas, Sir W. B. Richmond, Sir L. Alma-Tadema, Mr. Basil Champneys, Mr. Walter Crane, &c. The Council have resolved upon a scheme for holding the

Special Examination in the Colonies,

and the first will be held in June, 1901, in Montreal and Sydney, simultaneously with that held in the United Kingdom. It will be open to all architects over the age of twenty-five. The examination will be conducted on precisely similar lines to those held at provincial centres—that is to say, the testimonies of study and the answers to papers will be adjudicated upon by the Board of Examiners sitting in London, and the oral alone will be conducted by the local committees. The Council have arranged that these local committees, appointed under the various local architectural societies, shall be in every way representative and responsible. As soon as South African affairs are cleared up, the examinations will be held in Cape Town and elsewhere. Adopting the report of a committee that had been in frequent communication with the Association of Technical Institutions, the Council have arranged that certain certificates of the Science and Art Department shall be accepted as exempting from portions of the preliminary and intermediate examinations. The facts are notified in the current Kalendar.

The Council have addressed a letter to the Secretary of State for the Colonies protesting against the proposed demolition of the old Curtain Wall at Famagusta, in the Island of Cyprus. A reply has been received from the Colonial Office stating that the letter has been referred to the High Commissioner of Cyprus. At the request of the Royal Commission of the Paris Exhibition, 1900, the president nominated three members of the Institute to act on the International Jury, of whom one, Mr. Thomas W. Cutler, has been selected. The Council, acting on behalf of the Institute, which was one of the seven original representative bodies concerned in the establishment of the Sanitary Inspectors' Examination Board, have advanced the sum of £30 towards the initial expenses of the Board. This sum will be regarded as a first claim on profits accruing to the Board in respect of fees for examination. Mr. Thomas W. Cutler has consented to act as the Institute's representative on the Board. The Council hope shortly to be in a position to submit to the general body a form of contract as agreed upon between them and the Institute of Builders, with whom they are still in communication. Attention has been given to various schemes for acquiring new premises for the Institute, but the Council are not yet in a position to make any report. Mr. Arthur Cates has been re-appointed as a member of the Tribunal of Appeal.

Since the present Council came into office the president has appointed twenty-one arbitrators under building contracts, and eleven assessors in the following public competitions:—Clacton-on-Sea Improvement, Corsham Hospital, Fulham Vestry Baths and Wash-houses, Abingdon School Board, Burnley Technical Schools, Bury Infectious Diseases Hospital, Newcastle School of Cookery, Dorking Hospital, Walsall Town Hall, Cameron Memorial Hospital (West

Hartlepool), Berkhamsted Girls' Grammar School Buildings.

The Associates' Disabilities.

During the past year a considerable body among the associates has approached the Council through chosen representatives in order to place before them certain disabilities that lay upon the class of associates, and to obtain, if possible, a larger share in the working of the Institute. The question of greater variation in the composition of the Council was also urged. The Council, after giving the matters the most earnest consideration, made a recommendation, now approved by the general body, that the by-laws should be so altered as to provide two extra associate seats on the Council, to remove the restrictions on associates' eligibility to serve on the Council, so that any associate may be eligible to serve, and, by abolishing the asterisks before the names of members of the existing Council on the voting lists, to secure an even chance of election for all nominees. The Council hope that, while convinced of the necessity of maintaining their dignity and prestige, they have acted in this matter in no illiberal spirit towards the younger members of the profession.

The financial prosperity of the Institute continues, the balance of receipts over expenditure being £1,125. The Council particularly desire to call the attention of members to the growing item of arrears of subscriptions; while they seek to exercise the powers given to them under the by-laws in a generous spirit, it would be a matter of great regret to them if the continued deficit in respect of subscriptions compelled them to take more stringent measures.

Report of the Literature Standing Committee.

Since the election of the present Committee, on June 12th, 1899, the Literature Committee have held eight meetings. At the first meeting Professor Elsey Smith and Mr. Arthur S. Flower were appointed hon. secretaries, and at the next meeting Mr. R. Phené Spiers was appointed chairman, and Mr. H. Heathcote Statham, vice-chairman. The Librarian having completed the catalogue of the loan library, by preparing a supplement carrying the work down to December 31st, 1899, the Committee have arranged that this supplemental catalogue shall be printed and bound up with the copies in stock of the original catalogue, and sold for 6d., as the "Catalogue of the Loan Library with Supplement comprising Additions to December, 1899." The Committee have also had under consideration the desirability of preparing a supplementary catalogue of the drawings, prints, and photographs in the library which are not included in the general catalogue. The Committee desire gratefully to announce the donation made to the Library by Mr. Aubrey Stewart, through Mr. Phené Spiers, of several books of drawings by the late Professor Willis and the Rev. Canon Stewart.

Report of the Practice Standing Committee.

The usual monthly meetings of the Committee have been held. Mr. J. Douglass Mathews was re-elected chairman, and Mr. S. Flint Clarkson was elected vice-chairman in the place of Mr. Thomas Harris, whose ill-health necessitated his retirement. Mr. J. Osborne Smith and Mr. C. H. Brodie were re-elected hon. secretaries. The consideration of the London Government Bill by the Committee resulted in a list of objections to, and suggestions for, the improvement of the Bill being sent to the Council, with a recommendation that they be communicated to the First Lord of the Treasury, the Clerk to the London County Council, the leading London newspapers, and the professional journals. The Council adopted the recommendation, and the suggestions, &c., were published in the Institute Journal for April 15, 1899, p. 349. The chairman of the Committee subsequently reported that he knew from conversation with members of Parliament and others that these suggestions carried considerable weight and were highly approved. The publishers of "Whitaker's

Almanac," acting on the unofficial communications of an hon. secretary of the Committee, have corrected and amplified their paragraph concerning architects' charges, so that it is now in accord with the revised Institute schedule. They also, for the first time, now publish, under the heading of "Professional Education," a list of the chief centres of architectural education and a reference to the Institute examinations. The Committee have, with the Council's approval, undertaken the consideration of the revision of the Institute pamphlet on "Dilapidations." This will probably involve the writing of an entirely new pamphlet, the synopsis for which is now under consideration. Any suggestions by members of the Institute will be welcomed by the Committee. The Committee have also in hand the preparation of a short schedule indicating the usual practice as to the payment and amount of fees in party-wall cases.

Report of the Science Standing Committee.

The Science Standing Committee report that they have held ten meetings since the publication of the last annual report. Mr. W. C. Street was appointed chairman; Mr. Lewis Angell, vice-chairman; and Mr. H. D. Searles-Wood and Mr. Max Clarke hon. secretaries. The Committee are preparing for publication the results of the experiments for ascertaining the strength of different kinds of brickwork, but they have not been able to complete the arrangement for acquiring a standard size for bricks, though they hope to be able to do so shortly. The Committee have undertaken an inquiry into the supporting power of rocks and soils, and hope to report the results in the course of next session.

After the foregoing report had been received and discussed, scrutineers were elected for the annual election of the Council and standing committees. Candidates were then nominated as auditors for the ensuing session, and the statutory board of examiners under the London Building Act were appointed.

Surveying and Sanitary Notes.

Messrs. E. H. Shorland and Brother, of Manchester, have just supplied their patent Manchester grates to the Sanatorium, Bekesbourne, near Canterbury.

The South Wales and Monmouthshire Sanitary Inspectors' Association has been in existence two years, and has now a membership of 112 out of a possible 143, with forty-six honorary members, and twenty-three associates; making a total of 181.

A Big Paving Scheme.—In the City Hall, Dublin, on May 1st, Mr. O'Brien Smyth, Local Government Inspector, held an enquiry into an application of the Corporation for a loan of £28,198 for the purposes of stone and wood paving and asphalt in various streets of the city.

Leeds Street Improvements.—For widening Guildford Street, Leeds, it has been decided to purchase premises containing 170 sq. yds. for the sum of £7,225. Premises in Cookridge Street and St. Ann's Street containing 1,341 sq. yds., and premises in Great George Street containing 639 sq. yds., are also to be purchased by the City Council, the former for £13,000 and the latter for £4,473. This works out at £9 14s. and £7 per yard respectively.

Important Sewage Scheme for Chester.—A special meeting of Chester Town Council was held on Friday last to discuss the sewage outfall scheme recommended by the Sewering Committee, a scheme devised over twelve months ago by Major Tulloch, and estimated to cost about £36,000. Among other places, the system has been adopted with success at Chorley. After a lively discussion the recommendation was adopted.

The Proposed Westminster Improvement.—On Wednesday last a House of

Commons Select Committee began the consideration of the London County Council's Bill for extending the Thames Embankment from the Houses of Parliament to Lambeth Bridge, and for improvements at Westminster in connection with the scheme, at an estimated cost of £1,319,000.

Nuisance of Black Smoke.—At the Manchester City Police Court on May 2nd summonses were heard, taken at the instance of the Sanitary Department of the City Corporation, against a number of manufacturers and others for permitting black smoke to be emitted from the chimneys of their premises, and fines were imposed varying from £5 to 10s. and costs. In other cases orders of abatement were made.

Hull Sanitary Reform Scheme Rejected.—A special meeting of the Hull City Council has rejected (by a majority of one) the scheme which proposed to substitute water-closets for 36,109 privies in the city. Of the 56,861 houses in Hull 49,430 are what are known as privy houses, and of these 36,109 having no back-ways were described by the Sanitary Committee as "a danger to public health." The minutes which embodied this scheme also included recommendations for the sub-division of night-soil districts, and the collection of house and combustible shop refuse by the employees of the Corporation, instead of allowing it to be dealt with by the contractors.

Proposed Sewerage Works and Street Improvements at Sunderland.—A Local Government Board enquiry was held last week into the application of the Sunderland Corporation to borrow £16,106 for sewerage works and £3,060 for street improvements. The new Western Hill sewer, which is completed and cost £918, was included in the application, and provision was also made for a new main drain from Durham Road to the river, estimated to cost £10,000, and a new drain on the High Barns estate, the cost of which is put at £4,000. One of the street improvements contemplated is the widening of Deptford from 25ft. to a maximum of 30ft. The other is the Roker Baths Road, an old thoroughfare which was proposed to be widened from 25ft. to 45ft., as well as straightened.

A Glasgow Improvement.—Since electric cars commenced to run along the new route to Springburn it has become more than ever apparent that the accommodation in the narrowest and steepest part of the High Street is inadequate for the traffic, and it is satisfactory to learn that a widened street and a slightly easier gradient are forthwith to be secured. So soon as the premises on the west side of the street are vacated at the approaching term, the buildings are to be taken down, and a portion of the site is to be thrown into the street, which will then have a uniform width of 60ft. from Duke Street to Rotten Row. This particular section of the ancient thoroughfare has been more than once subjected to change. Originally the upper part must have been almost as precipitous as Balmano Street.

Ratable Value of Bradford.—The return of the ratable value for the city of Bradford up to the end of March has just been completed by the overseers, and shows a continued growth of the valuation. On March 25th of last year the ratable value of the unextended city was £1,192,226; and when the out-townships were added to the city on November 9th the ratable value became £1,368,103. The new ratable value of the old townships of the city is now £1,218,255, an increase of £26,029 on last year, and for the whole area now within the city boundaries £1,396,017, an increase of £27,914. The total ratable value for the townships recently added to the city is £177,762. The total amount of the rate for the new year has yet to be fixed, and it will to some extent depend upon the demands made by the various works which the Corporation propose to undertake. The City Fund rate, which includes the precepts for poor relief and School Board purposes, has been fixed by the overseers at 4s. 6d., which is 2d. more than last year.

Builders' Notes.

The death is announced of Mr. R. F. Dawson, of the firm of Messrs. R. F. Dawson and Son, contractors and stone sawyers, of Great Horton. Mr. Dawson was 53 years of age.

Fireproof Wood and Fire Prevention.—A striking instance of the escape of one of the "sky-scraping" buildings from fire in consequence of the use of non-flammable wood occurred recently in the big Dun Building on the north-east corner of Broadway and Reade Street, New York. A fire broke out sufficient to thoroughly ignite any ordinary building; but the Dun Building escaped because all the woodwork was rendered fireproof several years ago by the electric fireproofing process. This process is the same as that of the British Non-Flammable Wood Company, Limited.

New Doulton Institute.—Some years ago Sir Henry Doulton established close to his great Lambeth works a working men's club. Just before Sir Henry died, in November, 1897, he expressed the wish that a commodious and handsome institute might take the place of the humble little club. This wish has now been carried out, and in the new building in High Street, Lambeth, there are a lecture and concert room capable of holding 400 persons, billiard rooms, reading rooms and smoking rooms, all handsomely furnished and provided with the electric light. In a niche in the lecture room is a fine bust of the late Sir Henry Doulton, modelled by Mr. George Tinworth. A tablet shows that the institute has been erected to Sir Henry's memory by his children. Already 300 employees of the firm have enrolled themselves members of the institute.

Factory and Workshops Bill.—The Manufacturers' Section of the London Chamber of Commerce has issued to members of Parliament and to various Chambers of Commerce and Employers' Associations a report by its Parliamentary Committee on the provisions of this Bill. They point out that the Bill largely increases the discretionary powers of the Home Secretary in respect of so-called dangerous trades and in regard to overtime exemptions, and submit that such powers should, in the interests of employers generally, be a matter of statutory enactment rather than dependent on the individual view of the Home Secretary for the time being. The Section suggests various amendments in the Bill, and particularly in section 15, relating to measures for protection against fire in factories and workshops. While there is no objection to reasonable precautions being taken for the safety of workpeople, it is pointed out that to London manufacturers this section is the most serious in the Bill. Every factory erected since January 1st, 1892, and every workshop erected since January 1st, 1896, in which more than forty persons are employed, must be furnished with a certificate from the London County Council that reasonable provision has been made for escape in case of fire of all persons employed in storeys above the ground floor; or the building must not be occupied. With regard to every factory erected before 1892, and every workshop before 1896, it is the duty of the London County Council to ascertain that these are provided with reasonable means of escape, in case of fire, for all persons employed in storeys above the ground floor. "But there is this essential provision that, in case of difference between the occupier and the London County Council, the question may be referred to arbitration. There is no doubt that this provision has been a strong defence of London manufacturers from the action of the London County Council in requiring costly, and in many cases useless, alterations. The present Bill proposes to give the London County Council the same power for old as for new factories and workshops; in other words, the power to decide whether any factory or workshop may continue to be used or not, a power which no public authority ought to possess. The only protection manufacturers and owners would have is the existence of certain regulations issued by the Council, and they have no legal force."

Bricks and Mortar.

APHORISM FOR THE WEEK.

"The old south church, too, still pointed its antique spire into the darkness, and was lost between earth and heaven; and as I passed, its clock, which had warned so many generations how transitory was their lifetime, spoke heavily and slow the same unregarded moral to myself.—HAWTHORNE ("Twice Told Tales").

The "Trottoir Roulant." A great deal has been heard of late about the rolling pavement at the Paris Exhibition, so that a few particulars as to how it works will doubtless be interesting. It is not a detached structure like a railway train arriving at and passing certain points at stated times, but is always on the move, being nothing less than an "endless floor" about 2½ miles long. This pavement is raised 30ft. above the ground and there are ten entries to it, with as many exits, distributed along the Champ de Mars and the Invalides. You step on to it and get off when you like. There is, however, an important detail, which is, that the "trottoir" is divided longitudinally into three parts; the first of these is stationary, the second moves at the rate of about three miles an hour, and the third at about six miles an hour. When you are in a hurry you get on the third division, stepping on to the second when you desire to examine more leisurely something you are passing, and on to the first when you want to stop altogether. The novelty has been the cause of much fun, for even with this there is a right and a wrong way of getting on and off. Everyone knows what happens when a person alights from a 'bus with his face to the rear, and the same sort of thing occurs when a person does this on the rolling pavement.

Another Little Peculiarity. It is sometimes absurd to see, say, two men walking against the pavement (that is to say, moving their legs in walking fashion) and yet not making any progress. This is, of course, due to the pavement traveling in one direction as far as they are walking in the other, and is on the same principle as the racing horses that appeared at certain music halls some time ago, where they were running on an endless band driven at a high speed. From the foregoing particulars it will be seen that this means of locomotion is a very novel and pleasing one, and it is not surprising that it is so popular a feature of the great Exhibition.

Mr. Walter Crane's Report. THE Technical Education Board of the London County Council has made its annual award of art scholarships and exhibitions on the result of the recent competition. The examination of the work submitted was conducted by Mr. Walter Crane. There were ninety-seven candidates for the thirty School of Art scholarships, 172 for the thirty Artisan Art scholarships, and 214 for the 100 Junior Artisan Evening Art exhibitions. The scholarships are of the value of £20 and £10 a year, together with free tuition, and they are given for periods of two and three years. Mr. Walter Crane, in his report, states that there was a large increase in the number of works sent in, and they were generally of improved quality, and of a more practical character than those executed in 1898. He naturally noted certain imitative tendencies in design, and the constant recurrence of certain types of form in ornament, such as "the ogee-shaped formal tree upon the elongated stem" frequently offered on designs for book covers from art school, or "the well-known tree with the wriggling roots or the squirming curves tying themselves in knots or ending in heavy masses," which saved the trouble of digging deeper or going further afield for fresher decorative forms. As he had noticed before, the

sets of drawings sent in from art schools did not appear to be considered complete without a design for a poster, and these generally showed more determination to strike one by means of raw contrasts of colour or eccentric form than by really decorative or mural feeling or good drawing. Mr. Crane adds on this point that, while the poster affords the only opportunity or outlet for popular mural design, it is doubtful whether, owing to the essential conditions of the hoarding, this is not crushed by the very efforts of designer and printer to appal the eye rather than appeal to it. "The best correction, perhaps, would be a course of training in the arrangement and design of plain bills of lettering, which are quite capable of being made dignified and ornamental in effect when kept quite severe in form." In this connection he notes with pleasure the establishment of a class for the study of lettering, writing, and illumination at the Central School of Arts and Crafts. In the metalwork there were some extremely well-made articles, but as a rule the execution was better than the designs, which suggested that the study of better models would be desirable. The enamels generally showed more feeling. Mr. Crane praised the wood-carving exhibits and the designs for simple furniture.

Art in the Street. A correspondent writes to the "St. James's Gazette" as follows:—"The County Council has at last asserted its influence in the art interests of our public thoroughfares. It has invoked the aid of architects, in select competition, in order that by such precautions the new street which is to debouch on the Strand may not be ruined by the art abortions which now too commonly disgrace the street architecture of the metropolis. So far this is well, and, let us hope, of good augury. But if only the County Council had been less tardy in its action in such direction we might have been spared the disfigurement of Regent Street recently accomplished by two coarsely designed, discordant buildings—one on each side of the way between Oxford Street and Piccadilly. If, too, the Council had exercised due control, under expert advice, over the design of public art works in metal, we should not be threatened, as we are, by the ill-designed and clumsily-modelled 'Boadicea' group in bronze which is to afflict the public at the west end of Westminster Bridge. As regards the electric-light standards which are now being placed in Trafalgar Square, no words of ridicule or contempt can describe the depth of degradation to which art work has fallen in these disgraceful productions. Why, it may be asked, has not the County Council saved us from what is nothing less than national humiliation in the eyes of our foreign visitors? These will not fail to remember how in Paris, for instance, such works are of remarkable beauty, in proportion and artistic refinement of detail, on which an artist of high ability has not failed to leave his mark and win a reputation. Further, may we not wonder how it is that our costly teaching institution at South Kensington, with its branches throughout the provinces, has not made such an infliction as that in question beyond the range of possibility?"

Paris Disaster: The Prefect's Report.

In the official report which he sent to M. Waldeck-Rousseau relative to the bridge collapse at the Paris Exhibition, the Prefect of the Seine states that about two years ago, on receipt of an application from M. Gáleron for permission to construct the bridge, he referred the matter to the Municipal Council. The affair dragged on, and in February, although no decision had yet been arrived at, M. Gáleron began the work. As there was practically no doubt that permission would be eventually forthcoming, the Prefecture of the Seine did not offer any opposition, and on April 9th the Municipal Council sanctioned the erection of the "Passerelle." "It was," the report continues, "a matter of the utmost importance that the props and scaffolding should not be removed until the ordinary precautions against any accident had been adopted, and that the public

should not be admitted to the bridge until it had been subjected, like all work of the same kind, to the regulation trial." The report concludes: "But it happened that, contrary to all possible supposition, on Sunday, in the absence of the agents of the City of Paris, and without having informed anyone of his intentions, the person who had obtained the concession proceeded to the partial removal of the supports of his construction, which was immediately followed by the fall of the bridge." All responsibility for this sad accident is therefore thrown in this report on M. Gáleron.

The Forum Discoveries. PARTICULARS have been given in these columns from time to time of the progress of the excavations in the Forum at Rome. These excavations had at first to be carried out in an almost clandestine manner owing to the lack of funds and the jealousy of influential archaeologists, but they gradually assumed such importance as to render futile all attempts at opposition, and Signor Boni (who has just been created Knight Commander of the Order of the Crown of Italy by King Humbert for his services) now believes himself to be on the eve of a discovery quite as important for the topography of the Forum as his former discovery of the real position and character of the Sacred Way. The workmen have recently been carrying out a minute examination of the structure of the Cloaca Maxima, or the huge main sewer of ancient Rome, which has hitherto been believed to date from the time of Tarquin. This examination has confirmed previous ideas as to the excellence of the structure, but has shown many of the materials employed to have belonged originally to buildings of the early Republican epoch. This has led Signor Boni to conclude that, far from dating from the time of Tarquin, the Cloaca Maxima, as hitherto known, must have been constructed during the later Republican period. The problem is now to find out whether this Republican sewer is, or is not, the original one, or whether there does not exist at a different level and running in a different direction another original Cloaca Massima of the Regal epoch, the existence of which archaeologists have never yet suspected. Signor Boni is said to believe that a little accurate excavation will bring him on the traces of this most ancient sewer, the discovery of which would not only be of great archaeological interest in itself, but would help to determine the original topography and the real level of the ancient Forum. Meanwhile, underneath the modern Church of Santa Maria Liberatrice, which the Italian Government recently expropriated and demolished, have been found traces of the old staircase which formerly united the Forum to the Palatine Hill. Before long the material and earth will have been completely cleared away, and visitors will be able to pass up and down the very stairway which the ancient Romans used as a means of communication between the one famous site and the other.

Blackfriars Monastery. A PORTION of the walls of the old Blackfriars Monastery have recently been discovered in course of some "house-breaking" work in Ireland Yard, St. Andrew's Hill, between Ludgate Hill and Queen Victoria Street. When the housebreakers commenced their work on the ground floor of the house recently occupied by Messrs. Lidstone and Son they had to remove some deal panelling which had been affixed to the walls. On clearing away the boarding from one of the walls a Norman doorway of the old monastery was discovered with part of the wall into which it was sunk. This doorway and the wall itself were at once laid bare. It was bricked up many years ago—no doubt when the house was first built, for the bricks are still firmly embedded in what was once the aperture. It cannot yet be ascertained what will be done with this interesting relic, but in all probability it will be demolished with the rest of the building, as it seems to be too awkwardly placed for convenient preservation.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Sewage Settling Tanks.

CLITHEROE. — CONSTANT READER writes: "Enclosed you will find a plan and section (not reproduced) of two settling tanks for sewage. The division wall is 2ft. 3in. thick, of brick or concrete. What will be the pressure against this division wall when one tank is empty and the other is full? What pressure will a wall of that thickness stand? Would an 18in. wall be strong enough? Which is the best book to read on such matters?"

The plan and section of the two settling tanks show a division wall 50ft. long, 2ft. 3in. thick, and 5ft. 6in. high, whilst the maximum depth of water is 5ft. The pressure of water acting against the division wall under the conditions mentioned is equivalent to the weight of water contained within a right-angled triangle having a height and base of the same length as the total depth of water.

Total water pressure on wall

$$\begin{aligned} &= 50' \times 5' \times 5' \times 62.5 \text{ lbs.} \\ &= 39,062.5 \text{ lbs.} \\ &= 348 \frac{1}{2} \text{ cwt.} \end{aligned}$$

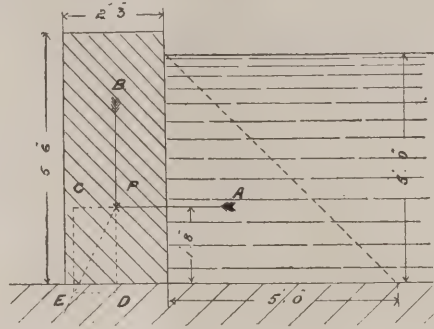
To ascertain the stability of the retaining wall, a portion of the wall, 1ft. in length, is taken as a convenient unit for the purposes of the calculation. The pressure of water acting on this unit is contained within a right-angled triangle, having a height and base of the same length as the depth of the water, and 1ft. thick. The resultant of this water pressure is represented by a single force acting horizontally at a distance of one-third the depth of water from the bottom of the tank. The moment of pressure of the water acting on the unit of wall at its base may be determined by multiplying the weight of water contained within a triangle 5ft. high, with 5ft. base and 1ft. thick, by one-third the depth (1ft. 8in.) of water. Similarly, the resultant of the pressure of the retaining wall is represented by a single force acting vertically downwards at the centre of the wall, whilst the moment of pressure of the unit of wall is found by multiplying the weight of the cubic contents of the brickwork contained within a foot of its length by half the thickness of the wall. Let w = weight of water per foot cube = 62.5lbs. per foot cube; b = weight of brickwork per foot cube = 114lbs. per foot cube; h = height of wall in feet = 5.5ft.; d = depth of water in feet = 5ft.; x = thickness of wall in feet.

The equation for simple stability (exclusive of the co-efficient for friction or cohesive power of the cementing material) is as follows:—

$$\begin{aligned} h \times x \times x \times b \times \frac{x}{2} &= d \times \frac{d}{2} \times w \times \frac{d}{3} \\ \frac{h b x^3}{2} &= \frac{w d^3}{6} \\ x^3 &= \frac{w d^3}{3 h b} \\ x^3 &= \frac{62.5 \times 5^3}{3 \times 114 \times 5.5} \\ x^3 &= 4.15 \\ x &= 2.04 \text{ ft., or } 2 \text{ ft. } \frac{1}{2} \text{ in. nearly.} \end{aligned}$$

From the foregoing it will be seen that a wall 2ft. ½ in. thick is required for simple stability. A brick wall, 18in. thick, is therefore inadequate, but a brick wall 2ft. 3in. thick will be quite suitable for the purpose. The cohesive strength of the cementing material used in the construction of the wall (which varies according to the nature of the mortar or cement used) has been omitted for the sake of simplicity and clearness, and also because in ordinary practice any additional strength thus obtained may be considered as providing a reasonable margin of safety.

The graphic method of ascertaining the stability or otherwise of any given retaining wall is shown in the accompanying diagram. The resultant of the pressure of water is represented



DIVISION WALL FOR SEWAGE SETTLING TANK.

by the line A P, acting horizontally at one-third its height from the bottom of the tank, whilst B P is the resultant of the pressure of the wall acting vertically downwards at the centre of the wall. The total pressures of the water and of the wall are now laid down to scale, and indicated by the lines P C and P D respectively. The parallelogram is completed, and the diagonal P E represents the resultant of the two pressures. In the case of the 2' 3" wall here shown, it will be observed that the resultant of the two pressures intersects the base line of the wall well within its thickness, and the necessary stability is thereby ensured. For a complete text book on the subject, "Rankine's Manual of Civil Engineering" (published by Messrs. Griffin and Co.) is recommended.

T. E. C.

Preventing Tracing Cloth Wrinkling.

CARDIFF. — W. H. L. writes: "I find, after applying colour to tracing cloth, that it wrinkles and becomes useless. What preparation is necessary to prevent this? I have used prepared liquid ox-gall both in the ink and in the colour."

There is nothing that can be mixed with the colour to prevent the wrinkling of the tracing cloth when it is applied. The remedy is to pin the cloth down with, say, four pins on every side, care having been taken the cloth is very tightly stretched. It should be so left until quite dry, when the surface will be found to be comparatively even.

H. F. W.

Architects' Final Certificates.

CARDIFF. — OMEGA writes: "What is the usual practice with architects when granting their final certificate for work done under a contract which states that the work should be finished at a certain time under a penalty, and the work is not completed in the stated time? Is it proper for the architect to advise the proprietor as to the amount of the penalty, and ask him whether he wishes to enforce it, or to grant his final certificate, deducting from it the amount of the penalty without consulting the proprietor?"

We are not aware that there is any established practice on the subject. The architect should give a certificate in accordance with whatever may be his duty as defined by the building contract. If the contract empowers him to determine whether penalties are or are not recoverable, and he finally certifies that money is due to the builder without taking into account any penalties that the latter has incurred, he thereby determines that penalties have not been incurred, unless it has been agreed that he shall not exercise the power. If the contract confers the power, the architect ought to exercise it, leaving to his client the question whether he will insist on his strict rights or not. If the contract does not confer the power, he may omit all reference to penalties in his final certificate, or, if he thinks that penalties have been incurred, insert in his certificate such reference to the matter as will show that in ascertaining the amount certified for he did not deal with the question of penalties at all.

H. P. B.

Ordained Surveyors.

DUNDEE. — SURVEYOR writes: "(1) What is an 'Ordained Surveyor,' and how is the title obtained? (2) What is necessary in order to become a member of the Surveyors' Institute? (3) Is there any work published dealing with the Continental co-ordinate system of surveying, as employed, for instance, in the Transvaal? If so, what is the cost, and who is the publisher?"

(1) So far as we are aware, there is no such thing as an ordained surveyor. Possibly it may be a local Scotch term; or possibly a surveyor engaged upon the Ordnance Survey may be meant. If any reader could assist us with a more correct answer we should be glad to hear from him. (2) The Surveyors' Institute can only be entered after passing a series of examinations, the particulars of which can be obtained from the Secretary, Great George Street, Westminster, S.W. (3) The co-ordinate system is that known as "traversing" in England. Full descriptions will be found in "Surveying and Surveying Instruments," by G. A. T. Middleton (Whitaker and Co., 4s. 6d.). G. A. T. M.

Strength of Bressummer.

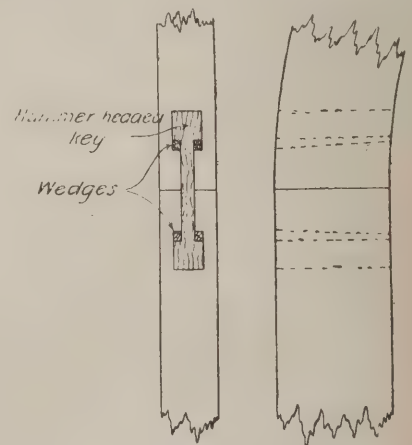
YORKSHIRE writes: "In a building there is a beam formed of three 9in. by 3in. pieces bolted together, spanning a 9ft. opening over a bay window, with 14in. brick wall and gable over. This beam has sagged ¾ in. to 1 in. in the middle. Will it go any further, or is it necessary to strengthen it, and how?"

Three 3in. by 9in. deals bolted together are sufficient for supporting a 14in. wall over not more than 8ft. span, or a 9in. wall over 12ft. span. If the bressummer carries the floor joists also, a further reduction of span by one-fourth is desirable. If the two inner deals can be shored up the outer one may be removed for the insertion of a 3in. fitch plate and replaced.

HENRY ADAMS.

Hammer-Headed Key Joint.

DUDLEY. — AYAT JAY writes: "I should feel obliged if you could give me a sketch of a hammer-headed key joint. This has been asked for several times in the South Kensington examination in Advanced Building Con-



HAMMER HEADED KEY JOINT.

struction, but I cannot find it in any of my handbooks."

The hammer-headed key joint is used in church doors with curved heads to connect the stiles with the head rails, as shown in the accompanying illustration.

HENRY ADAMS.

Builders' Book-keeping.

WEST HARTLEPOOL. — E. W. K. writes: "What is the address of Mr. Saker, the author of 'Builders' Book-keeping: a Perfected System'; also, is there any good book on keeping prime cost of contract work?"

Mr. Saker's address is 95-97, Finsbury Pavement, E.C. Other books on book-keeping do not give any information as to keeping prime cost of contract work.

Shipper Bricks.

DUDLEY.—AYAT JAY writes: "I should be glad to have a description of a 'Shipper' brick."

The names given to different classes of bricks vary in different districts, and even in different brickfields of the same district. According to Vol. III. of Notes in Building Construction the classes are sub-divided into malms, washed bricks, and common bricks, according to the manner in which the earth has been prepared, and are further sorted into varieties according as they have been affected by the fire in burning. "Shippers" occur in each class, being below the medium in malms, about the medium in washed bricks, and the highest quality in common bricks. They may be described as sound, hard-burned bricks, not quite perfect in form, and chiefly exported.

HENRY ADAMS.

Land Ownership.

TENANT writes: "Who would you say was the owner of the mound shown in the accompanying illustration? A has the ditch or trench on his ground, and claims to the centre of the mound. B, whose ground is on a higher level, claims all the mound, and wants provision for his surface water to run in A's

who protest and wish to prevent the closing of the road?"

(1) The road is now a public road. We cannot say definitely whether it is repairable by the local authority, but the fact of their having repaired it on several occasions is evidence that it is repairable by them. (2) It is the duty of the district council to protect the public right of way, and to prevent, as far as possible, its being stopped or obstructed, where the stoppage or obstruction would, in their opinion, be prejudicial to the interests of their district (Local Government Act, 1894, 56 & 57 Vic., chap. 73, sect. 26, sub-sect. 1). This provision applies to rural as well as to urban districts. The district council may adopt any of the following courses:—(a) Direct the removal of the obstruction. (b) Indict the person who caused it. (c) Proceed by action in the name and under the fiat of the Attorney-General. (d) Remove the obstruction and recover the expenses of doing so against the obstructor (see as to this last remedy *Louth District Council v. West* (1896), 65 L.J., Q.B. 535; 60 J.P. 600). Such being the duty and the rights of the district council, the remedy, if they disregard their obligation, is provided by the fourth sub-section of the above section, which enacts that where a parish council, or, where there is no parish council, a parish

Correspondence.**Sun Prints.**

To the Editor of THE BUILDERS' JOURNAL.
LONDON, W.C.

SIR,—Your correspondent "Ipswich" (see page 233 of last week's issue) need not make inked-in drawings transparent if he likes to copy them by the Sepia process, as by this process sun-copies can be taken direct from drawings on thin Whatman or Bristol board; but the lines should be inked in very clearly, and with a perfectly black ink.—Yours faithfully,
THE LONDON DRAWING AND TRACING OFFICE.

Measuring Mouldings.

To the Editor of THE BUILDERS' JOURNAL.
HEREFORD.

SIR,—I thank you for your answer to my inquiry with reference to the method of measuring mouldings, which appeared in your issue for March 28th last. I have tried the method advised, namely, by means of lead strip, but I cannot say it is satisfactory, as the least move would alter the line of mouldings, and if it be a cap with many moulds it is impossible to work the lead to them. I think there must be better methods than this one, and some good way of measuring elaborate mouldings, and I shall be glad if you will insert this letter, in the hope of obtaining the views of other readers on the subject.—Yours truly,
H. S.

Masters and Men.

The Selby Bricklayers' Wages have been advanced 1d. per hour on the old rate of 8d.

The Pudsey Carpenters and Joiners have struck for an advance from 7d. to 8d. per hour.

The Swansea Builders' Labourers have struck for an advance in wages from 5½d. to 6d. per hour.

The Plasterers in the Bangor District have been granted an advance of wages from 7d. to 8d. per hour.

The Dundee Slaters have struck against the masters proposed reduction of wages from 9d. to 8½d. per hour.

The Operative Plumbers at Paisley have struck for an advance of ½d. per hour on the present wage of 9d.

The Plumbers at the Leicester Isolation Hospital Works who struck work recently have returned to work.

The Stonemasons in New Mills, chiefly "banker hands," have struck for an advance of from 8d. to 9½d. per hour.

The Operative Masons in Bradford have been granted an increase of ¾d. per hour, making their wages 9½d., on May 1st.

The Northwich Painters have been granted an increase of ½d. per hour in wages, with the promise of another ½d. next year.

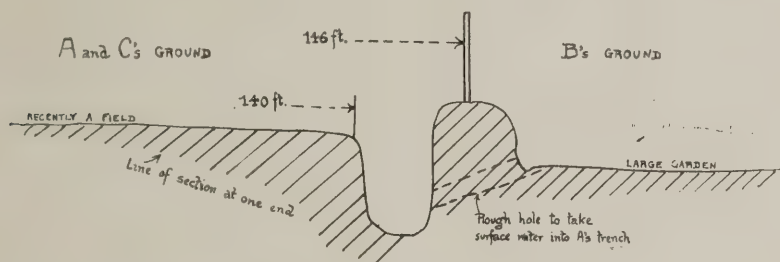
A Strike of Bricklayers' Labourers at Lincoln has occurred, 1d. an hour advance being demanded on the present rate of 5d.

The Barry Carpenters and Joiners, numbering between thirty and forty, have struck for an advance of ¼d. in November and ¼d. next May.

The Carpenters at Dover are on strike for an advance of ¾d. per hour on their wage of 8d., and to finish work at 12 on Saturdays instead of 1 o'clock.

The Dudley Carpenters' Strike has been settled by the employers agreeing to give the advance from 8d. to 8½d. per hour in July next.

The Master Painters in Bingley and District have decided to form themselves into an association for the conduct of the trade. Mr. Charles Dawson, Bingley, is president, Mr. A. Anderson, secretary, and Mr. W. Stoney, treasurer.



trench. A has let 146ft., or thereabouts (in lease), at £16 18s. per year to C. The 146ft. comes to the centre of the mound, but this belongs to B, and if provision has to be made for his surface water (leaving the trench open) C will only have about 140ft. of ground. Would 140ft. be the 'thereabouts' referred to in the grant instead of 146ft.?"

The presumption is that the person on whose land the mound is owns not only the ground covered by the mound but the ground occupied by the trench, because a party inclosing his own land makes his ditch or trench upon the extremity of his own ground, and throws up a bank on his own side out of the excavated contents of the ditch; so that the land constituting the ditch or trench, though on the outside of the bank, forms in point of law part of the inclosure. The presumption of ownership arising from the existence of the trench and bank may, of course, be rebutted by evidence that the land covered by the bank or occupied by the trench belongs wholly or partly to the adjoining owner. Unless such rebutting evidence exists, B in the case referred to by our correspondent owns the ground up to the surface line of the trench on A's side. We do not think that a measurement of "146ft. or thereabouts" would be satisfied by a measurement of 140ft.
H. P. B.

Company's Right to Close a Road.

WALLSEND-ON-TYNE.—ESSEX writes: "About sixty years ago a coal company rented a piece of ground about 500yds. long, and since that time it has been continually used, the higher level as a wagon-way and the lower as a road. The road has never been closed, and the public have had free access, it being now the principal means of communication between two villages, and on several occasions it has been repaired by the local authority. The coal company now propose discontinuing the railway and closing the road. The local authority, the members of which are mostly connected with the colliery, refuse to take action in the matter. (1) Is the road now a public road, repairable by the local authority? (2) What is the mode of procedure by public at large

meeting (sect. 19, sub-sect. 8), have represented to the district council that any public right of way has been unlawfully stopped or obstructed, it shall be the duty of the district council, unless satisfied that the allegations of such representative are incorrect, to take proper proceedings accordingly; and, if they refuse or fail to do so, the parish council, or meeting, may petition the county council; and, if the latter so resolve, the powers and duties of the district council in this respect shall be transferred to the county council. The remedy, therefore, is for the parish council, or, should there be none, a parish meeting, to make to the district council a representation that the road has been unlawfully stopped or obstructed, followed, after a reasonable time, by a petition to the county council. We assume that the lease to the coal company has not expired. If it has, the landlord may not be bound by the dedication of the road to the public by the company, though possibly he may.
H. P. B.

Strangers' Hall, Norwich.—In the course of a recent lecture on this building before the Norfolk and Norwich Archaeological Society, Mr. L. G. Bolingbroke said that Strangers' Hall was never a portion of any ecclesiastical building, nor an annex for guests from the neighbouring palace of the Dukes of Norfolk, and was never occupied by any representative body of the Strangers or by the Guild of St. George. Beneath the west end of the hall itself, and running transversely with it, is a fine decorated crypt of three bays, on the east side of which is a passage way leading to the garden on the south side of the hall, while to the east of this passage are other cellars. These cellars (which are so frequently found throughout the city beneath more modern work) are the crypts for the storage of valuables which usually existed beneath the timber-built houses of the fourteenth century. As the houses above them decayed and were removed, more substantial buildings were erected over them, and this is the case in the present instance.

The Grimsby Painters' wages have been increased from 7d. to 7½d. per hour.

The Newcastle Builders' Labourers, to the number of about 300, have struck for an advance in wages from 6d. to 7d. per hour, and also to revise the rule relating to carrying stones up ladders and to alter the system of allowing apprentices attending as bricklayers working as labourers.

Aberdeen Joiners' Dispute.—Ex-Lord Provost Mearns, who was appointed to decide between Mr. E. G. Wilson and Treasurer Bisset, the arbitrators who were unable to agree, has come to the conclusion that the rate of wages of the workmen should be reduced from 8½d. to 8d.

The Carpenters and Joiners at Belfast have struck for a week of 52½ working hours, stopping at 12 o'clock on Saturday; a ½d. an hour rise, making 9d.; and an increase of one shilling on the present allowance of one shilling a week per mile outside the boundary lines up to three miles. The main point of difference, however, is the carpenters' claim that they should do the work of pointing and ringing of piles, the making of concrete boxes, and all the carpentry work connected with concrete walls and floors, as well as with engineering and jetty work, which the masters claim as unskilled labour.

Advance to Cardiff Painters.—Some months ago the members of the Cardiff branches of the Amalgamated Society of House Decorators and Painters gave notice of their intention to ask for an advance of one penny per hour in wages. An increase of a halfpenny per hour has now been accepted. Certain alterations in the working rules have also been satisfactorily arranged.

National Conciliation Board.—At a Meeting of the Council of the National Association of Master Builders of Great Britain and Ireland held in St. Martin's Town Hall, on Thursday, April 26th, the president, Mr. W. Sapcote, being in the chair, the correspondence which had taken place between the secretary, Mr. J. A. S. Hassal, and the operatives' representative, Mr. G. B. Cherry, relative to the proposed formation of a National Conciliation Board was read. After discussion the following resolution was adopted:—"That having heard read the correspondence which has passed between this Association and the operatives on the subject of the suggested formation of a National Conciliation Board the Council desires to confirm the resolution passed at a Council Meeting of this Association held on October 24th, 1899, as follows:—"That in the opinion of this Council it is not expedient to proceed with the formation of a National Conciliation Board at present, unless a monetary guarantee be given on both sides for the due performance of the decision of the Conciliation Board."

Disputes in the Potteries.—Sir John Taylor, acting as arbitrator in a dispute between the Potteries, Newcastle and Leek branch of the Master Builders' Association and the Operative Carpenters and Joiners of the Newcastle and Potteries district, has decided that the present rate of wages shall remain unchanged, that rate having been arranged only last year. The award provides for a small alteration in the working hours on Mondays and Saturdays during the eight months mentioned. The award has been accepted by the parties concerned, who have agreed that it shall continue in operation for three years from May 1st. The operatives had given notice for an increase of wages from 8½d. to 9d. per hour, and for a reduction of 3½ hours per week during the eight months from March 1st to October 31st; and the employers had given counter notices for a reduction of wages from 8½d. to 8d. per hour, and for a reduction of one hour per week during the period mentioned. Following immediately upon this amicable settlement, there has commenced a serious dispute in another branch of the building trade of the district. The bricklayers, to the number of between 400 and 500, have come out on strike to enforce their demand for an increase of wages from 8½d. to 9d. per hour.

Engineering Notes.

Athlone Workhouse is to be steam heated by Messrs. John King, Ltd., engineers, of Liverpool and Donabate.

Birmingham Tramways.—The Birmingham City Council decided at its last meeting to accept the proposals of the City of Birmingham Tramways Company for the equipment of the Bristol Road tramways on the overhead electric system.

London's Electric Railways.—Having heard evidence and arguments of counsel on the Bill for extending the authorised Baker Street and Waterloo Railway to Paddington at the one end and to the City and South London Railway near the Elephant and Castle at the other, the Committee of the House of Commons on Thursday last found the preamble proved.

Institution of Gas Engineers and the Gas Institute.—It is proposed to amalgamate these two institutions, and at a meeting of the former held at Westminster on May 1st the proposal was approved. The president, Mr. J. W. Helps, of Croydon, remarked that no one interested in the gas industry could fail to come to the conclusion that two institutions, each claiming to represent the gas profession, were unwarranted, and were likely to interfere with the success and prosperity of the industry.

Large Tramway Scheme Sanctioned.—On Thursday last a Committee of the House of Commons passed the preamble of a Bill for the incorporation of a company with a capital of about a million with authority to construct a network of tramways in South Lancashire, to be worked by electric traction, in the large area between Manchester or Salford on the east to St. Helens on the west, with connections with those places. Forty-five separate tramways are to be made.

City Corporation Electric Lighting: Important Judgment.—On Thursday last Mr. Justice Farwell gave judgment in the Chancery Division in the action of the *City of London Electric Lighting Co. Limited v. Lord Mayor & Co. of London*. It was brought by the plaintiffs to obtain a declaration that certain contracts made by them with the Corporation for the lighting of the City were valid. Defendants contended that the contracts were void, by reason of the fact that members of the Corporation were shareholders in the plaintiffs' company, which was prohibited by the Acts of 1848 and 1851.—His Lordship construed the contracts in favour of the plaintiffs, and granted the declaration asked by the plaintiffs, ordering the defendants to pay the costs of the action.

A Great Bridge.—The contract for the new steel bridge over the St. Lawrence River at Quebec has just been awarded to the Phoenix Bridge Company, Phoenixville, Pennsylvania. The contract approximates to £900,000. The bridge, which requires 27,000 tons of steel, will be 4,000ft. long and 150ft. above the river. It will consist of three spans, two of 600ft. each and a centre span of 1,800ft. This middle span will be the longest cantilever span in the world, surpassing the Tay bridge's great span by several hundred feet. The bridge is to be 76ft. wide, with a roadway, four railway tracks, and footways on each side. It is to be finished in three years, and the work will be begun immediately.

Street Lighting by Gas.—Among the towns which have recently made large extensions in the use of the Welsbach incandescent system for street lighting are Bradford and Huddersfield, both of which have municipal electricity and gas supplies. Bradford introduced the Welsbach system with success some time ago, and has now decided to fix several thousand more burners. In Tunbridge Wells, where the Corporation also owns the electric light, the Town Council has decided to fit 350 incandescent burners in street lamps. The gas undertaking in this case is the property of a company. The sea front at Hove, which gives excellent opportunities for good lighting, is at present being fitted with new lanterns and burners for the Welsbach system. Other

towns which have recently adopted this method of street lighting include Dukinfield, Maidenhead, and Hemel Hempstead.

Birmingham's Welsh Water Scheme.—Birmingham is beginning to see a great deal of its Welsh water scheme. Between Frankley and Northfield Station great pipes are being hauled continually. From the higher parts of the road may be seen a long line of these pipes across the fields, rising and falling over hill and dale, and looking, with their tar-coating glistening in the sun, like the folds of some fabulous serpent. This line brings one to the great service reservoir near Frankley Beeches. The storage is two hundred million gallons, which, at the rate of thirty gallons per head per day, would, without renewal, serve for about ten days the population in and around Birmingham dependent on the scheme. Semi-circular in plan, and divided into two by a wall forming a sagitta of the arc, the reservoir has a water surface of twenty-five acres and a depth of 31½ft. when bank full. Roughly, the reservoir is about 650ft. above the level of Birmingham, but though it will give a higher average pressure than is now possible it will not serve the higher parts of the city and suburbs. Water, therefore, will be pumped from it to still higher reservoirs at Warley. The work is going on to the satisfaction of the engineers, who have no doubt of being ready within the Parliamentary time limit. The larger portion of the main walls has been erected, and a considerable portion of the blue brick and asphalt lining is ready. The filter beds are well in hand, and several of them are about half completed. The pipes now being got into the ground are for the 3ft. 6in. main to Birmingham. At first the inlet to the reservoir will consist of two cast-iron mains of this size, but ultimately there will be six, and all permanent works are constructed with this view. The six pipes would bring the water from Wales at the rate of a hundred million gallons a day, filling the reservoir in two days instead of in six. At present about 450 men are employed on the works, the supply of labour having been lately drawn upon for other works in the vicinity, such as the Hollymoor Asylum and the pipe-laying contract. The latter has been given to Messrs. John Aird and Son, while the contractor for the reservoir is Mr. J. Kellett. The resident engineer is Mr. F. W. Macaulay.

New Patents.

These patents are open to opposition until June 11th.

1899.—Public Baths.—7,992. J. KANE, Bristol. In a public bathing establishment arranged according to this invention the baths are divided off from the dressing rooms in the following manner:—Assuming an oblong building, an entrance corridor will extend on three sides, and will give access to the dressing rooms, these extending the length of the building and enclosing the baths between in a kind of hall. By this means the temperature of the bath room and of the dressing room can be regulated to suit their respective requirements.

Slabs for Railway Platforms, &c.—9,375. E. BRAEDNER, Manchester. This is an improvement on patent No. 6,190 of 1895, and consists in making the edge of the slab of small tiles of ironstone, afterwards adding the concrete backing. The tiles can also be fixed to the edges of slabs (wood or stone) *in situ*. They consist of the usual foundation of ball clay mixed with sands, to which powdered ironstone is added to give density and strength, the necessary whiteness being obtained by mixture with a sufficient quantity of china clay and flint.

Mortising Machines.—10,531. W. L. WISE, London, W.C. (J. D. Wood, Milwaukee, U.S.A.) The machine dealt with by this invention is intended to be worked by hand, and consists of an upright frame supporting mechanism which operates an auger and four

chisels that work in unison for cutting rectangular holes.

Hardening and Fireproofing Wood.—10,618. S. WILLNER, London, E.C. The wood is first placed in a chamber and heated till all the moisture is driven off. The chamber is then sealed, and a vacuum formed within it, after which a boiling solution of fifteen parts of tungstate of soda and ten parts of white gelatine, diluted with water, is sprayed into the fibres of the wood. The vacuum is then broken, and the superfluous liquid taken off. Then the vacuum is re-made for the spraying of a solution of formic aldehyde. Pressure is maintained for several hours, and the wood is then dried slowly.

"Slag Wool."—11,544. A. D. ELBERS, Hoboken, Hudson, U.S.A. "Slag wool" made according to this invention is freer from sulphur than the ordinary article, and is, therefore, claimed to be of better quality. The blast-furnace slag is desulphurised by smelting it in a cupola-furnace in admixture with gypsum, or other sulphates of the alkaline earths, and is afterwards blown into mineral wool.

Firegrates.—11,840. E. M. TURNER, London, S.E. The bottom bars of the firegrate (or some of them) are made hollow and open at both ends, the front ends being covered by a damper for regulating the draught. These bars are in combination with a hollow back, so that the air can pass through them into the back of the fire and so make it burn more brightly. At the top of the hollow back an air deflector is fixed, and provision is made for the escape of heated air into the room from a grid in the upper portion of the grate.

Acetylene Gas Generators.—12,053. THORN AND HODDLE, London, S.W. The object of this invention (which has particular reference to patent No. 15,962 of 1096) is to provide means for precluding the risk of an explosion by a certain mixture of acetylene and air, when the apparatus is first started. The air space in the holder is reduced by a diaphragm that forms an upper chamber into which water or any material can be placed to regulate the gas pressure. Provision is made to prevent the holder becoming over-charged or having too much pressure.

The following specifications were published on Saturday last, and are open to opposition until June 19th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—7,460, ROBERTSON, articles of furniture. 7,797, LORENZ, construction of building materials and mode of connecting them together. 8,376, HASLETT, metal window frames and sashes. 9,893, WHITAKER, apparatus for excavating. 10,045, CORDON, glazing of roofs and other structures. 10,494, RAMSDEN, bacterial treatment of sewage. 10,542, GIBARD, turning lathes. 11,084, ADAM, brick and tile-making machinery. 11,371, YOUNG AND SHAW, raising of water. 11,718, WILKINSON, staircases. 11,865, ROWLEY and TILL, moulding articles in clay or other plastic material. 12,140, HOLDING, tool holders for slotting, planing and shaping machines. 12,848, WADE, apparatus for automatically delivering disinfectant or other compound to a charge of water. 13,299, SWITHENBANK, cleansing all kinds of street gulleys and traps. 19,427, HEATH, apparatus for holding and distributing paint. 20,267, SPIERS, apparatus to be attached to self-acting revolving shutters, whereby the shutters can be utilised as sun and weather blinds. 24,060, DRAKE and PELTON, acetylene gas burners. 25,431, BROUGHTON, method of treating a disintegrated slate mixture for the manufacture of useful and ornamental articles.

1900.—964, DECKER, combined smoke and gas consumers and fuel feeders. 1,053, WACHWITZ, SATTler and DUNKELSBUEHLER, manufacture of plated metal. 1,393, NORMAND, pumps. 1,822, HANNEBERG, apparatus for the collection and conveying of light or heat from the sun or other sources to the cellar, basement, or other dark rooms in buildings, etc.

2,871, LOOSE, locks. 3,057, REY and REY, apparatus for burning hydrocarbons, alcohols, and other combustible liquids for heating purposes. 3,378, FURER, trapped ventilating devices for waste-water pipes. 3,415, GARSTANG, bacteriological purification of sewage. 4,088, WISE (*Pendleton*), saw filing and setting machines. 4,411, HOHNE, wire fences. 4,470, KOCH, stone-planing machines. 4,533, KEER, machines for planing or French polishing wood. 4,535, HEISLER, pumping engines and compressors. 4,606, ANSPACH, devices for lighting gas at a distance. 4,683, ROTH and ISRAELSKI, brushes. 4,691, BEDELL and WELSBY, valves for flushing water-closets and drawing off liquids. 4,698, SIMONS, nut-locking devices. 4,762, BLAKE, pumping cars. 4,788, MOFFITT, apparatus for hanging wallpapers. 4,879, JACOBSEN, theatrical stages.

Professional Practice.

Gateshead.—There is nearing completion in Gateshead a new drill hall and men's quarters for the use of the Gateshead Battery, 1st Newcastle Volunteer Artillery. For many years the drill and other functions have taken place in the premises in Park Lane, which have been found too cramped, hence the erection of the present building. The new hall comprises a main hall for drilling, 80ft. by 47ft. 6in., well lighted and having a boarded floor. In addition, there is a clothing store, orderly office, officers' room, harness room, gunners' room, sergeants' room, armoury, and every convenience for the members. There is a parade ground, 79ft. by 55ft., where drill movements can be performed with ease. The building is of red brick with stone facings, and has been designed by Messrs. Watson and Curry, architects, of Newcastle. The contractor is Mr. E. T. George, Newcastle, whose manager at the works is Mr. Johnson Reed.

Glasgow.—The new central fire station at Glasgow, which was opened last week and is one of the finest in the kingdom, covers an area of 3,300yds., and has involved a total expenditure of more than £60,000, the site costing £22,750 and the buildings about £40,000. The station has two frontages—one in Ingram Street and the other in High Street, that in Ingram Street, four storeys in height, being the principal one. On the ground floor to the right of the entrance are the watch-room and the engine house, with accommodation for four engines. The offices are to the left, and comprise the chief officer's room, officers' and clerks' rooms, &c. Immediately to the rear of the engine house, and opening into it, are stalls for eight horses; and behind this are the fodder house, spare stables, machine and harness rooms. On the first floor, over the engine house, are two duty rooms, provided with sliding poles. A passage across the roof of the stable communicates with the recreation rooms. The remainder of this floor and the floors above are occupied by the officers' houses. The engine-house walls are lined inside with a fine selection of Grecian marble and polished granite, and the floor is laid with oak blocks. The High Street building is five storeys in height. The four upper floors are occupied by the firemen and their families, the ground floor being occupied as shops. At the south side of the courtyard is a block of buildings containing on the ground floor rooms for spare machines, workshops for boot-making, hose-repairing, engineering work, joinery, coach painting, and plumbing; and on the three floors above are rooms for the firemen and their families. Behind this building is situated the children's playground. Facing this block on the other side of the courtyard a range of one-storeyed offices is built, comprising wash-houses, laundry, drying room, smithy, oil store, electric shop, &c.; in the south-west corner of the courtyard is the hose-drying tower, rising to a height of 90ft., having on the top a test-room for all fire alarm, telegraph, and telephone lines; adjoining is the gymnasium, 55ft. long and 25ft. wide, and underneath is a store for

wood and iron. In every fireman's house is a bath, supplied with hot water from a steam boiler, which also supplies the water for heating and for domestic use throughout the station. The buildings throughout are lighted by electricity. All pipes, drains, and electric light wires, also the telegraph, telephone, fire alarm, and house bell connections, are contained in a subway which connects all the buildings. The elevation to Ingram Street is well broken up with oriels, gables, pilasters, and carving, but not overlaid with ornament. The elevation to High Street is built of the same materials as that to Ingram Street (granite and Lochaber red sandstone), but is less ornate in character. The station being built on the barracks principle, access to the firemen's houses can be had only from the Ingram Street entrance, and thus every person entering or leaving the station is under observation from the watch-room. The plans were prepared and the work carried out under the superintendence of Mr. A. B. McDonald, M.Inst.C.E., city engineer of Glasgow.

Pitlochry.—A public hall has been built on a site near the Pitlochry Established Church from designs (selected in competition) by Mr. Alexander Ness, architect, of Dundee. In the front portion of the building there is a spacious vestibule, with cloakrooms and crush lobby on the ground floor, and with a small hall and other accommodation above, while the hall proper abuts on it at an angle. This hall, which is seated for 500 persons, measures 60ft. by 33ft. 6in., the height being 24ft. The gallery has seating accommodation for about 90 persons. At the south end there is a stage 25ft. long and 14ft. deep, together with the necessary adjuncts in the way of dressing rooms, retiring rooms and baggage rooms. The walls and ceiling of the main hall are finished in pale green, the ceiling being panelled in tints to harmonise. The scheme has been very artistically thought out, and the whole presents a pleasing and inviting appearance. The building is heated by an effective system of hot-water piping. The contractors were as follows:—Mason, Stewart, Jamieson and Forbes; joiner, W. Sims, Moulin; slater, the late Mr. A. R. Butchart; plasterer, J. Veitch; plumber work and heating, Adam Menzies; painter, A. and W. Miller; ventilation, Climax Ventilating and Heating Co., Glasgow. Though the accounts in connection with the building have not yet been made up, it is understood that the total cost of the hall, including furnishings, has been about £3,000.

Wenhaston, Halesworth.—The church of St. Peter, Wenhaston, has been restored. The chancel was completed in 1892, and now presents very much the appearance it had before the church was spoliated in 1643. Two windows of late twelfth century date are retained in the chancel; the tower and nave arcade are of the second half of the fourteenth century, while the windows in the nave and aisle and south porch are probably not earlier than the sixteenth century. It was whilst working on the chancel that the remarkable painting on oak, "The Last Judgment," was discovered at the east end of the nave. The Society of Antiquaries suppose it to have been painted about 1480, and covered up since 1549, in obedience to a Parliamentary edict of that date, and it thus escaped the violence of the iconoclast Dowsing and his emissaries. Notwithstanding the covering of centuries of whitewash, the brilliancy of the colours is remarkable. After undergoing the ordeal of exhibition in London, it now adorns the gallery of the church, and the vicar extracts an admission fee in aid of the restoration fund from the visitors. The panel is 17ft. 3in. wide at the bottom, and 8ft. 6in. high. When the chancel was completed, it was felt that the dilapidated floor and decayed and uncomfortable pews needed attention, and this year sees the completion of a new floor of oak blocks, the walls and ceiling renovated, the old pews substituted by chairs with plush kneelers combined, and Musgrave's patent hot-water pipes fitted. The architect was Mr. E. F. Bisshopp, of Ipswich, and the contractors

were Messrs. Kersey, of Woodbridge. It should be added that the old carved Jacobean work of the fifteenth century, and the poppy-head work, have been preserved and utilised in different parts of the church; also that experienced archaeologists are of opinion that more frescoes are almost certainly concealed by whitewash, which still disfigures the walls. The work, including that in the chancel, has cost £900.

Yarmouth.—The new Seamen's Institute on the South Quay, which was recently opened by H.R.H. the Duke of York, has been designed by Messrs. Bottle and Otley, the builder being Mr. William Cork. The cost is £2,250. The building occupies a site of about 28ft. frontage to the quay, with a depth of about 90ft. On the ground floor is the Seamen's Institute, 68ft. by 28ft., and 12ft. 6in. high, with a storeroom at the back about 15ft. by 12ft. The mission church is on the first floor, 68ft. by 28ft., and 22ft. in height to the apex of the roof, with vestry adjoining, the same size as the storeroom below. The main entrance to the Institute is from the quay, with outer and inner swing doors. The church has a broad staircase of pitch-pine leading from an entrance lobby. There is also a ladder staircase from the vestry, leading to the open space in the rear. The external woodwork of the west front, facing the quay, is of teak of an ornamental character; the ground floor has a projecting central porch, with canopy over, and large moulded windows on each side, so that those using the Institute will have a good view of the quay and river. The church has a seven-light perpendicular Gothic window at the east and west ends. The chancel floor at the east end of the church is raised. The roof of the church is open-timbered, with curved principals, and an arcade on each side. The windows are filled in with tinted cathedral glass.

Keystones.

Brighton Aquarium is to be bought by the Town Council for £30,000. The building originally cost more than £100,000.

A Nursing Institute at Northampton is being built at a cost of about £4,000. Countess Spencer laid the memorial stone last Thursday.

New Abattoirs at Benwell, Newcastle-on-Tyne, have been built. They are a compact range of brick buildings enclosing a cemented yard.

A new Presbyterian Church at Didsbury is being built at an estimated cost of £5,000 from plans by Mr. Henry Lord, architect, of Manchester.

A new Church at Beeston, Nottingham, is being built from the designs of Mr. Robert C. Clarke, of Nottingham, by Mr. William Fletcher, of Beeston. The estimated cost is £1,500.

Old Steelwork.—Birmingham has followed London's lead by arranging in the Municipal Art Gallery a portion of the exhibition of antique steel and ironwork recently held in the metropolis under the auspices of the Burlington Fine Arts Club.

St. George's Church, Leeds.—The corner stone of the apse which is being erected at the east end of this church was laid on Thursday last. It is proposed to re-roof the building, to renovate and paint the interior, provide new pews, re-arrange the heating apparatus, and instal the electric light. The cost of these improvements is £6,000. Mr. H. Walker is the architect.

Edinburgh Architectural Association.—The annual business meeting of the Edinburgh Architectural Association was held on Thursday last, Mr. James Bruce, W.S., presiding. Satisfactory reports were submitted by the secretary and treasurer, the accounts of the latter showing a credit balance of £116. Office-bearers for next session were elected as follows:—President, Henry F. Kerr, A.R.I.B.A.; past

president, James Bruce, W.S.; vice-presidents, A. Hunter Crawford, architect; Robert Wilson, architect; honorary secretary, T. Fairbairn, surveyor; treasurer, John Johnston, C.A.; librarian, J. A. Carfrae, architect.

The Fleming Cottage Hospital at Aberlour, Banffs., which was recently opened, has been built at a cost of about £4,000 from the designs of Messrs. Dun and Findlay, architects, of Edinburgh.

After the Fire.—The sum of £8,200 has been voted for the restoration of Government property destroyed by the great Ottawa fire. Large numbers of workers are now engaged clearing sites and rebuilding the city.

"Some Rich Districts for Architectural Photographs" is the title of a short article by Mr. G. A. T. Middleton, A.R.I.B.A., which appears in the issue of "The Amateur Photographer" for May 4th.

A new Presbyterian Church at Llandudno Junction has been built at a cost of £1,200. Mr. A. W. Smith, of Manchester, was the architect, and Mr. D. Evans Jones, of Colwyn Bay, the contractor.

A Hospital at Tindall Crescent, near Bishop Auckland, has been erected from designs by Mr. William Perkins, M.S.A., of Bishop Auckland. The total cost was £7,338, the site comprising three acres of ground.

Strike of Journeymen Painters in Wakefield.—In January the men asked for an advance of their wages from 7d. to 8d. per hour and agreed to accept 7½d. and a signed code of rules for twelve months. As the rules had not been signed on May 1st the men struck work.

Statue of the Queen for Paisley.—The statue of her Majesty which a Paisley gentleman proposes to erect in the centre of the Dunn Square, Paisley, will be a replica of the memorial statue by Mr. Francis J. Williamson erected at the top end of the Thames Embankment. The pedestal will be 7ft. high, and the statue 6ft. 10in.

New Companies.

Hattersley Brothers, Limited.

This company was registered on April 9th with a capital of £50,000 in £1 shares to acquire the business of oven foundries, stove and grate manufacturers carried on by T. Hattersley under the style of Hattersley Brothers and Co., at Queen's Foundry, Swindon, near Rotherham; and to carry on business as manufacturers of every description of kitchen ranges, cooking stoves, fenders, fire irons and brasses, tiled or other hearths, ornamental and other castings, hat and umbrella stands, gas and electric light meters, water cisterns and pipes; as furnishing and general ironmongers, &c. The first directors (of whom there shall be not less than two nor more than five) are to be elected by the signatories, T. Hattersley, M. Hattersley, C. H. Hattersley, M. Hattersley, T. F. Hattersley, H. G. Hattersley and W. Dust. Chairman: T. Hattersley, who is also managing director.

Monsell, Michell and Co., Limited.

This company was registered in Ireland on March 21st with a capital of £2,500 in £1 shares, to acquire businesses now carried on by R. H. Monsell under the title of Monsell, Mitchell and Co., as builders, providers, and dealers in glass, &c. The first directors (to number not less than two nor more than five) are to be nominated by Messrs. R. H. Monsell and F. W. Monsell, the first-named being governing director.

Foucar and Company, Limited.

This company was registered April 12th with a capital of £50,000 in £1 shares, of which 35,000 are preference and 15,000 ordinary, to acquire the freehold lands and premises, saw-mills, and other property pertaining to the business heretofore carried on by Ferdinand Louis Foucar, deceased, as now carried on

under the style or firm of Ferdinand Foucar and Co., at Moulmein, in Burmah, and a similar business carried on by F. J. Foucar as Foucar Brothers and Co., at Rangoon, Burmah, and to carry on in all or any of their respective branches, the businesses of timber merchants and sawmill proprietors, timber growers, &c. The directors are C. Wightman, F. S. Allen, E. J. Foucar, W. C. A. Danger and W. Needing.

Park Foundry Company, Limited.

This company was registered on April 19th with a capital of £50,000 in £1 shares to carry on the business of manufacturers of and dealers in stoves, grates and fire ranges of every description; to acquire the Park Foundry, situate at Belper, Derby; and, further, to acquire the business of mechanical engineers, machine and machine tool makers, machine builders, &c., as now and hitherto carried on by the Midland Electric and General Engineering Company, Limited, at Ashforth Street, Nottingham. There are to be not less than three nor more than seven directors.

Saul Moss and Sons, Limited.

This company was registered on April 21st with a capital of £20,000 in £5 shares to adopt an agreement with J. Moss, R. Moss, and F. Moss, and to carry on the business of furniture dealers, decorators, and dealers in leather goods, ironmongery, &c. The first directors (to number not less than three nor more than seven) are R. Moss, F. Moss, and N. Moss, jun.; all permanent.

Smith Brothers and Eastwood, Limited.

This company was registered on April 21st with a capital of £35,000 in £1 shares to acquire the business carried on at Valley Ironworks, Bradford, as Smith Brothers and Eastwood, and to carry on the business of mechanical, electrical, sanitary, and general engineers, iron and brass founders, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Glynea and Castle Coal and Brick Co., Limited.

This company was registered on April 23rd with a capital of £25,000 in £10 shares to acquire, explore, work, and develop any collieries, ironworks, patent fuel works, brick, pipe, and tile works, iron and other mines, quarries, &c. The first directors (to number not less than three nor more than five) are D. Lewis, T. Protheroe, J. E. Jones, D. Protheroe, and D. Jenkins.

Modern Brick Company, Limited.

This company was registered on April 26th with a capital of £30,000 in £10 shares to acquire the business carried on at Great Bentley as John Girling, and to carry on the business of brick and tile makers, &c. The first directors (to number not less than three nor more than five) are G. V. Maxted, W. J. Coles, and F. Knott.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BOSTON (Lines).—For the erection of offices and store Boston Dock, for the Boston Deep-Sea Fishing and Ice Corporation. Mr. W. H. Wheeler, C.E., Boston, Lines:—
F. Pattinson £1,417 Parker and Son £1,22
W. Greenfield 1,280 J. W. Pinder, Boston* 1,20
S. Sherwin 1,267 * Accepted.

CARDIFF.—For additions to police station, Roath, for the Corporation. Mr. W. Harpur, C.E., Town Hall, Cardiff:—
Melhuish Bros. ... £5,060 0 0 D. W. Davies ... £4,650 0
Thomas and Son ... 4,510 0 0 W. T. Morgan ... 4,500 0
Geo. Griffiths ... 4,785 5 6 Chubb and Co.* 4,477 0
Rees & Thomas ... 4,729 0 0 Gerard Hallett ... 4,340 12
Fox and Co. ... 4,679 3 5 [All of Cardiff.]
* Accepted.

CHELSEA (Kent).—For the erection of four houses at Green-street Green. Mr. St. Pierre Harris, architect:—
S. Ironmonger-lane, E.C., and Orpington:—
W. Owen £1,684 T. Knight £1,3
Somersetford and Son ... 1,632 Stebbings and Pannett 1,3
F. Wood 1,412

COMPLETE LIST OF CONTRACTS OPEN.

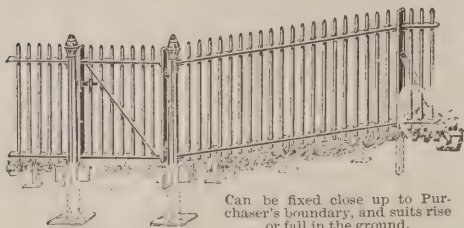
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
May 11	Mountain Ash, Wales—Chapel	Rural District Council	Morgan and Elford, Architects, Mountain Ash.
" 11	Barnard Castle—Bridge	"	W. Parkin, Surveyor, Barnard Castle
" 11	Bradford—Villas	"	J. Ledingham, District Bank-chambers, Bradford.
" 12	London, W.—Church Hall	"	C. J. Mann and Son, 29, Great George-street, Westminster.
" 12	Romsey, Hants.—Infirmary at Workhouse	Guardians	J. Jenvey, Architect, Market-place, Romsey.
" 12	Bettws-y-Crwyn, Salop—Alterations	School Board	Mr. Brand, Board School, Weals.
" 12	Saintfield, co. Down, Ireland—Hall	Presbyterian Church Committee	The Mause, Saintfield.
" 12	Castlebar, Ireland—Chapel	"	J. T. Kelly, Clerk, Lunatic Asylum, Castlebar.
" 12	Threlkeld, near Keswick—Cottages	Mr. H. Howe	D. N. Pape, Surveyor, Keswick.
" 14	London, E.C.—Alterations and Additions	H.M. Office of Works	Mr. Westcott, Office of Works, Storey's-gate, S.W.
" 14	Eastry, near Sandwich, Kent—Buildings	Rural District Council	W. J. Jeanings, 4, St. Margaret's-street, Canterbury.
" 14	Levenshulme, Lancs.—Shelter	Urban District Council	J. Jepson, Guardian Chambers, Tiviot Dale, Stockport.
" 14	Cromer—Hospital	Urban District Council	A. F. Scott, Surveyor, Church-street, Cromer.
" 14	Andover—Pavilion	Town Council	The Surveyor, Town Hall, Andover.
" 14	Atheury, Galway—Rebuilding	Church Vestry	J. G. Skipton, Northgate-street, Athlone.
" 14	Llantarnam—Footbridge	Urban District Council	R. Matthews, Surveyor, Cemetery House, Llantarnam.
" 14	Burton-on-Trent—Additions	School Board	Clerk, School Board Offices, Burton-on-Trent
" 15	Wimbledon—Additions	Urban District Council	Surveyor, The Broadway, Wimbledon.
" 15	Birmingham—School	School Board	Martin and Martin, 106, Colmore-row, Birmingham.
" 15	Brentford—Dwellings	Urban District Council	N. Parr, Clifden House, Boston-road, Brentford.
" 15	Broughton-in-Furness—Additions	Mr. J. Garner	J. Garner, Garner House, Broughton-in-Furness.
" 15	Eslington—Cottages	Rt. Hon. Earl Ravensworth	W. Johnston, Clerk of Works, Whittingham.
" 15	Glasgow—Gasworks	Corporation	W. Foulis, Engineer, 45, John-street, Glasgow.
" 16	Felixstowe—Basement	Hon. D. A. Tollemache	T. W. Cotman, Northgate-street, Ipswich.
" 17	Bolton—Machinery, &c., Buildings	Corporation	Hinnell and Murphy, 13, Mawdsley-street, Bolton.
" 17	Bolton—Farm Buildings	Corporation	Hinnell and Murphy, 13, Mawdsley-street, Bolton.
" 17	Reigate—Municipal Buildings	Town Council	Mackintosh and Newman, Birkbeck Bank-chambers, High Holborn, London, W.C.
" 21	Northumberland—Buildings and Alterations	County Council	J. Cresswell, Moot Hall, Newcastle-on-Tyne.
" 21	Old Hill, Staffs.—House	Urban District Council	D. Wright, Council Offices, Old Hill.
" 22	Walthamstow—School	School Board	W. A. Longmore, 7, Great Alie-street, E.
" 24	Salford—Chapels	Cemetery Committee	Sharpe and Foster, 23, Deansgate, Manchester.
" 27	Colne, Lancs.—Engine Shed	Lancs. and Yorks. Rly. Co.	Engineer, Hunt's Bank, Manchester.
" 28	Sheffield—Additions	Tramways Committee	C. F. Wike, Town Hall, Sheffield.
" 30	Winsford, Cheshire—Drill Hall	"	J. H. Cooke, Solicitor, Winsford.
June 4	London, E.—Public Buildings	East Ham Urban District Council	Surveyor, Public Offices, East Ham, E.
ENGINEERING—			
May 12	Warrington—Pipe Laying	Corporation	J. Deas, Bank House, Warrington.
" 12	Leominster—Storage Reservoir	Corporation	J. Budd, Borough Surveyor, Town Hall, Leominster.
" 12	Cork—Waterworks	Rural District Council	J. Cotter, Council Office, Workhouse, Cork.
" 14	Llandudno—Reservoir	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
" 14	Rhyl—Electric Plant	Urban District Council	W. H. Trentham, 39, Victoria-street, Westminster, S.W.
" 14	Heywood—Electric Lighting Plant	Corporation	J. H. Baldwick, Town Clerk, Heywood.
" 14	London W.—Alterations	Paddington Vestry	G. Weston, Surveyor, Vestry Hall, Harrow-road, W.
" 14	Guernsey—Drainage Extension Works	Street Board	T. J. Guilbert, Public Works Department, States Office, Guernsey.
" 15	Birkenhead—Pipework	Corporation	W. Bates, Electricity Supply Station, Bentinck-street, Birkenhead.
" 15	Millom, Cumberland—Tank Framing	Urban District Council	W. T. Lawrence, Clerk, Millom.
" 15	Millom, Cumberland—Gasholder Works	Urban District Council	W. T. Lawrence, Clerk, Millom.
" 16	Mariupol—Electric Railway and Electric Light	Municipality	Commercial Department, Foreign Office, S.W.
" 16	Folkton, Sherburn—Waterworks	Sherburn Rural District Council	W. O. Woodall, 32, Queen-street, Scarborough.
" 16	West Ham—Boilers	Town Council	G. Wise, Works Manager, Quadrant-st., Canning Town, E.
" 17	Seville—Material for Metal Wharf	"	Commercial Department, Foreign Office, S.W.
" 17	King's Lynn—Electric Lighting Plant	Corporation	J. Pilling, Borough Electrical Engineer, King's Lynn.
" 19	Sholton Colliery, Durham—Sinking Shafts	Horden Collieries Limited	I. I. Prest, Fern House, Sidmouth-avenue, Newcastle-under-Lyme.
" 22	London, W.—Electric Plant	Central Electric Supply Co. Ltd.	Manager, Electric Supply Co., 19, Carnaby-st., Golden-sq., W.
" 22	Pershore—Sewerage and Water Supply Works	Rural District Council	A. E. Baker, Union Offices, Pershore.
" 24	Taunton—Refuse Destructor	Town Council	J. H. Smith, Municipal Offices, Corporation-st., Taunton.
" 28	Portsmouth—Bridge	"	A. Hellard, Town Hall, Portsmouth.
" 29	Creeting St. Peter, near Stowmarket, Suffolk	Rural District Council	J. Taylor, Sons, & Crimp, 27, Gt. George-st., Westminster.
" 29	Ewesley, Northumberland—Reservoir	Tynemouth Corporation	Borough Surveyor, Tynemouth.
June 16	Bacup—Reservoir	Corporation	J. Diggle, 3, Longford-street, Heywood, Lancs.
July 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
IRON AND STEEL—			
May 14	Burton-on-Trent—Fencing and Gates	School Board	Clerk, School Board Offices, Burton-on-Trent.
" 14	Featherstone, Yorks.—Tank	Urban District Council	F. B. Rother, Council Offices, Featherstone.
" 22	Egremont, Cheshire—Railings	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont, Cheshire.
PAINTING—			
May 14	Stafford—Painting	Corporation	W. Blackshaw, Borough Hall, Stafford.
" 17	Islington—Painting	Guardians	W. Smith, 65, Chancery-lane, E.C.
" 17	London, S.E.—Painting	St. Olave's Union	Newman and Newman, 31, Tooley-street, S.E.
" 22	London, E.—Painting	West Ham School Board	W. Jacques, 2, Fen-court, E.C.
June 11	Wanstead, Essex—Painting and Repairs	School Board	J. T. Bressey, 70, Bishopsgate-street Within, London, E.C.
ROADS—			
May 12	Abersychan, Wales—Street Improvements	Urban District Council	E. Cooke, Council Offices, Abersychan.
" 12	Bradford—Road Metal	Corporation	J. H. Cox, Town Hall, Bradford.
" 12	Bridgend, Glamorgan—Kerbing	County Council	The County Surveyor, Town Hall, Bridgend.
" 12	Brynsaddler, Pontyclun, Wales—Road Improvement	Glamorgan County Council	The County Surveyor, Town Hall, Bridgend.
" 12	Caefatry, near Bridgend, Wales—	Glamorgan County Council	The County Surveyor, Town Hall, Bridgend.
" 12	Newport, Mon.—Materials	County Council	The Clerk, County Council Offices, Newport, Mon.
" 12	London, W.—Paving Works	Paddington Vestry	Surveyor, Vestry Hall, Harrow-road, W.
" 14	Levenshulme, Lancs.—Street Works	Urban District Council	J. Jepson, Guardian-chambers, Tiviot Dale, Stockport.
" 14	London, N.—Works	Hornsey Urban District Council	E. J. Lovegrove, Southwood-lane, Highgate, N.
" 14	Glasgow—Paving Setts	Corporation	J. Young, 88, Renfield-street, Glasgow.
" 14	Bingley, Yorks.—Street Improvement Works	District Council	R. Armistead, 8, Charles-street, Bradford.
" 15	Brentford—Granite	Urban District Council	N. Parr, Clifden House, Boston-road, Brentford.
" 15	London, E.C.—Paving	Shoreditch Vestry	J. B. Dixon, Town Hall, Old-street, E.C.
" 15	South Kirby, Wakefield—Street Works	Colliery Company, Limited	Garside and Pennington, Surveyors, Pontefract.
" 16	Watford—Road Works	Urban District Council	Engineer, 14, High-street, Watford.
" 17	Glasgow—Paving Stones	Corporation	Master of Works, City Chambers, Glasgow.
" 18	Derby Street Works	"	W. Swindell, Imperial-chambers, Albion-street, Derby.
" 18	East Morton, near Bingley, Yorks.—	Keighley Rural District Council	H. M. Butterfield, 3, Laythorpe-terrace, East Morton.
" 23	Twickenham—Kerbing	Urban District Council	F. W. Pearce, Town Hall, Twickenham.
" 24	Salford—Roads	Cemetery Committee	The Engineer, Town Hall, Salford.
" 28	Cheltenham—Wood Paving	Corporation	Surveyor, Municipal Offices, Cheltenham.
SANITARY—			
May 14	Bingley, Yorks.—Sewer	Urban District Council	R. Armistead, 8, Charles-street, Bradford.
" 14	Llandudno—Sewers	Urban District Council	E. P. Stephenson, Church Walks, Llandudno.
" 14	Lydney, Glos.—Sewers	Rural District Council	F. Evans, Clerk, Chepstow.

COMPLETE LIST OF CONTRACTS OPEN--continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
May 14	SANITARY--Continued. Shabington, Thame--Sewers	Rural District Council	J. Taylor, Sons, and Crimp, 27, Great George-street, S.W.
" 15	London, E.C.--Sewer	St. Luke's Vestry	Surveyor, Vestry Hall, City-road, E.C.
" 16	London, S.W.--Sewer and Paving Works	Westminster Vestry	Surveyor, Town Hall, Westminster, S.W.
" 18	Fletton, Peterborough--Sewerage and Sewage Disposal	Norman Cross Rural District Council..	G. and F. W. Hodson, Engineers, Loughborough.
" 14	TIMBER-- London, W.--Wood Blocks	Paddington Vestry... ..	Surveyor, Vestry Hall, Harrow-road, W.
" 15	London, S.W.--120,000 Wooden Casks	Admiralty	Director of Navy Contracts, Admiralty, Whitehall, S.W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
May 31	Honiton, Devon--Supplying Town with Water... ..	£21, £5 5s.	Town Clerk, Honiton.
June 1	Bury, Lancs.--Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhamsted--Girls' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamsted.
" 30	Riviera--Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."
July 16	Falmouth--Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.



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SELF-ADJUSTING ROUND-BAR
RAILING (No. 2740),

Is, we believe, the cheapest in the market.

ILLUSTRATED CATALOGUE OF ALL KINDS OF FENCES, FENCING, GATES, &c., FREE.
VICTORIA WORKS, WOLVERHAMPTON.
LONDON OFFICES AND SHOW ROOMS--135 & 141, CANNON STREET, E.C.

ROOFING SLATES :

Velinhell, Penrhyn, and Westmoreland.

SLATE SLAB GOODS

Both Plain and Enamelled.

ALFRED CARTER & CO., LIVERPOOL.

PERFECTION

IN

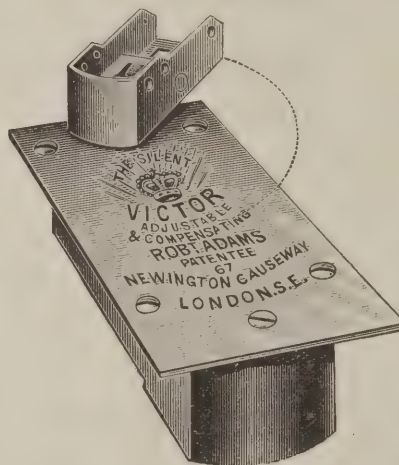
Spring Hinges

The "VICTOR" Double Action Spring Hinges open wider than any other--viz., 135° each way, i.e., 45° beyond right angles—and close with a perfect check action.

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PATENTEE,

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The "Crown Victor" showing opening capacity.

PERFECTION

IN

Spring Hinges

The "VICTOR" Single Action Spring Hinges open wider than any other—opening to and closing from the angle of 180°, i.e. the half circle, with a perfect check action.

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VERY EXTENSIVE AND WELL-ARRANGED SHOWROOMS.

FIREPLACES,
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BATHS & LAVATORIES,
KITCHEN RANGES,
GATES & RAILING,
BALUSTERS,



FOUNTAINS & STATUES,
BALCONIES,
VERANDAHS,
PORCHES
BROSELEY
"LIGHTMOOR"
ROOFING TILES

TENDERS—(continued).

EAST HAM.—For the erection of eighty-seven double-entrance houses, New Beeton, for the Council. Mr. A. H. Campbell, C.E., Public Offices, Wakefield-street, East Ham.—
Leslie and Co., £56,982 0
F. N. Toole and £240,746 0
Ltd. Son
J. W. Jerram 55,235 0 **Herbert Bros.** 37,239 15
Shillitoe and Son 49,982 0 **Surveyor's Esti-**
mate 33,590 0
Gregar and Son 45,930 0

FELIXSTOWE.—For new offices and agent's residence, to be erected in Hamilton-road, Felixstowe, for the Coast Development Company, Limited, of 33, Walbrook, from plans prepared by Mr. Wilfred J. Hardcastle, architect, 19, Surrey-street, Strand, W.C.:—
Smith and Son £2,695 **Everett and Son** £2,373
Frederick and Son 2,684 **Fred. Bennett** 2,360
Kerridge and Shaw 2,599 **Thos. Ward, Cliff**
Brown and Son 2,576 **Works, Felixstowe*** 2,290
 *Accepted.

LIVERPOOL.—For the erection of sanatorium, Birch Hill, near Frodsham, for the Hospital Committee. Messrs. Willink and Thicknesse, architects, 14, Castle-street, Liverpool:—
Holme & Green £11,855 0 0 **J. Pilkington** £9,493 0 0
W. H. Forde 11,447 0 0 **T. Woods** 9,449 0 0
Wm. Nickson 10,778 15 7 **Tomkinson & Sons** 9,567 0 0
C. W. Davenport 10,192 6 9 **Beckett and Co.** 9,434 0 0
Henshaw & Sons 10,150 0 0 **Isaac Dilworth** 9,200 0 0
Brown & Back- **Wm. Hall** 8,873 0 0
house 9,981 0 0 **A. Allen** 8,675 0 0
Morrison & Son 9,800 0 0 **Gerrard and Sons,**
Hughes & Stir- **Swinton*** 3,307 0 0
ling 9,750 0 0
 *Accepted.

LONDON.—For the erection of branch premises for the London and Provincial Bank. Mr. Alfred Roberts, architect, 18, Nelson-street, Greenwich, S.E.:—
E. Proctor £3,740 0 **G. F. Havell** £3,150 0
J. and A. Oldman 3,523 **S. J. Jerrard and Sons** 3,087
G. Simmonds & Sons 3,520 **H. Groves*** 3,020
W. Mills 3,395
 *Accepted.

LONDON.—For the construction of an underground convenience, Gibb's Green, Fulham, for the Fulham Vestry. Mr. C. Botterill, C.E., Town Hall, Walham Green:—
Geo. Jennings, Lambeth £2,250 **Newellite. Glazed bricks,**
W. Pearce, Thornton Heath 1,950 **2,000**
Finch and Co., Lambeth 1,938 **2,038**
Doulton and Co., Lambeth 1,932 **2,070**

LONDON, E.—For the erection of shop premises and stabling at Ilford, E. Messrs. Foulsham and Herbert Riches, architects, Bromley-by-Bow, E., and 3, Crooked-lane, King William-street, E.C.:—
G. E. Todd and Co. £3,580 **J. and H. Cocks** £3,560
T. Osborn and Sons 3,569 **Sheffield Bros.*** 3,393
C. Dearing and Sons 3,565
 *Accepted.

LONDON.—For pulling down and rebuilding the "Jolly Gardeners," Clapham, S.W. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, London, E.C. Quantities supplied:—
T. Osborn and Sons £1,947 **T. Welsh** £1,860
Courtney and Fairbairn 1,897 **Sheffield Bros.*** 1,855
L. Whitehead and Co. 1,875
 *Accepted.

LONDON.—For erecting stables and van-shed building, Grange-road, Bermondsey, for Mr. Samuel Taylor. Messrs. Newman and Newman, architects, 31, Tooley-street:—
G. Parker £1,778
Wells and Son (accepted) 1,565

LONDON.—For additions and alterations to 67, 69, and 71, Southampton-row, W.C., for Messrs. Walter Hill and Co. Messrs. Charles and W. H. Pertwee, architects, London and Chelmsford. Quantities by Mr. Joseph Rookwood, 25, Bedford-row, W.C.:—
Kilby and Gayford £2,518 **F. T. Chinchin** £2,106
Harris and Wardrop 2,367 **Stevens Bros.** 2,183
Green and Co. 2,300 **Snawin Bros.** 1,983

LONDONDERRY.—Accepted for the erection and completion of residence at Lawrence-street, Londonderry, for Mrs. Lynch. Mr. J. P. McGrath, C.E., architect, 28, Carlisle-road, Londonderry:—
Robert Colhoun, Londonderry £815

LONDONDERRY.—Accepted for the erection of dwelling-house at Hawthorne-terrace, Londonderry, for Mr. Jas. Bovaird. Mr. J. P. McGrath, C.E., architect, 28, Carlisle-road, Londonderry:—
P. McBaid £175

MAIDSTONE.—For the erection of electricity station and destructor house, Fairmeadow, for the Urban District Council. Mr. T. F. Bunting, Borough Surveyor, Fairmeadow, Maidstone:—
Pryor and Co. £9,000 **Neale and Co. (shaft**
Wallis and Sons, 9,583 **and fines only)** £3,250
Maidstone 9,583
 [Surveyor's estimate, £8,884 2s. 8d.]
 *Accepted.

NEATH (Wales).—For the erection of school buildings, Melincrythan, for the Neath School Board. Mr. J. Cook Rees, architect, Church-place, Neath. Quantities by architect:—
Evan Thomas £7,588 0 **John Davies** £6,662 0
Watkins and Co. 7,107 0 **Elias Moran** 6,483 0
H. Billings 6,900 0 **John Rees** 6,450 0
W. Francis 6,900 0 **Lattey and Co.** 6,450 0
Marles and Son 6,877 0 **John Davies, Car-**
Walters and Johns 6,848 0 **diff*** 5,930 0
Lloyd Bros. 6,700 **Lloyd and Tate** 5,566 10
 *Accepted.

NORTH CRAY (Kent).—For the erection of twenty-two cottages on the Birchwood-road. Mr. St. Pierre Harris, architect, 8, Ironmonger-lane, E.C., and Orpington:—
F. Wood £7,448 **Enness Bros.** £5,998
E. Thorne 6,600 **Stebbings and Pannett** 5,250
T. Knight 6,429

COMING EVENTS.

Wednesday, May 9.

INSTITUTE OF SANITARY ENGINEERS.—Meeting of General Purposes and Finance Committee at 3.30 p.m. Meeting of Election Committee at 5 p.m. Council Meeting at 7 p.m.
SOCIETY OF ARTS.—Mr. A. Moresby White on "Improvement of Our Roads." 8 p.m.

IRON AND STEEL INSTITUTE.—Annual Meeting. First day. 10.30 a.m.
Thursday, May 10.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.
ROYAL INSTITUTION.—Prof. Dewar, M.A., LL.D., F.R.S., on "A Century of Chemistry in the Royal Institution."—III. 3 p.m.
ARCHITECTURAL ASSOCIATION.—Annual Soiree at the St. George's Hall, Langham Place, W. 8 p.m.
WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL (Lectures on Carpentry and Joinery.—III.)—Mr. S. Barter on "Joinery and Windows" 8 p.m.
INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. S. Evershed on "A Frictionless Motor Meter." 8 p.m.
IRON AND STEEL INSTITUTE.—Annual Meeting. Second day. 10.30 a.m.

Friday, May 11.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XVII. 11.30 a.m.
ARCHITECTURAL ASSOCIATION.—Mr. Alexander Payne on "Egyptian Temples." 7.30 p.m.
SANITARY INSTITUTE.—Duke of Cambridge presides at the Annual Dinner at Holborn Restaurant.

Saturday, May 12.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Y.M.C.A. in Blackett-street and Warehouses, Low Friar-street, Newcastle. 2.45 p.m.
ARTISTS' GENERAL BENEVOLENT INSTITUTION.—Dinner at Hotel Metropole. 6.30 p.m.

Monday, May 14.

SOCIETY OF ARTS (Cantor Lectures).—Prof. Vivian B. Lewes on "The Incandescent Gas Mantle and its Use."—II. 8 p.m.
BRISTOL SOCIETY OF ARCHITECTS.—Mr. Mowbray A. Green, A.R.I.B.A., on "Renaissance Architecture of Bath and Neighbourhood." 8 p.m.

Tuesday, May 15.

SOCIETY OF DESIGNERS.—Mr. George R. Rigby on "Design for Stencil-Work." 8 p.m.

Wednesday, May 16.

SOCIETY OF ARTS.—Prof. Flinders Petrie on "A National Repository for Science and Art." 8 p.m.
BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.

Thursday, May 17.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.
WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL (Lectures on Carpentry and Joinery.—IV.)—Mr. Thomas Blashill, F.R.I.B.A., on "A Comparison of English and Continental Doors." 7.30 p.m.
ROYAL INSTITUTION.—Prof. Dewar, M.A., LL.D., F.R.S., on "A Century of Chemistry in the Royal Institution."—IV. 3 p.m.

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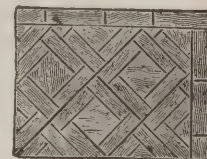
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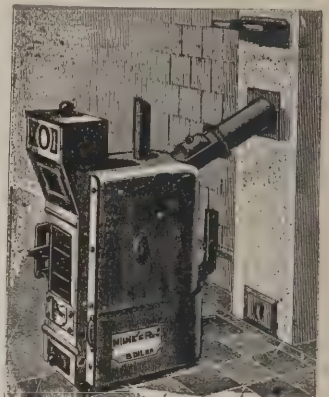
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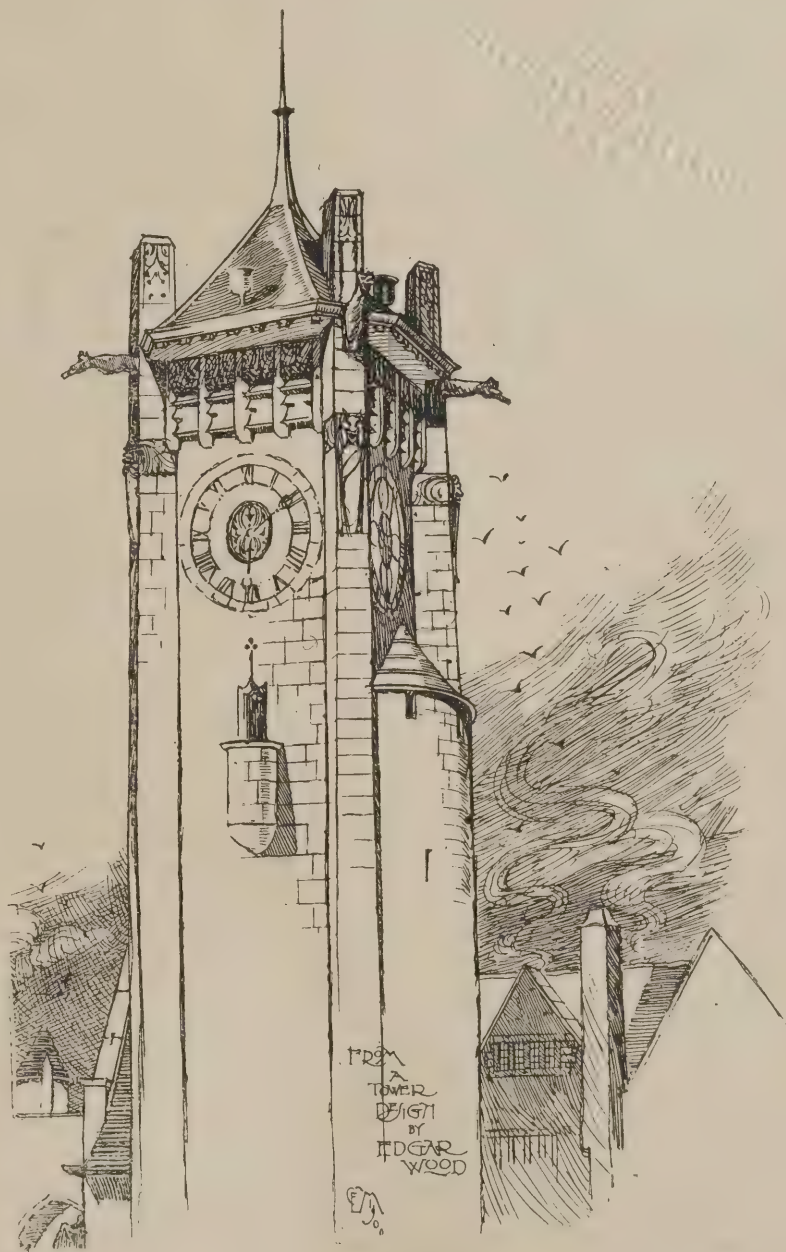
Ruskin's Turners. It appears to be the rule that notices of Turner's work shall be nothing if not eulogistic, which, at any rate, makes them dull reading and the voice of the critic to sound like the hollowest echo of Ruskin's extravagant lauds. Take this, signed A.M.S., from one of the cheaper dailies; it is pretty enough of itself, and probably turned out as easily as the street "music of Handel," which sets the kitchenmaids dancing:—"To attempt a description in words of Turner's pictures is to attempt the impossible. Like the musician, he makes a simple and direct appeal to the emotions through a particular sense. One hardly knows which to admire most, the sheer beauty of the vision, which is one thing, or the miracle of skill by which it is represented, which is another." Now this and what follows is "copy," mere "copy," although of the prettiest sort, and would not detain us a moment were it not that in the next paragraph the writer says something which gives others a right to speak. "There was nothing that Turner in the plenitude of his genius would not dare to paint, from the sun in the heavens to the most evanescent iridescence, or a sudden flash through a storm. It was on grandeur that his eyes were fixed—grandeur in the manifestations of Nature, grandeur in the works of man's hands; ships, bridges, and spires; a towering ship to ride the deep, a long league of arches like a bridle to subdue a mighty river, or a roof scaling like a man's mind to heaven! All these are to be found here in pictures which the pen of Ruskin has made famous to thousands who have never seen them."

The most noticeable lapse in this vain-glorious period is "from heavens to iridescence," but the effect of the whole is sublime.

There was an article in the "Art Journal" a few months ago the idea of which was to determine the limits of achievement in the landscape painter's domain, and although it proved disappointing, there were many who thanked the author for what he attempted to do, for there is no one so straitly confined within what should be obvious limits as the unfortunate painter, and no one so prone to make himself ridiculous by essaying what he should not. What gives or seems to give the distinction of style to art work is the suggestion of individuality conveyed by the artist's selection, not of the subject only but of an idiomatic mode of presentation, whereby it

is hall-marked as his own, and either hailed with delight or derided. The Turner of later days, he who "dared everything," courted comparison only with Nature, and, apart from the fact that his technical resources were altogether inadequate, the consequence was that the disparity between the endeavour and the achievement was only too often ridiculous. Lord Bacon might boast in his day that he took as his province "all knowledge," but he was not thinking of

adopting the comparative method which shows Turner amongst his coevals and forbears one may profitably study his works, and be sure of the purest enjoyment; pure enjoyment derived, not from the early works only, but from what is best in the others, as well, and particularly from the marvellously-painted studies of fishes and birds. The resultant impression will be that Turner habitually attempted more than he could hope to attain. The heavens were opened to him, and, seeing



ARCHITECTURE AT THE ROYAL ACADEMY. DRAWN BY C. E. MALLONS. (See p. 261.)

painting, and Turner should not have done it. If he could have known what Nature, not Ruskin, thought of such work, he would have been wiser and better, and less bosh would then be in the papers.

The contention that the highest art is severely restrained and conventional can be supported by examples of all possible kinds of work. Let Albert Dürer and Whistler represent the extremes, and let others give Turner his place. With this reservation, and

how new it all was, a great many eyes were opened while he was doing his best. Amongst his most hopeless failures, excepting for qualities always his that are never entirely lost, may be reckoned with few exceptions his Swiss and Italian views and all his pseudo-classical illustrations of poets. There is more than a hint of my own limitations in this inadequate article, but it is hoped that it may help others to see that they had better think for themselves than take on trust what they read.

E. R.

Changes at St. Martin's-le-Grand.

MUCH post office history has been made at St. Martin's, although it must by no means be supposed that the business of the General Post Office has always been carried on here. The story of the Department goes back to the time of Charles the First, when it was situated in a lane off East Cheap, afterwards being removed to Lombard Street, in which the General Post Office was situated until 1829. The so-called "old" G.P.O. is therefore not so old as may be thought, and the adjective is only admissible in relation to the huge telegraphic and administrative blocks built in modern times on the northern side of St. Martin's, officially known as "G.P.O. North" and "G.P.O. West." The "old" General Post Office—Smirke's gloomy pile—was opened in 1829 and many years ago business outgrew the capacity of the building, so that additional rooms were excavated below the old foundations and under the yard, and somewhat later an additional storey was imposed upon the classic proportions of the elevation. But the Office of Works toils in vain after the continually increasing demands for space, and now that more room is required it has been decided to demolish the building altogether and to start afresh, presumably on the models of the buildings of 1873 and 1895 opposite. To anybody, save a Government Department, those buildings might be supposed to act the part of the drunken helot of ancient days, and of the "awful example" of modern times, for they are among the most dreadful productions of the draughtsman's office, and, as the newer building is distinctly worse than the one of 1873, they exhibit a gradual decay of taste which leads us to expect the worst in the rebuilding scheme on the opposite side of the street. "G.P.O. West," inaugurated by that most unpopular of First Commissioners of Works, Professor Ayrton, in 1873, is bad, and was violently assailed at the time; so that it was opened amid a cloud of official apologetics, deprecatory of criticism, and calculated to disarm comment upon the style, or lack of style, in which these immense barrack-like offices were designed. "I have read criticisms of the style in which this building has been designed," said the Commissioner, "but it is an example of the Post Office Order of Architecture, and an admirable specimen of its class." Professor Ayrton was not a jocular person, and so cannot be accused of intentionally making a play upon words when he spoke of the Order. If one cannot endorse his description of the building as an "admirable" specimen of its class, we can at least sorrowfully admit that it is certainly "characteristic" of the Department's efforts in architecture, as exemplified in the succeeding twenty-seven years, a period showing a long series of works undertaken in the most cynical spirit of mere utilitarianism. Side by side with these degraded specimens of public architecture, these times have witnessed the growth of the artistic sense among commercial and professional bodies who have erected buildings alike imposing and beautiful. It is curious to notice, for instance, the contemporaneous rise of the hideous "G.P.O. North," with its alleged "decorative sculpture," and the Institute of Chartered Accountants. But the pity of it; what opportunities wasted in not rendering the rebuilding of the G.P.O. an occasion to fitly celebrate, in enduring brick and stone, the doings of England and the Empire with the uttermost ends of the earth. C. G. H.

On Reflection.

Light and Shade. THE St. Martin's Vestry has been seeking the light (as every progressive vestry should), and the result is noteworthy. The vestry would have light—the very best electric light—and with this laudable intention in view it zealously grappled with the powers of darkness. We can imagine the flow of oratory that furthered the proposals. Shoreditch might have her destructors, West Ham her technical institute, Lambeth her hardwood pavements, but St. Martin's—yes, St. Martin's would show them how electric lighting should be done. Their work should be heard of throughout the metropolis; they would startle London. And this they have most effectually done—though not quite in the intended manner. In one short week cast-iron abominations had risen from the footways—vulgar, ostentatious, florid things that quarrelled with the gas-lamps, sneered at the Nelson Monument, and were grossly offensive to the man in the street. But to the St. Martin's Vestry these things occasion a deep and holy joy. It is proud of them. It has even had its name cast on the base "lest we forget." Did the vestry imagine we should ever forget? But this was not all. The choice of a pattern by no means exhausted the vestry's artistic capabilities. The shafts had to be painted. Such an important item as colour could not be hurried. Personally, we have our own opinion. We think these shafts in any colour would be as black. But the vestry had a dozen painted in various colours, we presume to ascertain the effect, unless St. Martin's is striving to emulate the example of its sister St. Giles, whose lamps are painted, so it is said, to match the passing busses. If the vestry has emerged into a new light we fear its artistic qualities have not yet made themselves conspicuous. What colour for these standards has been finally decided upon we do not know. The standard that was half blue and half red was very pleasing. We suggest that a short length of white between the red and the blue would make the columns at once emblematical and patriotic. And what more could anybody want?

The Personal in Church Art.

WITHOUT entering upon the rough waters of the controversy between the Church Crafts League and the Clergy and Artists' Association, we may express a general satisfaction that so much is being done to improve the decoration and furniture of our churches. For long this work has been in the hands of firms that manufacture the works by the division of labour and by machinery, and, consequently, the interiors of our temples of worship have been characterised by the negation of good taste. In fact, churches have in many cases become store houses of tawdry, meaningless, machine-made ornament and furniture. It is almost superfluous to point out how lamentable such a degradation of human industry is when associated with divine worship. We are glad to see in the annual report that the Clergy and Artists' Association is making good progress in this resurrection of taste, and we understand that the Church Crafts League is also doing considerable good. The annual report of the Association shows that the membership has been added to by forty-one, and that the number of applications for advice upon decoration, &c., and for names of those to entrust with work, has been forty-nine in the past year, an increase of thirteen on the previous one. The income has been £170 3s., as against £168 3s. in 1898, and the deficit has been reduced from £40 1s. 8d. to £33 14s. 10d. The Church Congress Exhibition at Leighton House, under the auspices

of the Association, was a great success. We cannot entirely agree with Mr. Reginald Hallward, hon. secretary, in the following passage: "The artist who does the work himself, perhaps aided by one assistant only, appears in the eyes of a committee of business or commercial men, who judge of success by the number of hands employed on the job, in a very unedifying light. Now if he were a large employer, and sat on the boards of several companies, his fitness would be recognised at once. In their eyes, the unfitness of the artist is that he does the work himself, instead of employing someone else to do it." We do not consider any person of even slight education would really hold that the work of a firm is better than the work of one artist or the co-operation of a few on a large work. We believe the fact of the matter is the want of appreciation of the need of first-class work in a place of worship, local favouritism, and—cheapness. Until the duty to the worker is better understood, and that a bad or mediocre work is dear at any price, personal art will not be universal in our churches.

An Instalment of Reform.

THE times are not propitious for any kind of domestic reform, and we must therefore be properly thankful for even the very small modicum of reform which the Government offers us in regard to that most difficult and pressing problem—the housing of the working classes. The Housing Act Amendment Bill, which is now before the House of Commons, will, if passed, accomplish one desirable reform which we have more than once advocated in these columns: It will enable a local authority to acquire land for workmen's dwellings outside its own boundaries. It would be difficult to over-estimate the benefits to the tens of thousands, who in every great city are crowded together in insanitary slums or barrack-like blocks, that may result eventually from the adoption of this simple reform. The imagination loves to fancy the working man of the future returning from his daily work to something very like a model village; instead of crowding into a couple of rooms, or maybe a single room, in an insanitary city house, each family has its own cottage, and each cottage has its garden; architect and builder have done their part, and, freed from the necessity of accommodating the greatest possible number on the smallest possible area at the lowest possible cost, have erected neat little cottages which are at once convenient to live in and pleasing to the eye. It is an alluring picture, but let no one suppose that anything like this is to be realised as the immediate result of the passing of Mr. Chaplin's bill. Mr. Chaplin himself is under no such delusion; indeed, he frankly admitted that this was not a final measure in regard to the housing question, and that the question would have to be dealt with again. The pity is that in making his proposals Mr. Chaplin did not see his way to embody others which would give the scheme some sort of completeness; indeed, we doubt whether the bill, if passed as it stands, will not remain to a great extent a dead letter for want of some such supplementary provisions as Mr. Robson suggested in the amendment he submitted to the House. A country cottage is no good to a town worker unless he can get to and from his work in town quickly and cheaply; and a country cottage is out of the question for a working man with a large family unless the rent is very low, which it cannot well be until the financial restrictions which at present apply to housing schemes undertaken by local authorities are considerably relaxed. While welcoming the Government bill as a step in the right direction, we regret that these and other important factors in the problem have not yet received attention.



FROM A SKETCH BY C. E. MALLOWS.

ARCHITECTURE AT THE ROYAL ACADEMY.

SECOND NOTICE.

ANOTHER design to which the remarks in our first notice are, to a certain degree, applicable, is that by Mr. Aston Webb for the Royal College of Science. On the whole, however, it is a better design; it is broader, simpler, and more dignified in treatment; although, of course, the accident of its greater length helps it to some extent. But what we cannot help feeling is that, like the Eastern Telegraph Co., it is least successful where it is most novel. The general effect of the two recessed parts joining the centre with the end wings is successful enough, where precedent has been more nearly followed; although this might have looked better if the columns had been spaced a little further apart, had the proportion between the order and its basement been happier, and had the temptation to give a novel treatment to the heads of the ground floor windows been resisted. These window heads seem to us to be rather unreasonable, and to weaken the general effect; a firm, sharp line here would probably have had more value, and might have helped the general proportions. The entrance block and the two end blocks appear to us to be the least successful parts as well as the most novel.

The last few years has seen a fashion spring up for the employment of some form of the Renaissance for monumental work, but we must say we think that those who so employ it work to a great extent upon wrong lines. They do not seem to possess sufficient knowledge of the structure and character of the style. This particular style is a very flexible medium for expression, its variations are well nigh infinite, there is therefore much to be learnt. It differs in this respect from the purer but more limited style of the Greeks or that of the Middle Age. This flexibility and adaptability make it, to some extent, suitable for modern requirements, but it needs to be handled with much knowledge and judgment. What can be done in the way of novelty, while yet keeping to the spirit of the style, may be seen in the works of some of the best contemporary continental architects. This we imagine is not the result of greater ability, but of greater knowledge.

The design by Mr. J. M. Brydon, for the circular court of the new Government offices, is one that merits attention. It is too often

the custom for the critic to accept the general idea of any design as he finds it, and to confine himself to saying whether he likes or dislikes the effort produced. A moment's consideration in this case, leads us to ask whether this circular form for the courtyard of an office building, is the best form; whether it is characteristic and appropriate. It seems to us that it is not; that it necessitates too much sacrifice of space on the plan; that it creates too many awkward shaped rooms and useless spaces for an office building. It does not seem to be the inevitable outcome and expression of the necessities of the case. Had a plan been given with this design, it would have been interesting to see how this effect is produced. It appears to us that this treatment would have been more appropriate to a palace, as used, for instance, by Philibert de l'Orme in his design for the Tuileries, where an oval-shaped arrangement is introduced. In a palace it may be permissible to make a greater sacrifice of space and convenience, for the sake of effect, than it is in a group of offices. Although in a building of this national importance, a monumental effect of grandeur is required, yet some sense of proportion should be preserved; and if the grandest treatments are adopted for offices, what is left for buildings of still greater magnificence?

No doubt the curiously shaped rooms and spaces, created by this treatment, can be used for their practical purpose, but they would have been still more suitable had they been square, and this courtyard would have been more characteristic and more artistic had it been square also. It may be a fine effect in itself, but the question is—is it the right one?

Apart, however, from this vital question of the general idea of the design, the effect does appeal to one as being quiet, simple, restrained, and dignified; but what one misses is that exact relation of one part to another, that subtle and exquisite proportion and relative value of every feature to every other feature, which creates harmony, and which strikes on the senses like a full rich chord of music; the effect produced, for instance, by certain parts of the internal courtyard of the Louvre.

There are several other designs more or less in this style, which we have no space to

consider in detail. The best is, perhaps, that by Mr. T. E. Colcutt for Lloyd's Register of Shipping—though the attic storey seems a little heavy in treatment compared with the ground floor—and the worst is, perhaps, that by Mr. H. H. Statham, for the Cartwright Memorial Hall.

There is great interest attached to the few designs of an ideal nature which have found their way into the exhibition. The most important of these is a design for a town at the entrance of the proposed submarine channel tunnel, by Mr. J. Kotéra. This is not the time to enlarge on the value of this ideal sort of work, but we recommend everyone to make a point of seeing this particular specimen. It has composition and grouping and modelling, and, from the purely architectural point of view, is perhaps the best thing in the exhibition. To the left of it hang two small frames, one of which holds detail studies, which are most charmingly drawn, and which show some originality of treatment. The other is a small monumental design, which appeals to us more than the larger subject, and which is, to our mind, finer still in idea and sentiment. These designs should not be missed.

Another ideal design is one by Mr. Beresford Pite for a street front, in glass mosaic and faience. Mr. Pite's work is well known to us all, and it really is interesting to see how he looks at a subject such as this, and what he would do with it. We do not quite like the way the large circular arch is cut up with a central column below the level of the archivolt, and two mullions above. It does not look structural, and is a little unhappy, and we are doubtful as to the effect of the wavy lines of ornament, and the window heads to the upper floors, and the solid pier coming over the centre (but not exactly central) of the arch below; but the design as a whole has distinct charm, and is most interesting as a genuine attempt to solve a problem which for years has been crying for solution.

Other ideal designs are a façade of a military museum, by Mr. J. E. Spain, in which the special character and sentiment of the subject is not sufficiently emphasised, though the design shows knowledge of style—a modern country house in the eighteenth century manner—which is interesting, if somewhat



FROM A SKETCH BY C. E. MALLOWS.

paradoxical in title—and an entrance lodge, by Mr. H. Inigo Triggs, all of which have the interest of this sort of work.

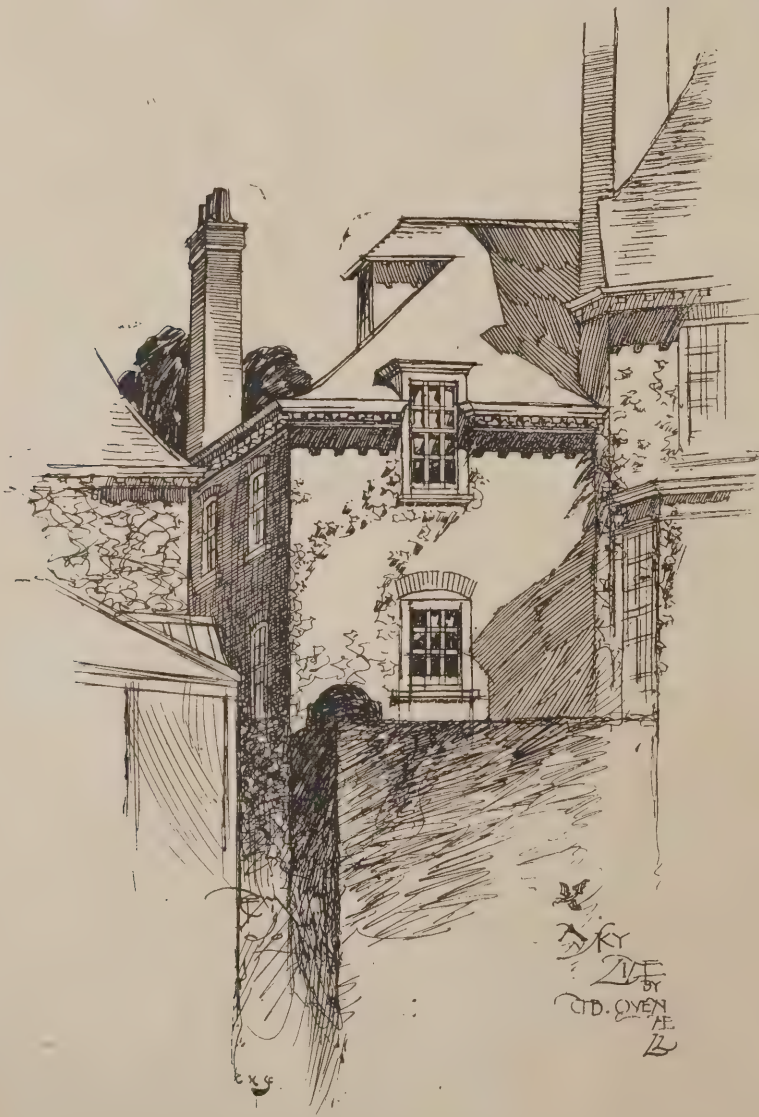
If we come to compare one class of building with another we come to the conclusion that the small country houses are far superior to the public buildings and monumental class of work. This is only what is to be expected. The country house appeals strongly to the domestic sentiment of the average Englishman, the problem is simpler, the restrictions are fewer, the subject is smaller; it is more easy to grasp and to handle. It is possible to group and model the building, to control the large masses and the skyline in a way that is not possible in a town house, and which, in a large public building, requires a natural grasp of mind, a wide knowledge, and a severe training which does not come in the way of all of us. In many of these small designs there is simplicity, a naturalness, and a directness which appeal to us most strongly, particularly as a contrast to the laboured, worried, and affected productions with which the room is full. Of these country houses we noticed some cottages at Shellingford by Mr. W. H. Atkin Berry, a house at Warlingham, by Harrison and Ward; Sand Hill Close, Hitchin, by Mr. T. G. Lucas, Ickleton Grange, by C. A. Nicholson; a house near Hythe, by J. A. Minty, and the "Stranger's Corner," by Harold Falkner. All these designs are, no doubt, open to criticism, but the majority of them have a quality which disarms it. With regard to the last-mentioned one, however, the drawing which illustrates it invites criticism. It is an affectation; it is not sincere. More thought has been given to the quaint way in which the mount is divided up, and to producing spidery lines showing trees and sky, than to illustrating the qualities and character

of the building. We do not want to know what the illustrator can do with his pen; we want to know what the architect can do with his building, and this drawing does not explain it as well as it might.

As it is out of the question to attempt to discuss every interesting design in this exhibition, we cannot say all we would wish about such work as Mr. Prior's medical schools at Cambridge—not so successful, we think, as his domestic work—Messrs. Hall Cooper and Davis's design for Plumstead Municipal Buildings, the Free Library at Leamington by Mr. Newberry, the Bristol tramways by Mr. Green, competitive design by Mr. Macartney, public school by Mr. J. S. Lee, Plumstead Municipal Buildings by S. Russell, C. E. Mallows and Grocock, public baths by R. S. Ayling, Cartwright Memorial by H. Cheston and J. C. Perkin, and Leamington Science and Art Schools, by C. E. Mallows and Grocock. Or, again, of the work shown by Mr. R. W. Schultz, A. N. Prentice, Reginald Blomfield, and many others. All these designs have some quality or charm in their different ways that will repay inspection.

There are others that do not repay inspection, and we wonder how they came to be admitted. No. 1699, a scheme for the supply of water to London; 1768, a new public library at Forest Hill, are specimens, though possibly not the worst.

St. Levan Church, Stoke, has been reopened. Immediately after it was opened in November, 1898, it was found that its acoustic properties were so defective that important structural alterations and additions would have to be made. These have been carried out at a cost of about £800. An organ, costing £250, has also been placed in the church.



FROM A SKETCH BY C. E. MALLOWS.



THE PRESIDENT (MR. G. H. FELLOWES PRYNNE) EXPRESSES APPRECIATION.

THE A.A. SOIRÉE.

THE Architectural Association was in a light and happy vein on Wednesday and Thursday evening last. As our readers are aware, it has been their practice for some years past to hold an annual soiree and musical play—a form of diversion which has never received a more hearty reception or been more successful than it has this year in "The Mayor of Montillado." For the "book" of this Spanish romance, Mr. F. Dare Clapham is responsible, and though the lyrics, as a whole, lacked that piquancy which is so desirable, but so difficult to obtain, there were dozens of clever and amusing references and retorts in the patter. The following was the cast:—

Don Muria Maduro ... (mayor of Montillado)
Mr. G. B. Carvill.
Don Juan Purlino ... (an architect)
Mr. Alfred Stalman.
Luiz ... (his assistant, and son of Bodega)
Mr. S. Constanduros.
Biero Bodega ... (landlord of the inn)
Mr. F. Dare Clapham.
Rosita } ... (his daughters)
Juanita } Miss Sophie Tyler and Miss Grace Wylde.
Carlos } ... (friends of Luiz)
Pedro } Mr. A. S. Vernon and Mr. Gervase Bailey.
Antonio Amillo ... (foreman mason)
Mr. A. W. Bentham.
Diego } ... (masons)
Alvaro } Mr. Frank Carvill and Mr. Bernard Lang.
Carmen } ... (flower girls)
Mercedes }
Inez } Miss Ada Yerbury, Miss Evelyn Jackson,
and Miss Rose Webb.
Dolores ... (the mayor's daughter)
Miss Annie Roberts.

Chorus of flower girls and masons:—Mesdames Edith Burn, Nellie Carvill, Florence Clayton, Jessie Maude, Kate Rimell, Mabel Tunstall, Lilian Webb, Violet Whichcord; Messrs. F. W. Baker, H. Banister, S. Elston, C. Harrington, H. Harrington, A. C. Kelly, C. Pellew, A. W. Smith, A. Smithers, R. Towers, A. H. Whichcord.

Those who remember last year's comedy, "The Druids' Elect: An Episode of the Ancient Britons," will see that there has not been so much play on the names of the characters in "The Mayor of Montillado," Purlino being the only architectural freak. Last time the characters included Lucius de Rougepot, alias Grennus (who made his entry on the stage to the last bars of "The Wearing of the

Green"), Ashlar and Rubble (ancient Britons, candidates for the Council), a first druid called Owen Rent, a correspondent named Pennialinus, and the very ingenious titles Ellalyn and Lettilyn (British maidens). But to return to the Spanish romance.

It opens with a chorus of flower girls and masons in the market-place of Montillado, and when the latter have been conquered and are buying the flowers that shall make their "daily toil seem lighter" Don Juan Purlino, the architect, comes on the scene and sourly demands the reason why his masons are not at work on the new town hall. Purlino is a cadaverous-looking man, dressed in a dingy black suit and a hat that reminded one of the Gunpowder Plot, only the feather and the big boots were missing. This architect has become most prosperous, and is the president-elect of an honourable society, hoping to occupy the P.R.I.B.A. chair next year; when this has been arranged he has determined always to lunch at Sweeting's before important meetings. Here is a little more light on his character:

Prominence of course I seek,
And as I have no end of cheek,
I never miss a chance to speak
Anything for notoriety.

If in your work you would succeed,
I'll tell you what has been my creed,
To always move, and drink, and feel,
In the very best society.

A man of such high motives as Purlino is, of course, deserving of success, and he is evidently appreciated, for half his jobs, he says, were got in this way.

It may seem odd, perhaps, that the young architects of the Architectural Association should thus satirise their own profession. One learns, however, before the play has proceeded very far that it is only the great and eminent ones of the profession against whom these shafts of wit are directed; Luiz, the architect's assistant, is as gallant and amiable a youth as one could meet in a summer day.

The foreman mason comes forward and tells Purlino that one of the reasons of the delay in the building is that all the subscribers want their names on the foundation stone, some having given extra donations on the condition that their names should appear in large letters. "Call again when we get up to the cornice," says Purlino to the girls who try to sell him flowers; he really was a most important man, only he had to be continually reminding people of the fact. His foreman presents to him the eighth-scale drawings and says they show a 9in. layer only of concrete under the tower, a little peculiarity which is explained away by the fact that it was done to reduce the cube. Then the district surveyor had said no damp-course was provided. "Oh! then show it to the office boy," replies the fretful Purlino. At this point we have an interruption in the technical allusions by the entry of the innkeeper's daughters, Rosita and Juanita, and the two gentlemen who desire to take them on the water that evening, one of whom expresses his intention to bring the guitar and sing. "Not that, old man," says his friend, "you know what happened last time." Rosita, however, arranges matters for her lover, who "sings all right when it's calm." But the assent of Bodega



PURLINO AND THE MAYOR.

to the whole arrangement is needed, and this his daughters get in a trio. Next we have a drinking song. One always associates a song of this kind with the people of hot countries. Luiz has a rich baritone voice, and "Here's to the Maid of the South," which has a mellow, flowing air, called forth loud applause.

Now comes the great entry—the mayor and his charming daughter Dolores. There were two Dolores on the London stage on Wednesday and Thursday last, one at the St. George's Hall and the other at the Lyric Theatre, and both scored a great success with their songs. His Worship the Mayor told us in the duet with his daughter that he was "broke," and that he always wore his ermine gown, but, though the first statement was apparent, it would be difficult to describe the garment which enveloped him, for it seemed to be a mixture of a khaki-coloured brocade and a seaside bathing-tent. In fact the mayor was "rococo." Then there was his head. The bottom portion was natural, but the upper part consisted of a false forehead of the equilateral triangle variety, with a tuft of fuzzy hair at the back. But everyone agreed that Maduro and Dolores were excellent. The mayor's advice should be taken to heart. He says that if an alderman or a man in high position who has many daughters finds he "can't afford to clothe them and provide their daily bread," well, he can ask for plans of buildings, advertise a competition, which is open to all batchelors, and besides a premium he can just throw in a daughter as an extra little plum.

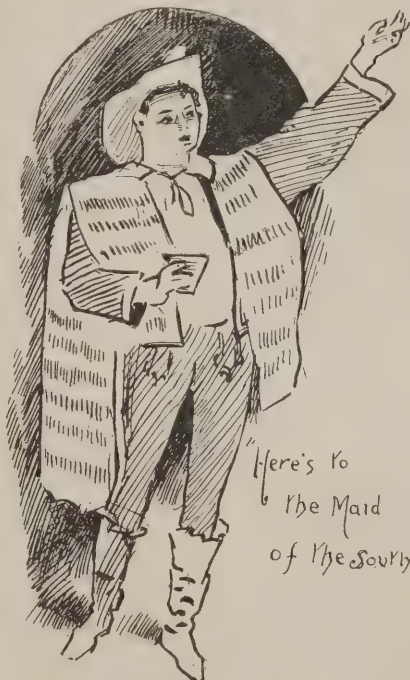
Besides all this, the mayor is a very busy man. The day in question he opened at 10 o'clock with the unveiling of a new fountain and cattle-trough (we have his authority that the first water that came through tasted of red lead and dried leaves); then at 11 o'clock he had to be on the Baths Committee to discuss the question of allowing the diving horses to perform on Wednesdays—eventually it was decided that they should be allowed, and that Fridays should be apportioned to the monks. Other functions keep him busy through the day, and he finishes up with a bull-fight at 9 o'clock, followed by fireworks.

Luiz wants a ticket for the foundation-stone ceremony. "But your master, Purlino, had six," says the mayor. "Yes, I know, but he sent them to the heating engineer, who wanted them for his typewriter's sister." A little more music came in here from Dolores again, who sang "Across the Bay" with great taste and feeling.

We have now a dialogue between the mayor and Bodega, in which the former explains that the reason why Montillado had to have a new town hall and new baths was because other towns had them. Why, a pottering little place like Sneezio went in for the influenza, so Montillado was bound to follow suit, and the mayor took the lead. Then there were Purlino's fees. What fees! The contemplation of these, in view of the depleted condition of the municipal exchequer, causes the worthy mayor no little embarrassment, because—as he sings,

You feel so very funny
When you're running short of money,
And your balance at the bank is rather low.
When you find you have to burrow
For your dinner on the morrow,
It makes you feel so very, very low.

But Bodega devised a grand scheme to extricate the mayor out of his difficulties, by which



LUIZ (MR. S. CONSTANDUROS).

Purlino was to forego his charges and have in exchange the hand of Dolores. After this business has been arranged, Purlino enters, and then follows a most amusing dialogue between him and the mayor (it begins with "Very nice day. Very nice people out on Monday") in which the latter eventually comes to the point. Purlino accepts, but says (aside) he must make it up out of the provisional amounts. The maiden, however, has been overlooked, and being of a fiery nature, and in love with Luiz, resents the idea. Purlino then begins to threaten, produces a ghastly bill of indefinite length, and the curtain to Act I. drops with the various ladies supported in the various gentlemen's arms, and the poor old mayor fainting in Purlino's.

We have the same market-place before us in the second act, and an opening chorus of masons, followed by a song by the mayor (who has just been elected to his position for the second time) "Isn't that a funny thing to do." There was a topical war verse in this song, ending with "Oh! wasn't that a 'Powerful' thing to do." (A year is supposed to elapse between the two acts.) It should be mentioned that, owing to his money troubles, the mayor's hair and moustache had turned white. He is still short of 400 (pesetas.) He'd tried to raise the money. He'd taxed motor cars, but that didn't succeed. Then he



END OF ACT I.



ROSITA AND BODEGA.

arranged a benefit bull fight, but two men were killed, and he had to pay compensation to the widows under the Employers' Liability Act; so he lost on that. He thought he might do something with the Corporation plate, but then he found out that it was only plated, a predecessor having been struck with the same idea. However, he grants the masons the holiday they ask for.

As has been shown, Purlino is a wonderful man. But there's much more to learn about him. "When I was 'prentice," he tells Bodega, "I won the Soane. It was not given away with a pound of tea in those days—so anyone couldn't get it. Then I got tight—I mean the Tite." "I've heard about you," remarks Bodega. "Was it 40s.?" Purlino scowls. "I speak languages you know," he adds. "An architect must be able to speak languages—good language and bad language. Besides, the King has made me a D.S.O.—that is, a District Surveyor in Ordinary."

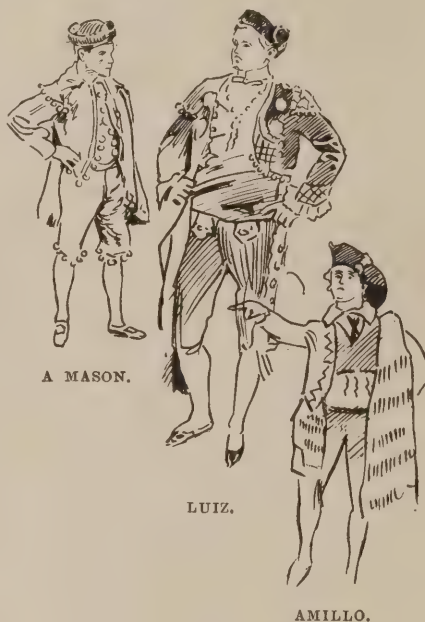
The impecunious old mayor has several friends, of whom the innkeeper's daughters are most sympathetic, and they decide to find out from the private secretary how much Purlino's fees amount to, for "what's the good of a private secretary if he can't give you private information." There is a clever little sally against Purlino. He says:—"I just drop in you know to have a little chat." "You mean," says Bodega's daughter, "chat and have a little drop." This reminds one of the old lady's assertion that bridges were made for boats to go under, or of some of Lewis Carroll's sayings.



DOLORES (MISS ANNIE ROBERTS.)

Dolores has still another effective song, "Sleep," and later on Luiz sang "Listen, my Darling," with great effect; but the mayor is still "broke," and Purlino equally threatening. The opening ceremony is on foot, and the mayor agrees that it would be well that the famous strolling musicians should be there, for opening ceremonies generally want something to liven them up. There's always a long notice in the morning paper in which the reporter may, in a fit of absence of mind, mention the architect's name; the name of the man who made the gold key is always mentioned. The reference to gold sets Purlino threatening once more, and he emphasises that he is not "Carvilling" (a dreadful pun on the name of a leading performer). "How about something down and the rest by instalments?" suggests the mayor. "Do you think you can have architecture on the hire system? No!" says Purlino.

Everything, however, ends well, for Luiz and Dolores, who ran away to be married and have been round the country as the strolling musicians, "discover themselves" and make up the 400 pesetas that are owing; but before this they sing their song, and so increase the funds, having received a considerable contribution from the unsuspecting Purlino, who falls in love with the masked Dolores and



requests her to "Call me Purly." Then the chorus winds up for the finale, everybody is satisfied, and the curtain falls amidst thunders of applause.

This, then, was the play. The acting was capital, the music (by Mr. Leonard Butler) was pleasing and comprised many delightful airs ("Sleep" and "Listen, my Darling," being especially good), and the mounting and dresses were admirable. The latter were supplied by Messrs. C. and W. May, of Garrick Street. Altogether the play was highly successful, and the large audiences who witnessed it were quite delighted and heartily endorsed the few sentences of warm appreciation and thanks to the performers spoken by Mr. G. H. Fellowes Prynne, the President, at the close of the performance. Altogether the production reflects great credit on all concerned, especially when it is remembered that they are all amateurs.

A new Public Library at Falkirk is to be built at an estimated cost of between £4,500 and £5,000 from the designs (selected in competition) of Messrs. McArthur and Watson, architects, of Edinburgh. The building will be two storeys high, and will comprise a reading room 51ft. 6in. by 29ft., a lending library 39ft. by 37ft., a reference library 25ft. by 20ft., a recreation room 50ft. by 39ft., and the usual staff accommodation.

Correspondence.

Ordained Surveyors.

To the Editor of THE BUILDERS' JOURNAL.
LONDON W.

SIR,—In reply to your correspondent's query (see page 254 of last week's issue), "ordained" simply means "ordered." In the case of an ordained surveyor, the applicant after having satisfied an examining body as to his professional qualifications is "ordained" or "invested" in his office by the Sheriff of the Lothians and Peebles, or by the Lord Provost, Magistrates and Council of Edinburgh. There is in Edinburgh "The Society of Ordained Surveyors," who have lately instituted examinations which it is necessary for candidates for membership with some exceptions to pass, and which consists of a preliminary and a final. Full particulars and syllabus of the examinations may be obtained from the Secretary to the Board, 56, Queen Street, Edinburgh.—Yours faithfully,

C. MCARTHUR BUTLER.
Secretary, Society of Architects.

Norman Tower at Canterbury Cathedral.

To the Editor of THE BUILDERS' JOURNAL.
HIGHGATE, N.W.

SIR,—I know nothing of the facts of the demolition of the old tower at Canterbury Cathedral, and I am amazed to read the statements in your issue of April 25th that the late Mr. Austin, the cathedral architect, and also the dean and chapter of the day, wishing to re-erect another tower were guilty of a subterfuge. While I can regret the loss of an interesting relic, I really cannot understand the statements which seem to me almost incredible.—Yours faithfully,

HARRY SIRR.

SIR,—In reply to Mr. Harry Sirr's query as to the correctness of my statements about the demolition of the Norman Tower at Canterbury Cathedral, he can rely upon the facts being as stated. I enquired into the matter when at Canterbury some years since, and found the incredible to be credibly narrated. In fact so certain am I of the accuracy of this story that I have placed it upon more permanent record in the pages of my book on "The Dover Road." CHARLES G. HARPER.

"Mitchell's Building Construction."

To the Editor of THE BUILDERS' JOURNAL.
THORNTON HEATH.

SIR,—I have been greatly interested in reading the criticisms appearing from time to time in your valuable journal, especially those with reference to "Mitchell's Building Construction," a book which I myself have studied most carefully, so that I am therefore entitled to an opinion. It seems to me that your reviewer (see p. 155 of issue for April 4th last) has gone through the book in a manner similar to that which a good many people go through a novel, reading the interesting parts and skipping what does not appeal to him, or he would not have left the impression that the whys and wherefores were not explained; besides, his views on the methods of education are somewhat idealistic, and I fear would require more time to carry out than can be devoted to study in these days. Firstly, with reference to the colours. Mr. Mitchell does not state that those mentioned and no others must be used, but gave them as a guide to elementary students who may know nothing of the subject as a basis from which they may select, and whilst not claiming that they will give the most harmonious combinations they certainly make the various materials distinct, which in a working drawing is more important than harmony. Secondly, complaint is made of some of the illustrations on the ground that they might lead a student to suppose that any deviation from the method shown would be wrong. I can only say that I was never the victim of any such supposition. There are, on the other hand, hundreds of well-drawn, fully-figured details representing, as far as my experience (now fairly long) is concerned, types of up-to-date construction, and as such most useful to a beginner.

The references to the illustrations are written in clear terms, without ambiguity or any useless redundancy of words, which your reviewer seems to regret; the point about the brick footings specially mentioned is fully answered with methods of calculation and principles involved in the advanced course on the same subject, a part of the work to which your reviewer seems to have completely omitted to refer. It is a strange proceeding, surely, to review as a principle what is practically an introduction to another work. But, apart from this, the why and wherefore is stated in nine-tenths of the articles, and where this is not done it would seem that, being of an advanced nature, it has been left for the advanced work.

Your correspondent "F. F." (see page 226 of issue for May 2nd) has evidently a grievance against text books generally, and would seem to advise the abolition of all such useless aids. He should remember that we are not all possessed of that intuitive genius, that sagacious penetration, which would lead us to decide with unerring judgment the good from the bad that come under our notice, and that to ordinary mortals, of which class I am a humble member, a book of reference is sometimes a blessing.

I noticed some time ago in your journal a note of two students who gained the first two places in the kingdom in the South Kensington examination in building construction, apparently written by one of them, in which the help obtained from the above book is gratefully acknowledged. This would seem to me valuable evidence of the value of this particular work.—Yours faithfully,

PERICLES.

Civil Service Appointments.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—A great deal of misunderstanding seems to exist regarding Government situations for young architects and engineers, which are frequently advertised in the technical journals. I now wish to clearly point out the conditions under which candidates must serve, so that they may look before they leap.

The four departments for which your younger readers are eligible are: The Admiralty Works Department, the Royal Engineer Department, the English Office of Works, and the Irish Board of Works. The salaries of these vary from £150 to £700 a year, and the limits of age from twenty-one to thirty. The conditions of service are governed by the Superannuation Acts of 1859, 1871, 1876, and 1887, and the principal points to be remembered are:—(1) No pension can be obtained until sixty, unless the civil servant is compelled to prematurely retire by injury or ill-health occasioned in the discharge of his public duty. If he leaves of his own free will when under sixty years of age he gets nothing. The mind must therefore be disabused of the popular idea that a Government official can get a pension any time he chooses to give up his post. Not a bit; the Government is by no means so philanthropic as it is supposed to be. (2) No pension can exceed two-thirds of the salary at the time of retirement, and the maximum pension is only attained after forty years' service. Under this period it is one-sixtieth of salary for every year's service. (3) A civil servant must retire at 65. (4) All upper posts can be abolished at one fell sweep, and the Treasury only undertakes to maintain unaltered the pay of the particular class to which the civil servant, for the time being, belongs. Promotion can therefore be peremptorily blocked for good, and the official has no redress whatever. (5) Any office can be abolished altogether, in which case the holder may have a special superannuation allowance, or a gratuity. (6) Service in unhealthy places abroad counts as time and a half. (7) Promotion is not by merit, as advertised, but purely by sequence. The man who gets in first will always be above the man who gets in second, and so on. Such a system is destructive of all zeal, and there is not the slightest incentive to efficiency.

Now for the peculiarities of each department.

In the Admiralty Works Department the civil engineers find three Royal Engineer officers over them, occupying the highest billets at salaries of £700 a year and more, plus their military pay. The civil engineers are thus ousted from the best posts in their own department by the cuckoo Royal Engineers, who merely superintend. The civil engineers are changed about from dockyard to dockyard, and have to go abroad to such stations as Halifax, Vancouver Island, Bermuda, Jamaica, &c. Their whole expenses for travelling are, however, paid. Owing to the recent reorganisation of this department it is now filled with young men who block the way for newcomers, and thus promotion is extremely slow.

The Royal Engineer Department is notoriously rotten to the core, and it has an evil reputation, which it only too richly deserves. Its whole creed is that the Royal Engineers must get the credit for everything, and their selfish interests are far above those of the Army or of the State. Hence the civilians who bolster them up are placed in the background, and the eyes of the public are blinded. There are no advantages in this department beyond free medical attendance, all the rest being disadvantages. Firstly, the social position is intolerable, as the surveyor, being without a commission, is practically treated as a subordinate, and is seldom recognised by other officers of the Army. His so-called relative rank is a farce, and only equivalent to that of a quartermaster, as if forsooth he had enlisted. Such insults make one's blood boil with indignation. Secondly, the pay is wretched, and because of the upper posts being filled with young men advancement is deathly slow. So stationary is it, indeed, that any person now entering will have to wait thirty years before he reaches the princely salary of £300 a year! This is a fact. He starts at £180, and rises by £10 per annum till he arrives at £280, then he waits—and waits—and waits. Thirdly, he has to go on foreign service at least twice, for four or six years each time. Fourthly, the work is disagreeable; all red tape and correspondence, his duties being really those of a quantity surveyor. Fifthly, he is eternally superintended by Royal Engineer officers, who, being jealous of his professional knowledge, do their best to keep him down. Sixthly, and worst of all, if he is a married man it costs him £80 out of pocket every time he gets a move, which may be reckoned on an average every four years. This means a corresponding reduction of income. A special committee recently sat on the grievances of these unfortunate surveyors, but its recommendations were ignored by the Treasury, and the whole of the proposals collapsed.

In the English Office of Works promotion is likewise very lagging, and the salary only starts at £150 per annum. It used to begin at £100, until three of the younger men left in succession and passed into another department, when a generous Home Secretary actually raised it to £150 for future aspirants, but allowed the salaries of the existing officials to remain as they were. Consequently men who had been some years in the service found themselves with less pay than the novices just entered. How beautiful is official justice! Then these architects, or surveyors as they are called, sometimes have to undertake the most gigantic responsibilities, such as taking charge of mops and brooms! They have, however, nice stations, such as London, Edinburgh, &c., where they can live in peace for years without being moved, just because they happen to put in four or five years in one place like the migratory surveyors, R.E. But they also have to serve in China, Japan, and other places in the East.

The Irish Board of Works ends the story of this pitiful black list. Once the examination is passed, political influence holds sway, and he who swears he is a Home Ruler is perhaps passed over the head of the mere Orangeman. Promotion is as tedious as that in other departments, and for similar reasons, and the upper appointments are quite disproportionate to the lower ones. Private practice is strictly prohibited, and one is banished to such remote

spots as Cavan, Galway, &c., there to vegetate as green as the Emerald Isle itself. Then the work is very hard, and the surveyors frequently have to sit up to eleven o'clock at night wading through piles of papers and correspondence generated by a beneficent officialdom. Sometimes men break down from sheer stress, and then they have to go with a miserable gratuity. This department is quite undermanned.

I have personal friends in all these branches, and that is why I know them so intimately. As a man cannot get a pension till sixty, and must retire at sixty-five, it will be seen that the retiring allowance is only a delusion and a fraud, as he cannot live long to enjoy it. The salaries are small, and far below those of even the moderately successful practitioner. The sole advantage of a Government appointment for a technical man is security of employment. Civil Service berths are excellent for mere clerks who cannot do half so well in civil life, but for fully-trained professional men they are no attraction whatever. One can do far better outside, in spite of competition. The wonder is that any candidates come forward at all; but then they do not know. Anyhow, there will be very few examinations for a long time, as the establishments are filled up with young men. I have lifted the veil, and called a spade a spade. My advice—my honest advice—to every young architect or engineer contemplating such appointments is—don't.—Yours, &c.,

CAUGHT.

Railway Charges for Builders' Materials, &c.—I.

By N. L.

MOST builders receive or forward a considerable amount of different classes of goods by rail, and a few remarks by a practical man who has been engaged both in the building trade and the railway service will doubtless be useful.

The common practice among builders is to pay any charge for carriage without question, never taking the trouble to enquire how the charges are arrived at, whatever the amount, when the expenditure of a very little time and trouble will enable anyone to check the charges made, and also to know the cheapest way to forward different goods, when considerable amounts may often be saved. The reasons for this laxity are many, but I will endeavour in this and the following article to give hints and directions on matters in which builders generally make mistakes, and I am sure they will find that, when only a small quantity of goods is sent or received, it will pay them well for their trouble, while if the quantity is considerable they will reap a corresponding advantage.

System of Charging.

As the class of goods dealt with by builders is of a heavy description, we need not trouble ourselves by going into the rates by passenger train, and can confine ourselves entirely to the rates by goods train. Merchandise is classified into eight different classes—A, B, C, 1, 2, 3, 4, and 5—according to the value of the goods, the bulk in proportion to weight, and liability to damage, &c. Classes A and B are only applicable to consignments of four tons and upwards, and Class C to consignments of two tons and upwards; they do not include collection or delivery. Classes 1 to 5 include collection and delivery by the railway company in towns where such service is performed by them, and if the builder should do his own carting to and from the station he is entitled to a cartage allowance of 1s. 4d. to 2s. 6d. per ton, according to the class the goods are rated at; but, of course, this must be claimed or it will not be obtained. How many builders have carted their joinery, &c., to the station for jobs away from home and never known they were entitled to a cartage allowance? The rates of a few of the smaller companies do not include collection or delivery for traffic passing between two of

their own stations, but would do so if going to or from a station on another company's line where such service was performed.

At every goods station a public rate book is kept, accessible to the public by Act of Parliament, and where every rate in force from that station must be entered. Every builder who desires to check his charges should obtain the class rates (and any exceptional rates for goods he is likely to deal in) to those places he is generally receiving from or forwarding to, and keep them handy for reference, so that when any fresh job away from home has been obtained it is only a matter of a very few minutes to obtain the rates to that place.

For small consignments under 3cwt. a special scale of charges is used which is above the actual working out at the tonnage rate. For instance, the charge for 2cwt. 2qrs. at 25s. per ton is 3s. 7d., whereas the actual working out is 3s. 1½d., and where there are two or three different classes of goods of small quantity going to or coming from the same place it will be found cheaper to pay for the whole at the highest rate. For instance:—

	cwt.	qrs.	s.	d.	s. d.
8 pieces rain-water pipe (Class 2)	1	2	at 21	8	= 2 0
8 pieces joiners' work (Class 3)	2	2	at 25	0	= 3 7
Keg white lead (Class 1)	1	0	at 16	8	= 1 2
	5	0			6 9

but 5cwt. at the highest rate—namely, 25s. per ton—is only 6s. 3d. Articles of exceptional bulk or length in proportion to weight, such as long ladders, &c., are charged extra, generally a minimum of one ton for each truck used. Although I shall be able to give a very general comprehensive idea in these articles of railway charges as they affect the builder, it is quite impossible to give a tithe of the various tables and classifications, and I should advise anyone wishing to go thoroughly into the question to obtain a "Classification of Goods by Merchandise Trains," a book published by the railway companies, price 1s.; or a "Guide to Railway Charges," a book published by F. Childrens and Co., 4, Duke Street, Charing Cross, London, price 1s. 6d. post free, which has all the necessary tables and classifications, and also builders' goods classified by themselves, which saves wading through all kinds of merchandise to find that required.

Packing.

The rates for some goods vary considerably according to the manner in which they are packed, if they are packed at all, some goods, which will be referred to later, being only accepted for carriage, if unpacked, at owner's risk. Some of the chief instances are beadings and mouldings, gilt, lacquered or varnished, in boxes or protected by boards, Class 3, otherwise Class 5; metal chimney-pieces, packed Class 3, unpacked Class 4; colours and paints in casks, iron drums, or in tins in cases, Class 2, if in cans, hampers, boxes, or iron bottles, Class 3; lead piping in cases and casks, Class 1, otherwise Class 2; size in cases and casks, Class 1, otherwise Class 2; stoves, polished or enamelled, packed Class 4, not packed, at owner's risk only, Class 3; varnish in casks or iron drums, Class 2, otherwise Class 3.

The following articles if not properly protected by packing are only accepted for carriage at the owner's risk:—Baths; chimney-pieces; chimney pots; chimney tops of iron or zinc; cisterns and tanks, cast-iron; concrete castings; ornamental fencing, cast-iron; figures, casts and ornaments; window frames, iron; grates, ranges or stoves, polished or enamelled; gas and oil stoves; lavatory stands and basins; lead lights; limestone, marble and slate slabs; palisades, iron; pans, earthenware, closet, bath, urinal and lavatory; and window sashes, glazed.

Owner's Risks.

From 10 to 20 per cent. on certain classes of goods can be saved if the consignor forwards the goods at the owner's risk, but an indispensable condition of these reduced rates being charged is that an owner's risk consignment note must be signed by the sender, relieving the company of the ordinary risks of a carrier, but not from any damage arising from wilful misconduct on the part of their servants, &c. The articles that may be sent at these reduced

rates are divided into three divisions, according to their liability to damage—Div. *x*, about 10 p.c. off; Div. *y*, about 15 p.c. off; and Div. *z*, about 20 p.c. off—but care should be taken that a check is kept, to make certain that when the "owner's risk" note is signed the reduced rate is obtained, or the sender may possibly sign the note without obtaining any corresponding advantage. The following are lists of the principal goods for builders subject to the reduced rates, the figures in brackets denoting the class rates:—Division *y*: Eaves, troughs, channels, rain-water pipes and connections, cast-iron (2); flint, plate, sheet and window glass (3); gravestones and tombstones (3 and 4); joiners' work, common wood, including beadings and mouldings (not gilt, lacquered or varnished), doors and frames, fittings and fixtures for buildings, staircases, balusters and handrails, window sashes, frames and shutters (3); lead piping, not packed (2); marble, packed (3); marble slabs, not less than four cemented together (3); marble scantle, 2in. and more in thickness (2); carved stone for the interior of buildings (4); stoves, grates or ranges, common or kitchen (2); lead lights (4); water-closet seats, mahogany (4). Division *x*: Carved stone for building purposes (2). Division *z*: Marble chimney-pieces, packed (3); slate chimney-pieces, enamelled or polished, packed (3); stoves, polished or enamelled, packed (4); mantelpieces and overmantels, wood, in cases (5).

In the event of certain goods getting broken or damaged when being carried at owner's risk, the railway companies will return the damaged article and carry another similar one to replace it free of charge, provided that the damaged article be returned within two weeks of being tendered to consignee, and the whole transaction is completed within one month. The goods which may be thus treated are baths, balusters and palisades, iron or steel; boilers, kitchen or furnace, iron or steel; cisterns, cast-iron; window frames, iron; grates, ranges or stoves, common, kitchen, polished or enamelled, packed or otherwise; lamp-posts, iron or steel; light iron castings; ovens, common or kitchen; overmantels, cast-iron; eaves, channels, rain water pipes and connections; pipes, iron or steel; sinks, cast-iron; slate slabs, plain or enamelled; stable fittings, iron or steel; stoves, gas or oil; tables, cast-iron or cast-steel; and valves, gas or water.

(To be concluded.)

Builders' Notes.

Breach of Building By-laws at Lancaster.—At the Lancaster Borough Police Court recently four informations were heard against John Gibson for non-compliance with the local by-laws in erecting four houses in Aberdeen Road, Lancaster, in March, 1899. It appears that plans for these houses were deposited and approved, then an amended plan was submitted and disapproved, and eventually the houses were erected not in accordance with either of these plans. The magistrates imposed penalties and costs amounting in all to £10 8s.

Malicious Prosecution of a Bricklaying Contractor: Damages £500.—The case of *Holdswoth v. Willsmer* came before Mr. Justice Grantham and a special jury in the Queen's Bench Division on Friday last. It was an action for false imprisonment and malicious prosecution. The plaintiff was a bricklaying contractor of Walthamstow and the defendant was a timber merchant of the same place. The defendant had given the plaintiff a contract to do the bricklaying on some houses at Leyton, and the plaintiff was to provide his own scaffolding. Disputes arose, and the plaintiff sent two men for his scaffolding, and after it had been taken to his yard the defendant brought the police and charged him with stealing some wooden poles. The magistrates at Stratford dismissed the case without calling on the defence for an answer to the charge.—The jury found a verdict for plaintiff for £500, and judgment was given for this amount, less £30 19s. 6d., which had been paid into Court

in connection with a counterclaim for work done.

Slag Bricks and Cement.—At the second sitting of the Spring Meeting of the Iron and Steel Institute of Great Britain on Thursday last (Sir William Roberts-Austen, the president, in the chair), the utilisation of blast-furnace slag was dealt with by the Ritter Cecil von Schwarz, who first referred to its present use in the form of sand and as made into bricks and cement. Hitherto slag cement appears to have been a somewhat untrustworthy article. Recently, however, a process for the manufacture of cement from blast-furnace slag has been started in Germany and Belgium, and the results were stated by the author to be highly satisfactory as regards strength, voluminal constancy, and reliability. In the manufacture of this cement, the slag is first granulated and then reduced to sand, in which condition it is mixed with limestone and slacked lime, the mixture being reduced to a fine powder. This powder is then mixed with water and made into bricks, which are air-dried and afterwards burnt into clinker in a special furnace. The clinker is stored for about six weeks, and is then ground into fine powder. The cement thus produced is said to be distinguished for its exceptional tensile strength and resistance to compression.

More Fire Tests: Important Floor Test.—Publication No. 46 of the British Fire Prevention Committee gives an account of tests made with screen sail curtains by Mr. Rasmus Buggé. One curtain was 8ft. high and the other 8ft. 2in. high; both were 8ft. 6in. wide. The second test was made on account of the climatic conditions being extreme in the first instance, for it was freezing at the time. In each case the curtain was hung directly in front of two door openings (each about 7ft. by 3ft.) with the fire at the back. After a test of half-an-hour the curtain still remained intact, though one or two small holes were made in it. Publication No. 48 of the Committee gives the result of a fire test with a floor of deal joists and coke breeze concrete of the kind specified by local authorities as fire-resisting, and about which there has been considerable controversy in technical circles. The area of the floor was 100ft. super. in the clear (10ft. square), and the load was 100lbs. per foot distributed, six weeks (winter) being allowed for drying. The following is a summary of the effect of the test:—In fifteen minutes all the boarding to the soffit was consumed. In fifty-four minutes the flame came through the floor between the last joist and the wall. In sixty minutes the floor had deflected and the concrete had cracked transversely. In seventy-four minutes the concrete between the two east joists fell. In eighty-two minutes the floor and load collapsed. The joists were found broken in the centre and the bottom edge charred about 2in. to 2½in. The floor boards (¾in.) were only slightly injured. The maximum temperature reached was 2,100deg. F.

Enlargement of Wakefield Cathedral.—Mainly through the efforts of the Bishop of Wakefield, the £7,500 which was required in order to claim £2,500 offered towards the Wakefield Cathedral extension has been subscribed. The total sum raised from the beginning is £27,338, and, after paying £8,267 for property, &c., to improve the site, there is about £6,000 still to raise to complete the contracts already entered into, which amount to about £25,100.

Walsall New Municipal Buildings Competition: Result.—In this competition the five selected designs recommended by the assessor (Mr. J. MacVicar Anderson, F.R.I.B.A.) and approved by the Council, are:—(1) Mr. James A. Bowden, architect, Moorgate Station Buildings, 63, Finsbury Pavement, E.C.; (2) Messrs. Cackett and Burns Dick, architects, 24, Grainger Street West, Newcastle-on-Tyne; (3) Mr. Sydney W. Cranfield, A.R.I.B.A., and Mr. H. J. Potter, A.R.I.B.A., 19, Lincoln Inn Fields, W.C.; (4) Mr. J. Glenn Gibson, architect, 4, Gray's Inn Square, W.C.; and (5) Mr. William A. Pite, F.R.I.B.A., and Mr. R. S. Balfour, A.R.I.B.A., 3, Upper Montague Street, Russell Square, W.C.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

"All art constantly aspires towards the conditions of music. For while in all other kinds of art it is possible to distinguish the matter from the form, and the understanding can always make this distinction, yet it is the constant effort of art to obliterate it."—W. PATER.

Cretan Archaeology.

EXCAVATIONS were begun in March last by Mr. Arthur Evans, representing the Cretan Exploration Fund, and Mr. D. G. Hogarth, the Director of the British School at Athens, on the site of the ancient Cnossus in Crete. It was here that King Minos built the Labyrinth as a prison for the Minotaur, the monster ultimately slain by Theseus. Mr. Evans has laid bare a large building belonging to the Mycenaean period, which may be dated from 1500 to 1000 B.C. The plan and contents of the building show it to have been a palace like those which Schliemann discovered at Mycenae and Tiryns. In one chamber of the palace there have been found a great quantity of clay tablets bearing inscriptions in the very early "Cretan script," a system of writing much older than the Greek alphabet. Another find of very great interest is a well-preserved fresco painting in one of the corridors of the palace, representing a girl in the usual Mycenaean costume holding a slender vase in her hands. The drawing is good, and the picture will probably take rank even before the Flying-fish fresco found by British excavators in the island of Melos, which was hitherto the finest known example of Mycenaean wall-painting.

The Tall Building.

SINCE the middle of April a series of articles on "American Engineering Competition" have appeared in the pages of the "Times." These have been written by their special correspondent, and show that the writer is thoroughly conversant with his subject and in a position to speak authoritatively. Article No. 8, which appeared in the issue for Thursday last, deals with structural steelwork, and as it is of special interest to our readers we give below some extracts from it. "The big steel buildings of America have been too often written about to make any detailed description of them necessary here; but I doubt if many persons in England have an idea how completely in America steel is taking the place, not only of wood, but of brick and stone. One of these enormous edifices will contain ten to twenty thousand tons of steel and will be twenty to twenty-five storeys high. The framework is erected with marvellous rapidity, very powerful lifting appliances being installed by the contractors for the purpose. As all the parts are prepared accurately to size at the works, with holes drilled, they have only to be fitted together and a few rivets or bolts put in to make the skeleton of the house. . . . It is to be hoped that something more may be done to introduce the steel building into this country, if for no other reason than to give an impetus to the steel trade. If our own steel-makers would take a leaf out of the Carnegie book and do something to force this outlet for their wares, instead of sitting still and lamenting their hard fate, it would be better for themselves and for the country. . . ."

American Engineers.

THE Americans appear to be specialising in quite a different direction to ourselves. We have our great George Street magnates for designing bridges, roofs, &c., and the contractor, in theory, has simply to follow drawings and specifications. In America there are a certain number of designing engineers, but the work is far more in the hands of men who have had wide experience in the execution of work. Therefore, practice and theory—using the terms in their conventional sense—go more often hand in hand. I think the example we had in this country not long since of the design of an important bridge being recast by the contractor's engineer

because it would have been impossible to erect it as originally planned could not occur in America. In Westminster there are civil engineers who will design a whole railway in their office; bridges, station, permanent way, locomotives, carriages—in fact, everything; and ill fares the impertinent contractor who suggests that any detail is capable of improvement. The consequence is that such designs are not designs at all, they are merely copies of former practice—methods and details pieced together to suit the occasion as well as may be; and thus progress is checked and the foreign contractor gets a footing. On the other hand, the British contractor, not being consulted, will not consult. He has to produce exactly what he is told, be it good or bad, and he seeks compensation in producing it in exactly his own way."

The Blackfriars Arches.

A PARTY of antiquarians (including Sir Walter Besant, Mr. W. St. John Hope, and Mr. Wickham Noakes) recently visited the Blackfriars Priory referred to on page 253 of last week's issue. The principal arch, says the "City Press," had been excavated to a considerable depth to allow it to be inspected, and the newly discovered archway had been partly revealed by the knocking away of the brickwork which has covered it. The arch and the half-arch on the north wall measure about 14ft. in length, and the remaining arch on the east wall, at right angles to the other, adds another length of some 11ft., giving a total of 25ft. of the walls of the Blackfriars Priory still remaining. The height of the main arch, which was formerly pierced by a window, is 13ft. from the lowest stonework yet excavated to the apex. An opinion has been expressed by Mr. Gordon Hill that these remains are in no way associated with the Blackfriars, but ante-date the friars' buildings by 100 years, and are, perhaps, relics of a palace. Mr. St. John Hope, however, is of opinion that they are late thirteenth or early fourteenth century work, and, considering that the Blackfriars Priory was commenced about 1276, the probability is that the remains are none other than those of some building of the priory. That it was a vaulted building may be gathered by the spring of an arch which remains. Though the arches are within the priory precinct it cannot be claimed that they have ever formed part of the friars' church, which building was more to the south-west. Great interest has been taken in these ancient remains, and it is gratifying to learn that the main or northern archway is to be carefully taken down, stone for stone, and rebuilt in the grounds of the residence of Mr. Wickham Noakes, at Selsdon Park, Croydon, where the remains will be open to the inspection of those interested on the presentation of a visiting card.

Cast Metal Competition.

AN exhibition was open last Wednesday and Thursday at the Ironmongers' Hall of designs for and work in cast metal submitted in competition for the prizes offered by the Founders' and Ironmongers' Companies. The designs were adjudged by Mr. G. J. Frampton, A.R.A., and Mr. R. H. Young. The collection was a very disappointing one, there being only just over thirty exhibitors. It seems somewhat a pity that more interest has not been aroused in this laudable effort of the Founders' Company to help arts and crafts forward in the branch they are concerned with, and that more works were not sent. On the whole, the examples were of average merit, with perhaps one or two works of considerable merit. The majority of the exhibits were, however, very unimaginative. In Class I. half the first prize in Section A is gained by Mr. H. Charles Eyres for a tobacco box in the shape of a flower, not very well cast and which is of little use for the purpose intended. Mr. Alexander Stokes with a small plaque copy in metal of Raphael's cartoon showing St. Peter healing a man sick with the palsy shares the second prize with Mr. J. Alfred Lemon, who exhibits a portrait medallion casting. Mr. James Ellis in Section B takes third prize with a small rococo casting of a stand and

figure holding a glass mirror. The first prize of £10, Section C, given by the Ironmongers' Company, is awarded to Miss Florence H. Steel for a neat design for a pilaster-panel. The third prize, Section C, is taken by Mr. A. J. Shirley, for a not very original plaster-cast from an embossed copper panel called "The Vanities of Human Life." One £2 10s. prize, Section C, is taken by Mr. Richard Garbe for a bust and head of very ordinary merit, and another £2 10s. prize by Mr. Onslow Whiting with a set of castings of electric bell pushes, switch, bell handle and letter plate, which we seem to remember seeing at the last Arts and Crafts Exhibition. The third prize in Section D is given to Mr. S. S. Dunwell for a simple and neat little bell. In section E half the first prize goes to Mr. Henry Price for a model of a group, and half to Mr. Arthur C. White for a design for a panel; the second prize is gained by Miss Florence H. Steel for a very pleasing plaster design for an alms dish; the £2 prize in this section goes to Miss Eveline M. J. Howell, and the £1 10s. prize to Miss Eliza M. Burgess for two good designs for caskets; the £1 prize goes to Mr. G. Gilbert Walker for a design for a pastoral staff. In Class II. the first prize, Section B, is taken by Mr. George W. Lee for figure heads, one a plaque of no particular use, and the second prize is given for a group of castings by Mr. Frederick B. Robinson. Mr. G. M. Ellwood sends designs for mantels and cast iron railings, but a design for a grille stated to be for cast iron would be almost impossible to carry out in the flimsy foliage forms. Two designs for gates by Mr. Albert Waldron are worthy of notice, but would be slightly too light for outdoor use. The design for a verandah by Mr. R. Quilter Lane is an unsuccessful attempt, for, of course, a design is of no use unless in keeping with the architecture, and a drawing-board design meant to be turned out by the dozen is a quite mistaken ideal.

The Silchester Excavations.

MR. G. E. Fox and Mr. W. H. St. John Hope gave an account at a recent meeting of the Society of Antiquaries of the excavations at Silchester during last year. An account of the work done during 1898 will be found on page 253 of the BUILDERS' JOURNAL for May 31st, 1899. It may be remembered that in 1898 the explorers were at work at the south-west corner of the city; last year they turned their attention to the opposite (or north-east) corner. The two insulae laid bare lie to the north-east of the forum insula, in the centre of the city, and between the modern high road and the north wall. The largest structure discovered last year is a house of the courtyard type at the south-east side of insula 21. Immediately to the south of this is a smaller house, chiefly interesting on account of its having yielded a fragment of mosaic pavement of good design. The pavements of the other houses were either quite plain or merely striped in different colours, so it is to be regretted that the only piece of ornamental mosaic found last year should not be larger. Two other houses (making four altogether) were explored in insula 21, one at the north-west corner of the corridor type, and the other at the north-east corner also of the corridor type, but converted into a courtyard house by later additions. The four corridor houses discovered in insula 22 were of inferior size to those in insula 21, and of no great interest. Some of the houses had hypocausts, but in nothing like so perfect a state of preservation as other examples of this kind of heating apparatus at Silchester. Besides the houses there were a few "blocks," a term used to describe a building of unknown use. The most remarkable feature in the plans of the buildings is the irregular way in which they are placed with regard to the sides of the rectangular insula, suggesting that many of the houses existed on the site before the walls of the fortified city were built, and that the enclosed space was divided up into blocks so perfectly correct in shape as to be worthy of the admiration of the setter-out of an American town. The expenditure on the explorations in 1899 was £515 0s. 7d., and the results obtained are well worth the money.



FIG. 4.—DETAILS FROM THE NAVE OF ST. PAUL'S CRAY.

DETAILS OF SOME KENTISH CHURCHES.

By J. RUSSELL LARKBY.

THERE is, perhaps, no other county in England where the ecclesiastical buildings contain so many remnants of Early English work as the county of Kent. This remark applies more especially to the interior features, as, alas! the restorer has, in a vast number of cases, made his handiwork far too prominent on the exteriors, so that many churches fairly complete inside are, externally, of all styles and of no style. In some cases, too, the re-

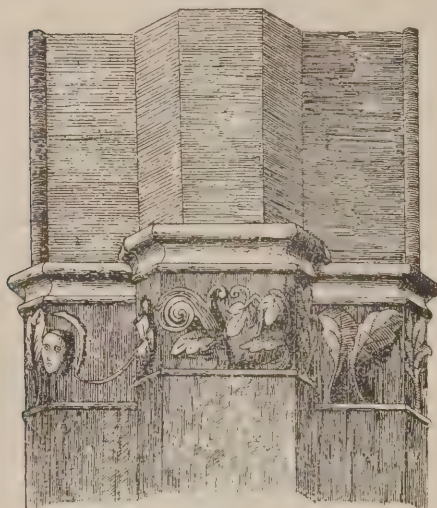


FIG. 1.—DETAIL OF LADY CHAPEL ARCH, ST. PAUL'S CRAY.

stor has invaded (and apparently quite overcome) the interiors of many of these interesting old village churches. He appears sometimes as a cheap paperhanger and painter of extraordinary frescoes, whilst at other times he is seen to advantage as the author of styles of architecture never dreamt of by the early masters of the art. Not that restoration, in the true sense of the word, must be

decried; in many cases it is of the first necessity, and can be accomplished (as at St. Paul's Cray, Kent) without utterly destroying the early portions of the building. Nevertheless, every artist and antiquary must for ever tilt at deeds which are perpetrated every day under the cloak of "restoration."

But to return to the subject of the common occurrence of Early English work in Kentish churches, St. Mary Cray, St. Paul's Cray, Orpington, Chelshfield, West Wickham, Eynsford, Farningham, Kensing and Wrotham, to name only a few in West Kent, all contain really good Early English work. It is true that Early English windows are very uncommon, and in the churches above mentioned the work is chiefly confined to chancels, nave arches, and doorways. At Eynsford, however, there are nine lancets in the transept, but the work in other parts of the country would be accounted plain, and of little value. Good Early English or other towers are also very rare in Kent, and, indeed, the churches have nothing to compare to the often superb towers of the west country.

The most interesting building in West Kent, having reference to Early English work alone, is the small church of St. Paul at St. Paul's Cray, situated in the by no means sweet-smelling valley of the Cray river—a stream of chameleon-like qualities and constantly decreasing volume. By referring to Fig. 1, the very good character of Early English foliage of an uncommon order will be at once apparent. This sketch is taken from an arch leading to the Lady Chapel, which now does duty as a vestry. The most prominent feature of the foliage is the volute-like object on the central shaft, and its form in this instance does strongly support the contention that Early English foliage was, to a great extent, influenced by the Ionic volute. A curious and unusual combination of foliage with the human head is illustrated on the left hand shaft; but it is, of course, possible that this portion is of later date and not contemporary with the other parts of the capitals. Unfortunately, there is here little to judge from, as the foliage has been greatly damaged.

Fig. 2 is taken from the first bay of the nave, and illustrates the very common arrangement of a small shaft in a plain chamfer; but I cannot at present call to mind any other instance in West Kent where the capitals of the shafts are replaced by human heads. The

central head on the half column is vigorously rendered in the original. Fig. 3, which is a south elevation of Fig. 2, is interesting on account of the well-formed oak leaves and the graceful termination to the hood mould. At Fig. 4 we find the most interesting piece of

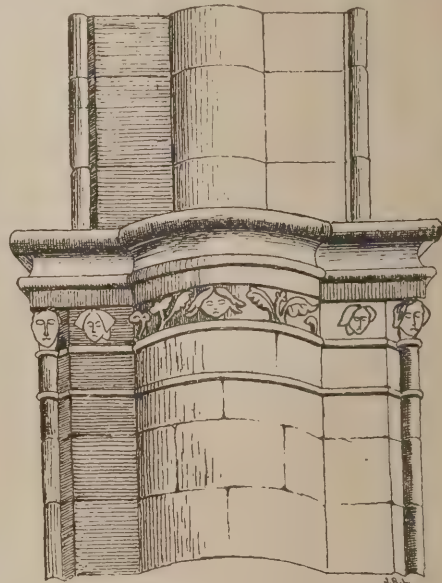


FIG. 2.—FIRST BAY OF NAVE, ST. PAUL'S CRAY.

work in the church. The details here drawn are attached to the reversed bell of an otherwise very plain capital. It will be noticed that the third head from the left is similar in style to the head exhibited on many of the coins issued in England during the latter part of the twelfth century.

In the chancel of the church is a small acutely-pointed arch with well-moulded capitals and bases to the columns, and the moulding is very similar to that on some of the smaller capitals in Westminster Abbey. It gives that good effect of light and shade so characteristic of Early English work.

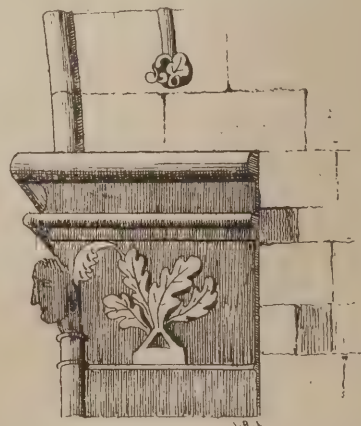


FIG. 3.—FIRST BAY OF NAVE, ST. PAUL'S CRAY.

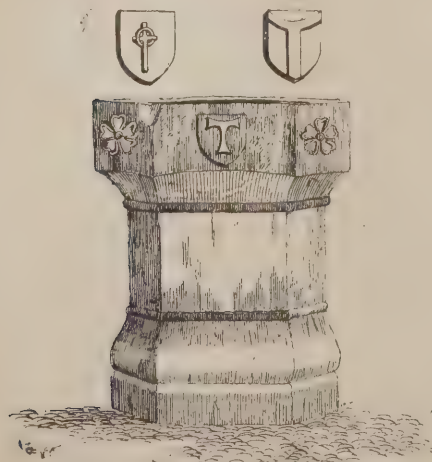


FIG. 5.—FONT, EYNSFORD.



FIG. 6.—CORBELS, EYNSFORD AND ORPINGTON.

The font illustrated at Fig. 5 is from Eynsford Church. The building itself is of considerable interest, as it is one of the few Kentish churches with the apsidal chancel. The font probably dates from the middle of the sixteenth century; above the sketch are shown the shields attached to the other facets. Fig. 6 shows some interesting corbels from Eynsford and Orpington. Nos. 1 and 3 are from the north aisle of Eynsford Church, and No. 2 is from the west wall of the same building. The expression in this example is excellent, and it is treated in the free style quite worthy of the Decorated period at its best. Nos. 4 and 5 are from Orpington, and are of middle Perpendicular date. The arms shown on No. 4 are again repeated on a dripstone termination above a four-light Perpendicular window in the chancel, which has the

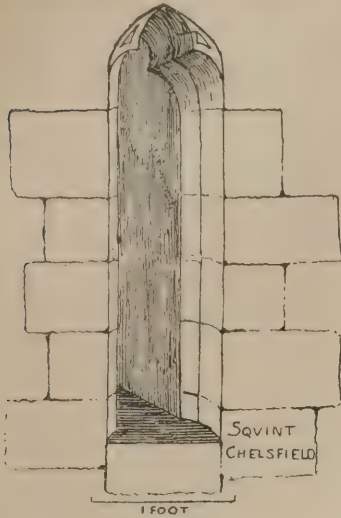


FIG. 13.

depressed arch and stiff tracery of that period. An interesting example of Early English work at the beginning of the style can be seen in the chancel of Orpington Church. It is a small, round-headed priests' door, with a plain chamfer, in which is placed a bold round continued down to the ground line.

Chelsfield Church.

Lying a short distance from the main road, and in a position of great beauty, Chelsfield

pierced by two Early English lancets with very wide splays, but without mouldings, and although they may be early in the style it is impossible to give even an approximate date to them. Examining the external base of the tower another example of early wide-jointed masonry is to be seen, and from this it appears probable that the original dimensions of the church have not been extended, notwithstanding the alterations made at times subsequent to its erection. This is certainly supported by reference to Fig. 9, which shows two Norman windows, and a Decorated doorway at the west end.

Fig. 10 shows a Decorated capital and base from the arches leading to the south chapel. The capital is a good example of the application of roll moulding; the arches above are quite plain, being merely chamfered off at the angles. They appear to have taken the place of some earlier work, as the chapel has a small and deeply-splayed Early English window in its south wall. That the chapel was not included in the original design of the church is, I think, shown by the presence of a small round-headed Norman window above the Decorated arches, now filled up and the access of light stopped by the lean-to roof. The masonry of the chapel, it should be stated, is composed of ordinary flints, the same material as used in the other Early English portions of the structure.

Fig. 11 shows the east window details. The east window of this church is a fine composition of three Early English lancets, plain and separate without, but splayed within, having banded shafts with well-moulded



FIG. 9.—NAVE, CHELSFIELD.

but here with the work of our own forefathers—!

Fig. 12 shows the only old woodwork in the church, if we except a very much restored screen in the tower arch. The work sketched is perhaps not beautiful, but in a district where old woodwork is uncommon one must be thankful for small mercies. Fig. 13 illustrates a squint from the sometime Lady Chapel bearing on the High Altar. It is apparently of middle Perpendicular date, and cuts the wall at a very oblique angle. The great length in proportion to the breadth is to be accounted for by the level of the chapel floor, which is considerably lower than the chancel level. The levels do not appear

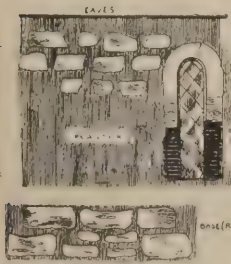


FIG. 7.—NORMAN DETAIL, CHELSFIELD.

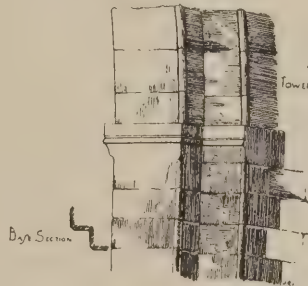


FIG. 8.—TOWER ARCH, CHELSFIELD.

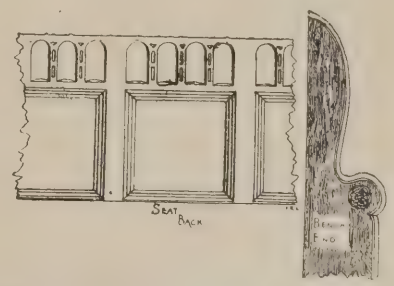


FIG. 12.—WOODWORK IN CHANCEL, CHELSFIELD.

Church is a building of no less interest to the architectural student than to the ecclesiologist, whether he be amateur or professional. To the latter, of course, the building and its humble, but interesting features will appeal in a peculiar manner, whilst the former will find ample food for reflection, for it is not often that one finds in a small country church very good, though plain, work of three distinct periods—Late Norman, Early English, and Decorated. For a short excursion, say, Saturday afternoon, I know of no other place in the district where one can so easily spend a few hours with genuine pleasure and profit. The church is dedicated to St. Martin (Bishop of Tours, A.D. 473), and in order to give a general idea of the structure it is only necessary to say that it consists of chancel, nave, with south chapel and porch, and a north tower with the broach spire so common in the county.

The earliest portion of the church would appear to be a small area of the north wall of the nave at its junction with the tower, and this consists of wide-jointed masonry which still retains a deeply-splayed Norman window, the details of which will be seen by referring to Fig. 7. The junction of the Norman with the Later Decorated work can be plainly seen outside, but the inner surface of the wall is covered with plaster and white-wash. The tower arch (Fig. 8), which is really a continuation of the nave wall, is also of Norman date, and fortunately it has so far escaped restoration. As the arch is acutely pointed without any apparent necessity for it, the work must be of rather a late date, getting near to Transition, but the character of the abacus, and the plain base without mouldings or plinth, at once stamp the work as Norman, without much later influence. The lower portion of the tower is

capitals and bases. The square abacus of the capital, as shown in the section, is peculiar, but this of course may be a restoration. It is impossible to say if this is so, or not as the work is covered with modern paint, and if the paint were used as a device to conceal the chief beauty of the work one can only say that it has been entirely successful. It will be a happy day when people learn that Early English work looks really well without paint and varnish. One can imagine the howl of indignation from all classes if the County Council ordered that the alien "Cleopatra's" needle should be given a coat of white paint, with the details picked out in red and blue,

to have been altered at any time subsequent to the piercing of the wall to form the squint. There are some very fair brasses in the chancel; one, a priest brass (name not given) on the chancel wall, being of excellent workmanship. Another in the chancel floor, bearing date 1420, has a scroll issuing from the right shoulder bearing the application, "Jhu fili dei miserere mei." The chasuble worn by this priest is of great length and reaches nearly to the bottom of the alb. Near the squint is another very interesting but mutilated brass to Robert le Brun (Fig. 14). It is, or rather was, a representation of the Crucifixion, but the central figure and the figure of

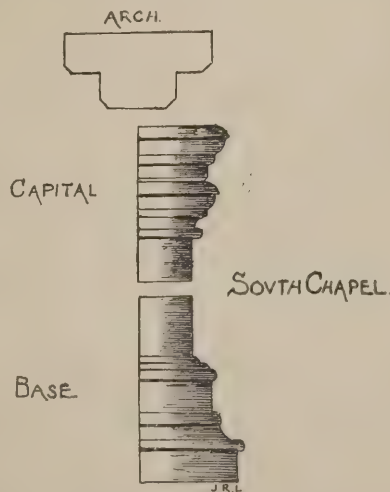


FIG. 10.—DECORATED CAP AND BASE, CHELSFIELD.

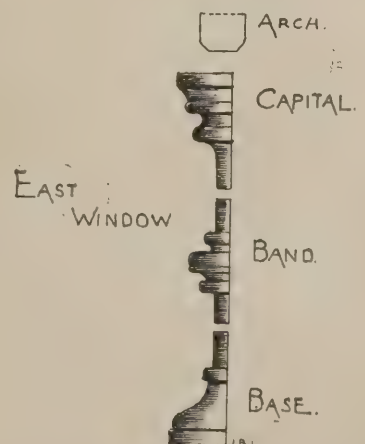


FIG. 11.—DETAIL OF EAST WINDOW, CHELSFIELD.

St. John have both disappeared, whilst the figure of St. Mary, strange to relate, with the exception of the head, is nearly perfect. Judging from the style of what is left of this brass, it was at one time a work of considerable beauty; hence probably its present deplorable condition. The chief object of attack has naturally been the crucifix, the matrix of

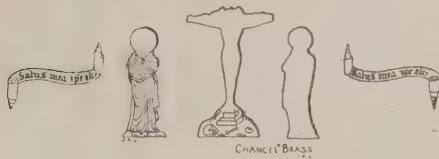


FIG. 14.—CHANCELL BRASS, CHELSFIELD.

which has been very roughly handled. On the face of the tomb is the inscription: " + Hic jacet Robert-le-Brun quonda Rector istius ecclie qui obyt XXV d'e meus Aprilis annodui M^oCCCC^o XVII^o cuj aia ppiciet de Amc. + "

ARCHITECTURAL ASSOCIATION.

EGYPTIAN TEMPLES.

By ALEXANDER PAYNE, F.R.I.B.A.

A MEETING of this Association took place last Friday evening, Mr. G. H. Fellowes Prynn being in the chair. The minutes having been read and confirmed and a vote of thanks having been accorded to the ladies and gentlemen who assisted at the soirée, Mr. Payne then read his paper on "Egyptian Temples," of which the following is a summary:

I think I may say without fear of contradiction that in studying the temples of Egypt we are studying the earliest monuments that exist devoted to religion and erected by what was the most civilised nation of the ancient world.

There is evidence to show that most of the religions of the ancient world were derived from a common origin, and had for their main idea either the worship of the powers of nature or as regarding nature as a theatre descriptive of divine things. In Egypt it is certain from the monuments themselves and the representations on them that their early worship was derived from the phenomena of nature, and fortunately we have from Egyptian hieroglyphics a full description of what took place in each room of the temples, where staircases are provided leading up to the flat roofs, so that certain ceremonies might take place in full view of the heavenly bodies in honour of which the services are held.

When the Greeks and Romans successively conquered Egypt and made it a province of their empires no attempt was made to disturb their worship and religion, so similar in some respects to their own; in fact, the Egyptian deities were at once adopted as part of the State religion, and vast sums were spent in the restoration of the ancient temples evidently under the direction of the Egyptian priesthood, and, judging from the inscriptions, with the most scrupulous conservatism of the ancient plan and purpose.

Memphis.

Abydos has been called the cradle of Egypt, but the seat of the first settled monarchy appears to have been the great city of Memphis, just south of modern Cairo, and said to have been founded by Menes, the first historic king, about 4000 B.C. This city must have been one of the largest of the ancient world, and the ruins of an immense place remained as late as the twelfth century A.D.; but, owing to the inundations of the Nile, nothing remains of it at the present day but a few earth-mounds and two colossal statues, which stood in front of the great Temple of Ptah, and the Pyramids and innumerable tombs built on the uplands west of the Nile, which formed the great cemetery of the city, and amongst which the famed Pyramids of Gizeh formed the chief. These are surrounded by whole streets of tombs.

The inundations of the Nile have also destroyed almost every vestige of the large cities which once existed in the Delta, so that it is necessary to go 200 or 300 miles up the Nile before reaching extensive remains of temples. The whole valley of the Nile, including the river itself, would appear to have risen since the times of ancient Egypt, so that the Temples of Denderah and Edfu, which will be described in detail, are now some 30ft. or 40ft. below the level of the ground, and have had to be dug out quite recently for their complete examination, and are now under the care of the Government as ancient monuments. There are also extensive remains at Kom Om-bos, Esneh, Philæ, and other places on the river. It is at ancient Thebes that an idea of the magnificence of ancient Egypt can be best obtained. The ruins of temples and buildings there exceed those left in the remainder of Egypt altogether, if we except the Pyramids, and are far more extensive than anything remaining either at Rome or Athens. The site of the ancient city, being mostly above the level of the inundation, has escaped the destruction that has fallen upon other cities. Thebes dates from a high antiquity, and a few of the more ancient parts of its temples are from the time of the Eleventh Dynasty, about 2500 B.C.; but under the Pharaohs of the Nineteenth Dynasty (about 1400 B.C.), Seti I. and Rameses II., &c., the chief seat of government was transferred from Memphis to Thebes and the city was embellished with the magnificent temples of which the ruins now remain. The great group of Karnac alone is nearly a mile long and one-third of a mile wide, and comprises a whole assemblage of temples connected together by avenues of sphinxes. These buildings are mostly far too complicated and elaborate to describe in the limits of a single paper. Moreover, they show in many instances a departure from the original and simple plan of the early temples dedicated to the gods; the monarchs of this period would seem to have been almost intoxicated by the grandeur of the empire and the extent of its foreign conquests, and the temples are covered with inscriptions of their own glorious doings, and, though the credit of them is all ascribed to the gods, the prevailing sentiment seems their own glorification.

Egyptian Cosmogony.

The Egyptians imagined the world to be a vast plain suspended in space, of which Egypt, with the Nile running through it, was the centre and by far the most important part, the nations round being comparatively barbarous and uncultivated. Below this plain was stretched out the plain of the nether world, with another Egypt and Nile almost the counterpart of those in this world; the sun and moon and heavenly bodies, after traversing above the world, descended in the west and passed back again over the plain of the nether world, rising again in the east. All the spirits of the departed went to the nether world, and those that were judged worthy of continuing life remained there with the same avocations and amusements that had occupied them in this world.

It is at Denderah before we come to any considerable remains of a temple. This temple, as it actually stands, was rebuilt in the time of the Ptolemies, and the decorations were continued down to the time of the Roman Emperors, but the inscriptions show that it was a restoration of an older temple which stood at the same place from the very earliest times. One inscription says: "The great building plan of Ant (Denderah) was found written in ancient characters on hide of the times of the successors of Horus." Another inscription says that King Totmes III. made a restoration of this monument found described in ancient characters of the time of King Khufu (the builder of the Great Pyramid of Gizeh). Thus it appears that the Egyptians regarded themselves as the keepers of the sacred plans of the religious buildings, which were handed down by writing and tradition from the most ancient times and were not deviated from in any essential particular; we may, therefore, regard them as models of the ancient temples which existed from the earliest time, and it is

interesting to notice many features in common between them and the Tabernacle erected by Moses by divine command and the temples of Ezekiel and Herod, and also the temples of the Greeks and Romans; there is as much similarity in the plan and arrangement of the great temples of Egypt as there is between the different cathedrals of the Christian Church. This temple of Denderah was dedicated to Hathor.

Egyptian Mythology.

Egyptian mythology is complicated by the fact that in various localities different names are applied to the same idea. The fundamental principal seems to have been to regard the heavenly bodies and powers of nature as symbols of the attributes of the Deity, and in most localities there is a divine Trinity. First, there is the masculine or creative principle symbolised by the sun, and called Ra-Harmachis at Heliopolis, Amen-Ra at Thebes, and so on; and in the philosophical idea representing the powers of goodness and light as opposed to evil and darkness. Secondly, there is the feminine or receptive and maternal principle symbolised by the moon and stars, and called Isis, Hathor, Muth, and several other names; and in the philosophical idea representing truth and faith, which keep alive and preserve the powers of goodness in states of decline symbolised by the night. Finally, as the result of a marriage or union between these two, there follows the third principle, the new-born day, represented by the sun rising again and called Horus; and in the philosophical idea representing the resurrection and regeneration, and the dawn of a new era of religion and civilisation in the world. The ceremonies and processions which took place in the temples would appear to have been theatrical representations of what takes place in nature; each hour and day being symbolised as a separate deity, and the great event being the triumph of the sun over the powers of darkness and its bursting forth in renewed splendour at the opening of day.

There was probably an entrance court before the Temple of Hathor at Denderah but if so it has been destroyed, and now one enters directly into a hall or porch supported by twenty-four columns; this is the Hypostyle Hall or Khent Hall—that is Front Room. It is 143ft. broad, 80ft. deep, and about 50ft. high; it is a most noble apartment of harmonious proportions, and at once strikes the beholder with its grandeur; the walls are decorated with reliefs recording the various Pharaohs who built or restored the temple. The ceiling represents the firmament and stars.

Passing through this room, with its beautiful and massive columns covered with inscriptions, we proceed along the central axis of the temple into the Hall of the Appearance, so called because the statue of Hathor, "the golden-rayed," was brought on festive occasions from the Holy of Holies in the rear into this hall to be exhibited to the people, who did not advance beyond the front room; this room is 45ft. 6in. square, and the ceiling is supported by six columns.

There were three small rooms on each side of the Hall of Appearance; one of those on the left side was the temple laboratory, where the incense, oils and ointments were prepared for the temple services, as the inscriptions thereon show. The second room is called the assembly-room, and it is supposed the offerings were placed here on the festal days. The third room afforded a passage out of the temple. One room on the right, or west side, was called the Silver-room, and contained the jewels and ornaments of the divine image and temple utensils of costly materials, as shown in the inscription, which gives the uses of the room. The second room formed an exit from the temple on that side; the third room formed a sort of anteroom to the stair leading to the roof on that side.

Following the main axis of the temple, the next room is called the Hall of the Altar, immediately behind the Hall of the Appearance. On the left from this a small anteroom leads to a long straight staircase ascending to the roof. There is also a room on this side called the Room of Purification, probably used in the

preparation of festival ceremonies. On the other side is another staircase, of short flights, winding round a square with landings at the angles and ascending to the roof; the inscriptions on these rooms and staircases refer to the great New Year's Festival, on which occasion there was a solemn procession of the priests carrying images of the deity through the temple and afterwards to the roof. On the roof is a small temple, from which the rising sun or the moon and the stars could be seen, and which presumably formed the goal of the procession before proceeding down the other staircase. The next room in the centre of the temple axis behind the Hall of the Altar is called the "Hall of the Cycle of the gods," or the "Middle Hall," and this is immediately in front of the cellar, adytum, or Holy of Holies. This sanctuary is surrounded by a passage round which are a series of small rooms used in the services of the temple.

Next to the dwelling of Hathor is "the Chamber of Flames," where the goddess is represented exterminating evil with fire; the next is called the "Throne Room of Ra"—the Sun—where the Pharaoh (who represented the deity on earth) is shown destroying a crocodile (evil) with his lance. On the west side are the "Rooms of Purification" and "the Room of a Necklace," where the king is shown presenting a necklace to Hathor. In the thickness of the walls of the temple are twelve crypts or secret chambers, in which, it is supposed, the treasures were kept, and the entrances to which were ingeniously concealed. On the roof were six rooms, three on the east and three on the west side, devoted to the worship of the slain and risen Osiris, as shown by the inscriptions.

I have passed by Abydos, where there are interesting mortuary buildings with some of the most beautiful sculptures of Egypt, dating from the time of Seti I.; and shortly above Denderah we come to Thebes, with the great temples of Karnac and Luxor. It is quite impossible in the limits of one evening to describe these in detail.

Almost all the temples on the west bank of the river were mortuary buildings, the west or setting sun being devoted to the dead.

Esneh.

We next make a stop at Esneh, 484 miles above Cairo, where are the remains of the Hypostyle, or front room, corresponding with the similar apartment already described for Denderah; it is a very noble specimen, in excellent preservation. The size of the hall is 103ft. by 52½ft., and is supported by twenty-four columns 37ft. high. There are high abaci over the capitals of the columns, on which rest the massive architraves, and again on these the roofing blocks, each block varying from 22ft. to 26ft. long and 6ft. 6in. wide. It is calculated that there are 110,000 cubic feet of sandstone in this hall alone, and the whole of the interior is covered with inscriptions. According to these the hall was founded not later than Totmes III. (Eighteenth Dynasty) and afterwards rebuilt by the Ptolemies; it was dedicated to the ram-headed Khum-Ra, one of the representatives of the sun god, and signifying the union between the rising and setting sun.

The hall is remarkable for the great beauty of the capitals of its columns, which differ from one another but are not discordant; the sculptor has derived his inspiration from the lotus, palm, and other foliage.

Edfu.

A few miles above Esneh is Edfu, a little village in which stands the most complete specimen extant of an ancient Egyptian temple. The plan is almost the same as that at Denderah, with the addition of a large court surrounded by a colonnade in front of the temple, entered by a huge pylon or gateway, with two pyramidically-shaped massive towers, which originally formed the main entrance to all Egyptian temples. There is also a girdle or encircling wall going round the whole temple and forming an outer protection, which probably originally existed round most Egyptian temples. The pylons in front, or "watch towers" as they are called in the inscriptions, are 100ft.

high; an easy staircase surrounded with good hewn stone in large blocks in the pylon ascends to the summit, from which a magnificent view of the winding Nile is obtained. In front of the pylons are four vertical deep niches, in which were placed the higher flagstaffs, covered with copper, as the inscriptions tell us, "to avert the storms of heaven"—in other words, they acted as lightning conductors as well as flagstaffs, a proof of the scientific attainments of the Egyptians.

The open court in front of this temple (which is wanting in Denderah) is spacious and open to the sky, paved with flags and surrounded by thirty-two columns on the south or front, the east and west sides forming a colonnade. The temple itself is sacred to Horus (the sun at his rising). The orientation is exactly the opposite to that at the temple of Denderah, the front of which faces north, whereas this temple faces south, that is, it faces the position of the sun during the daytime, whereas the one at Denderah, dedicated to the gods and goddesses of night, faces the position of the sun in the nether world, according to Egyptian ideas, during the night. The temple was rebuilt during the reigns of the Ptolemies, but the inscriptions inform us that it was carried out according to the plan of the great writing that fell from heaven to north of Memphis. It is further stated that the Great Hall was built according to the arrangements of temples written by Kherheb Imhotep, son of the god Ptah; this shows that the Egyptians in the arrangements of their temples rigidly adhered to the traditions handed down to them from antiquity and preserved amongst them in writing. As at Denderah, a history of this particular temple and a description of the rooms and the uses to which they were put is given in inscriptions on the walls. From the foundation of the new temple to its completion and the festal entry of the deity B.C. 142 was a period of ninety-five years. The hall following the front room at Denderah (a temple sacred to the gods of the night) is called the "Hall of the Appearance," and the next room the "Hall of the Altar"; then comes the "Hall of the Cycle of the Gods." I suggest that this is because after the sun has run his course at night he appears in the hall to the worshippers in all his glory, Hathor being on such occasions being called the Golden Beamed and the sun goddess, and all the powers of heaven are, as it were, awake to their duties; but the corresponding rooms at the temple of Horus (a god of day), at Edfu, are called the "Festal Hall" and the Hall of the Repose of the Gods," which seem to indicate the refreshment and repose of the deities after the day's work is done.

Following the front court, we come upon the Hypostyle Hall, or front room, which forms the first room at Denderah as it now stands. This hall contains, against the front wall and between the pillars, two little rooms, one on each side like chapels, which we learn from the inscriptions were intended, the one on the left as an incense chamber to hold the incense and holy water required on religious festivals, and the one on the right as a chamber or safe for the sacred rolls and books of the temple, a catalogue being given on the walls. The ceiling of this hall is covered with astronomical representations.

A few miles above Edfu the channel of the Nile contracts and passes through a chain of sandstone mountains, which are extensively quarried. Vast chasms are cut down through the mountains in every direction as if they had been sawn, the tool marks of some such instrument as a saw being plainly visible. These were the quarries of ancient Thebes, and extend for miles.

Forty miles above Edfu is the beautiful temple of Kôm Ombo. The peculiarity of the plan is that it is a double temple, with twin entrances side by side, and double twin suites of rooms throughout; the left half on entry is sacred to Horus, god of the day, and the right half to Sebek, the crocodile-headed god (a god of the night). Like the other temples we have been examining, there has been a restoration under the Ptolemies of an ancient building which stood on the site.

A short distance further south brought us to the first cataract, the southern end of Egypt proper, near which are extensive granite quarries. It is said that all the obelisks, granite blocks, and pillars found in Egypt came from these quarries; the labour of working them, and taking them down to the river and to their various destinations, must have been almost incredible.

Above the cataract and quarries is the picturesque island of Philæ, crowned with temples, walls and colonnades. The island is about a quarter of a mile long, and 150 yards broad; the Temple of Isis, with its accessories, occupies about half the length of the island. The temple was built at various times, and owes its charm not only to the gracefulness of its architecture, but also to the beauty of its situation. The inner part of the temple, the first apartment of which is an elegant hypostyle consisting of an uncovered forecourt and a covered hall beyond, with four columns on each side, is one of the most beautiful halls in Egypt, not only on account of its well-balanced proportions and admirable preservation, but especially on account of the beautiful and delicate colouring, which, being very little perished, conveys a better idea than almost any other example of what the gorgeous effect of these buildings must have been when their colours were fresh and unfaded.

On the east side of the island is an elegant little temple, or pavilion, which goes by the name of "Pharaoh's bed," with five columns on each side and four at each end, and half enclosed; it is a favourite subject with painters on account of its elegant form and suitability to the landscape, though the inscriptions within it are of no importance.

A discussion followed, in which Messrs. G. H. Fellowes Prynne, J. Marshall, Dr. Weymouth, R. Phené Spiers, J. E. Newberry, Percy Newberry, and A. T. Bolton took part. A vote of thanks was accorded to Mr. Alexander Payne, who briefly replied.

Messrs. T. S. Gregson, J. A. Hallam, F. C. R. Palmer, W. H. Stonebridge, and R. J. Goulston were then unanimously elected members of the Association.

Annual Elections.

The scrutineers for the annual elections then announced that the following gentlemen had been elected for the next session:—

President: Mr. W. H. Seth-Smith.

Vice-Presidents: Messrs. W. A. Pite and R. Elzey Smith.

Committee: Messrs. G. H. Fellowes Prynne, H. T. Hare, A. Bolton, H. A. Satchell, F. G. F. Hooper, W. A. Forsyth, M. Garbutt, A. A. Hart, A. B. Mitchell and E. H. Sim. (In order of number of votes received.)

Hon. Treasurer: Mr. H. W. Pratt.

Hon. Librarian: Mr. A. S. Flower.

Hon. Secretaries: Messrs. G. B. Carvill and R. S. Balfour.

Mr. W. H. Seth-Smith then proposed a vote of thanks to Mr. G. H. Fellowes-Prynne, the retiring president, and referred in complimentary terms to the great service he had rendered the Association in that position. The vote was seconded by Mr. A. T. Bolton, and was carried with considerable applause. Mr. Prynne acknowledged, and, after referring to the able assistance rendered him by the hon. secretaries, Messrs. G. B. Carvill and R. S. Balfour, and the secretary, Mr. D. G. Driver, proposed a vote of thanks to them which was heartily accorded, and acknowledged by Mr. Carvill.

On the motion of Mr. F. D. Clapham, votes of thanks were passed to the hon. treasurer, Mr. H. W. Pratt; hon. librarian, Mr. A. S. Flower; the editor of "A. A. Notes," Mr. A. Beresford Pite; and the other officers. Mr. W. H. Seth-Smith announced that Mr. Fellowes Prynne had kindly consented to take up the editorship of "A. A. Notes," owing to Mr. Pite retiring, and Mr. H. A. Satchell the sub-editorship. The meeting then terminated.

Dr. Johnson's Birthplace in Market Square, Lichfield, is to be bought by the Lichfield City Council, and will be used as a museum of Johnsonian relics.

Professional Practice.

Leeds.—At last Wednesday's meeting of the Leeds Board of Guardians the plans prepared by Mr. A. Saxon Snell, F.R.I.B.A., of Southampton Buildings, W.C., for extending the infirmary were approved. The committee reported that the most desirable manner of providing additional accommodation was by utilising section 6 and the main schools' building, and erecting additional blocks in place of the old building behind the schools. They recommended the Board to provide infirmary accommodation for 770 cases. The main building of the schools should form the administrative block, containing entrance hall, committee rooms, medical staff and matron's offices, library, visitors' rooms, matron's

A block for male and noisy cases should be erected behind it, and no alteration be made in the front elevation of the schools' building. Separate receiving wards for male and female cases to be provided on the ground floor of the schools' building. A new mortuary would also be erected. The total accommodation would be for 358 males and 412 females. With regard to the extension of the Nurses' Home, the committee believed that the most feasible plan would be by adding another storey throughout. The present dining-room and kitchen could then be thrown into one large room, and a new kitchen provided on the floor above. The committee's recommendations were adopted.

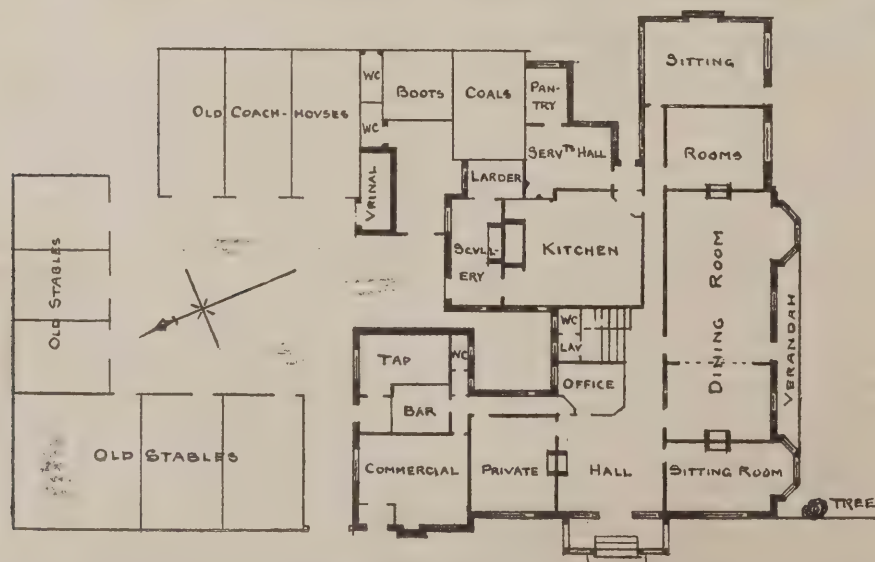
Newcastle.—The Duke of Connaught visited Newcastle last week to open the new Y.M.C.A. buildings which have been erected

half a dozen shops, and several rooms on the upper floors, reached by means of a lift. The café in the basement is well lighted, cheerful, and comfortable. The main dining room is 63ft. long and 28ft. wide, and there are two smaller dining rooms, one being for ladies. There are also in the basement the heating chamber, kitchen, scullery, and lavatories. At the back of the shops in Blackett Street a meeting room 37ft. long and 25ft. wide has been provided, with an entrance from the vestibule of the Y.M.C.A. and an entrance to the stairs of the large hall. On the other side of the vestibule is a bicycle stand, with storage for a large number of machines. Just above this, on the "mezzanine" or half-way floor, a club dressing room is provided, with lockers, a lavatory, and bath room. On the third floor is the gymnasium, placed immediately over the large hall and provided with a double door to prevent any sounds of the exercises reaching the hall. The remainder of the floor, with the exception of one class room, has been arranged as a photographic studio, with reception room and dressing rooms. The gymnasium is 48ft. long and 33ft. wide, and is lighted from the roof; the photographic studio is 31½ft. by 22ft. Mr. Pringle was the contractor.

Southborough, Tunbridge Wells.—The Hand and Sceptre Hotel, occupying a prominent position at Southborough, near Tunbridge Wells, was formerly well-known as a coaching inn on the London road. The old premises, although picturesque, were badly built and very dilapidated, and accordingly the house has been entirely rebuilt as a high-class residential hotel. Besides the accommodation shown on the ground floor plan on this page, there are fifteen bedrooms, two bathrooms, and a large billiard room over the bar with separate entrance. The new plan was determined to a large extent by the position of the old cellars and existing stables, which were retained for use in the new building. The walls are faced up to the moulded string-course with red bricks from a local maker; above that level they are covered with rough-cast all round, except to the billiard room, where they are tile-hung. The large gable on the west front is framed in solid 7in. square pitch-pine, stained and oiled, carried on the projecting floor-joists and six large brackets, and filled in with rough-cast between the timbers. The design is by Richards H. Hill, F.R.I.B.A., and Ernest Hill, A.R.I.B.A., of 3, Lombard Street, E.C., and the work was carried out by Messrs. H. Somerford and Son, of Orpington and Clapham.

Warmley, Bristol.—New parochial offices have been built facing the village green at Warmley. Mr. Henry W. Bennett, Bristol, is the architect. To the right of the vestibule and entrance hall a spacious Board room is provided, which faces Warmley Green in one direction and overlooks the village in the other. To the left of the entrance hall is a well-lighted clerks' office, abutting on which is the strong room. At the end of the hall a room for the relieving officers is provided, adjoining which are the paupers' rooms, separate entrances being provided for male and female applicants who require to see the Board. To the left of the relieving officers' department there is a cloakroom and lavatory for the Guardians. A commodious committee room and a store-room are also provided on the ground floor. The upper part of the building forms the caretaker's residence. The whole structure is well lighted, adequately appointed, and very suitable for the present needs of the Board of Guardians. The contractors were Messrs. Adams and Jefferies, builders, of Oldland.

Hull School of Art: Site chosen.—Three sites were proposed for the Hull School of Art (which is to cost about £19,000), one on the north side of John Street, Kingston Square (facing the Oval), one on the north side of Wright Street, and the other at the corner of Bond Street and Jarratt Street. This last was selected by the Technical Institution Committee last week.



HAND AND SCEPTRE HOTEL, SOUTHBOROUGH, NEAR TUNBRIDGE WELLS, KENT. R. H. HILL, F.R.I.B.A., AND E. HILL, A.R.I.B.A., ARCHITECTS, 3, LOMBARD COURT, E.C.

quarters, and quarters for the assistant medical officer, steward, &c., with servants' bedrooms on upper floors. The upper floors and wings to be utilised as wards, and proper sanitary blocks erected. Other blocks would comprise kitchen and stores (one-storey building), and double wards (three-storeys in height), and a one-storey building for lying-in cases. The committee recommended that the existing medical officer's house be not interfered with.

at the junction of Grey, Grainger and Blackett Streets from designs by Mr. J. W. Taylor, F.R.I.B.A., of Newcastle. The Association itself occupies most of the interior, with a reception room, a reading room, and fourteen smaller rooms in which the general work of the members will be carried on. A large hall for meetings seats 700 persons, and there is a smaller hall to hold 300 people. The portions to be rented include the café in the basement,

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Making a Stable Cooler.

RODBOROUGH, STROUD.—RODBOROUGH writes: "We are asked to make some alteration in the roof of a stable in order to make it cooler in summer. The roof is 30ft. long, 14ft. span, covered with corrugated iron, painted cream outside. It is lined with matchboarding, with layers of thick felt between the iron and the boarding. This stable, notwithstanding ample ventilation, is very hot indeed in summer. What would be the best means of reducing the inside temperature?"

If there were an air space between the boarding and the iron sheeting the stable would be both warm in winter and cool in summer. This could now be obtained by either inserting a second ceiling below the present boarding, or by stripping off the corrugated iron and refixing. Probably an air space of a very few inches would suffice, but as much as 9in. or 12in. would be better. In any case it should be contrived so that a current of air passes along it. G. A. T. M.

Discolouration of Plastering.

BARNSLEY.—G. W. S. writes: "I have lately had some plastering executed with Robinson's cement, and find after it has been finished a few days that a grey discolouration breaks out in some parts, more particularly on the walls. Care was taken to execute the work strictly according to the printed instructions issued by the manufacturers. The wall surfaces are clean and of new brickwork, no ironwork is under the discoloured portions, nor do I find any traces of iron in the sand. On writing to the manufacturers on the subject I am informed it may be owing to the sand containing some iron or to the workmen's tools not being kept clean. That is not the case, else why should the ceilings not be affected? I also find that occasional blistering occurs to the setting coat after being finished a day or two. Will you please tell me what in your opinion is the cause of the above defects and whether they are characteristic of the material?"

In the absence of samples of the work it is difficult to accurately define the cause of discolouration. It may be due to iron in the sand of the mortar used for the brickwork. This theory is partly confirmed by the fact that the ceilings are not affected. The cause of discolouration may be traced by cutting out portions of the defective plaster, also portions of the brick mortar, and having them analysed. This would be more effectual and satisfactory than testing the sand which, it is assumed, was part of, or similar to, that used as an aggregate to the cement. Robinson's cement, like other white cements, is formed from a gypsum basis, and has to be thoroughly calcined and finely ground before being bagged up for commerce; therefore it is not liable to "blister." The blistering is probably due to the presence of imperfectly slaked particles of lime, which may have been incorporated accidentally or intentionally. Some plasterers mix a small portion of lime-putty with the cement for the finishing coat, thinking that it will work more freely, "easier" than if used neat. In my opinion discolouration and blistering are not characteristics of the cement in question. W. MILLAR.

Ancient Lights.

MERE, WILTS.—J. H. writes: "A. has a window overlooking B.'s property. B. has a tenant that wants to put up a workshop. How far must B.'s tenant keep away from A.'s window? In the first place A.'s window was put in on sufferance. But of course it has been

in its present place more than twenty years. A. now threatens that if B.'s tenant puts up anything at all he will pull it down again. Can he legally do this?"

There is no particular distance at which it is lawful to erect the proposed building. It must not be erected at such a distance and of such a height as to cause a substantial privation of light sufficient to render the occupation of A.'s premises uncomfortable, or prevent his carrying on his accustomed business on those premises as beneficially as he had formerly done. In estimating the injury to light by the erection of a building the matter to be considered is whether there is any diminution of light for any purposes for which A.'s house may be reasonably considered available. The new building cannot be erected so as to cause such a diminution. H. P. B.

Mild Steel Stanchions.

BROMLEY, KENT.—J. E. J. writes: "On p. 233 of your issue for May 2nd Mr. Adams gives a formula for the safe resistance to compression of a steel stanchion, H section, which he says is Gordon's formula. I presume this is for pillars of less than 30in. diameter. I have worked out an example according to this formula, and get a result that appears far too small; which suggests a printer's error in Mr. Adams's formula. Should it not read:

$$R_c = \frac{A r_c}{1 + a \left(\frac{l}{d}\right)^2}$$

instead of

$$R_c = \frac{A r}{l + a \left(\frac{l}{d}\right)^2}$$

If I am wrong would Mr. Adams kindly put an example into figures?"

There was a printer's error in the formula given at p. 233. It should read

$$R_c = \frac{A r_c}{1 + a \left(\frac{l}{d}\right)^2} \quad \text{instead of } l + \&c.$$

Example: Dorman Long and Co.'s special stanchion section of rolled steel joists, namely 9' x 7' x 58lbs. x 18ft. high. Then $A = 17.05$, $r_c = 6.5$, $a = \frac{1}{2500}$, $l = 216$, $d = 7$; whence safe load = $\frac{17.05 \times 6.5}{1 + \frac{1}{2500} \left(\frac{216}{7}\right)^2} = 80$ tons.

By Dorman Long and Co.'s table of strength the ultimate load on this stanchion would be 232 tons, and allowing $\frac{1}{4}$ for stationary working load the safe load would be 58 tons. Taking the value of a given in "Notes in Building Construction," Vol. IV., p. 114, for wrought iron of various sections, which would be practically the same as mild steel, namely, $a = \frac{1}{1000}$ both ends fixed, this stanchion works out to a safe load of 54 tons.

HENRY ADAMS.

Strength of T-Rafters.

STOWMARKET.—P. J. T. writes: "I should be much obliged if your expert would explain, by calculations, how the size of a wrought iron T-rafter can be obtained from Gordon's formula.

$$B W \text{ tons} = \frac{16 s}{1 + \frac{l^2}{a d^2}}$$

s = sectional area of inches; l = length in inches; a = constant = 1500; d = least diameter or breadth in inches. Maximum stress on rafter, 15.89; unsupported length, 6.5ft. This is the example given on page 176, "Designing Ironwork" (Henry Adams), and though the size of the rafter is found to be $4\frac{1}{2}$ in. x $4\frac{1}{2}$ in. x $\frac{3}{8}$ in, I cannot follow how it is obtained from the formula given."

The working asked for is as follows:—The sectional area of a $4\frac{1}{2}$ x $4\frac{1}{2}$ x $\frac{3}{8}$ tee = 5.27 sq. in.; $\frac{a}{2} = 750$ for only one end fixed, factor of safety = $\frac{1}{4}$ for roof work.

$$\frac{16 s f}{1 + \frac{l^2}{a d^2}} = \frac{16 \times 5.27 \times 75}{1 + \frac{78^2}{750 \times 4.5^2}} = 15 \text{ tons.}$$

HENRY ADAMS.

Book on Chapel Design.

SHEFFIELD.—J. J. S. writes: "I should feel obliged if you will kindly say if you know of any book dealing with designs, &c., of chapels."

The only book we can recommend is "Church Design for Congregations; its Development and Possibilities," by James Cubitt, with nineteen plates, 8vo. cloth, 1870, a copy of which can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C., 5s. 6d., post free. It was published at 10s. 6d., and is now out of print. The foregoing reply will also be in answer to the query of "W.F." (Upper Clapton, N.), whom we might also inform that there is no stipulation requiring the chancel of a Wesleyan chapel to point eastwards. We have given numerous illustrations of small churches and chapels in back numbers.

New Patents.

These patents are open to opposition until June 19th.

1899.—Metal Window Frames and Sashes.—8,376. C. A. HASLETT, Philadelphia, U.S.A. At each side of the frame are metal tubes screwed into the head and the sill. Weight tubes are also provided, and attached to one end of each sash cord or chain is a T-shaped runner, fitted with springs, with which the sash engages. It is claimed that the framework is fire- and water-proof, and that the parts are easily accessible and repairable.

Roof Glazing.—10,045. C. CORDON, Harpenden. The glass sheets have their side edges slightly turned up, so that there is a shallow trough formed for carrying off any water that may find its way between the glass and the metal capping. This latter is of arched section, with cross tie-pieces, and is fixed in place by screws that pass between the spaces intervening between adjacent sheets of glass. By this construction lead back gutters and aprons at junctions are avoided.

Brick and Tile-making Machinery.—11,084. D. R. ADAM, Paisley. The object of this invention is to enable existing brick-making machinery to be used for making corner, round-nosed, splayed, and other odd shape bricks or tiles, without necessitating the alteration of the moulds of the filling table. It consists of the combination of a device connected with the machine so as to reciprocate vertically, and carrying a knife for cutting off a piece of the clod, a guide-way having an opening corresponding to the piece cut off the clod, and a press-box having a liner made in pieces that fit together to the shape of the required brick or tile.

1900.—Heating and Lighting Basements.—1,822. O. B. H. HANNEBORG, Christiania, Norway. Extending from the roof into the basement is a good-sized pipe having a large funnel-shaped top. This pipe and funnel have mirror surfaces, and over the funnel a large mirror is pivoted to an adjustable arm. The light and heat taken up by the mirror is thus transmitted to the cellar. The device is only intended to be used when light cannot be admitted into the basement in any other way.

Hanging Wallpaper.—4,788. T. E. MOFFITT, Bathgate, U.S.A. The apparatus consists of a rectangular frame having transverse rollers for supporting the paper and guiding it, a reservoir and distributing pipes for laying the paste on the paper, and a smoothing roller. The device is light and is used in the hands, being simply rolled against the wall, which unrolls the paper it carries, pastes it, and smooths it down.

The following specifications were published on Saturday last, and are open to opposition until June 25th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—7,776, DRAKE and GORHAM, method of adapting candelabra for the electric light.

8,111, HULANDS and HULANDS, machines for breaking up roads. 8,764, FISHER, gas burners. 9,020, BEVIS and GIBSON, lift valves, safety valves, &c. 10,587, BERTENBURG and FELLER, self-closing union-joint for water pipes, hoses, &c. 11,577, PEASE, roofs. 11,900, BROWN, locks and keys. 12,359, WADDELL, catch for doors. 12,365, HARRISON, water taps or valves. 12,458, MURRAY, automatic apparatus for periodically discharging chambers or receptacles, particularly applicable to sewage filters. 12,638, WEAVER, insertion pipes and joints for drains and sewers. 12,652, HURRELL and STURGEON, tap for water. 12,712, WOODHOUSE, WOODHOUSE and COOK, syphon-flushing cisterns. 12,874, APPLE-GARTH, glass globes, screens, or covers for electrical incandescent and other lamps. 12,919, BASTOW and JESSOP, wood planing, moulding, and taking-out-of-wind machine with automatic feed. 12,924, FLETCHER, lavatory apparatus. 12,938, DOWSON, manufacture of gas. 12,958, TANNETT-WALKER, planing machines. 13,049, WALKER, WALSH and WALSH, manufacture of bricks, slabs, tiles, pillars, and plaques from small pieces of aventurine. 13,124, LAWSON, glazing for roofs. 13,401, YOUNG, supports for incandescent lamps. 14,470, CHAPMAN, cabinets, tables, &c. 14,897, LAKE (Puttkammer and Orthmann), apparatus for checking workmen's time. 16,459, PONCES, acetylene gas generators. 21,200, JACKSON, incandescent gas burners. 24,118, KOSOV, WISCHEW, SOFONOW and NAUMOFF, locks for doors. 24,360, MCGINN, acetylene gas apparatus. 25,083, BRAZELL, hinges for gates. 25,759, KUNZELMANN, lock.

1900.—751, GODFREY (Emrik and Binger), coating paper, cardboard and other materials with water colours to be used for painting pictures, &c. 1,111, HUDSON and RANN, apparatus for controlling the draught in flues and chimneys. 2,046, GLAUERT, wrought iron window sashes. 3,157, BOULT (Theyskens), manufacture of pulleys. 3,436, RUSZNÁK, means for producing painted patterns on walls and other large surfaces. 4,244, FIMMEN, process and apparatus for the manufacture of artificial stone. 4,453, ROBINS, pipes for drainage purposes. 4,599, BURTON, window holders and fasteners. 4,959, DÖDERLEIN, panelling. 4,969, HEISLER and FISCHL, device for lifting doors and windows for lubricating purposes. 5,009, MARKWARDT, door and window hinge. 5,011, HOFFMAN, spring hinges. 5,034, HINSDALE, flushing valves. 5,055, JACOBSEN, valve apparatus for hydraulic presses. 5,253, LEWIS, apparatus for disinfecting and flushing drains and sewers.

Masters and Men.

The Dundee Slaters' Strike has now moderated, only twenty men being on the strike roll.

The Dispute in the Belfast Building Trade.—Twenty-four employers have acquiesced in the carpenters' demand for increased allowances when travelling outside the city, and a reduction from 54 to 52½ hours per week.

The Cheltenham Builders' Labourers, to the number of 200, have struck for an advance on their present wage of 5d., and are willing to submit to arbitration as between 5d. and 6d. The masters decline to arbitrate unless between 4½d. and 6d.

The Swansea Builders' Labourers have been granted an increase of a farthing an hour, making the standard rates as follow: Labourers, 5½d. per hour; scaffolders, engine and mortar-pan men, and bathstone sawyers, 6d. per hour; hauliers, 4s. per day; overtime to be at the rate of time and a quarter for the first three hours, and then time and a half. Overtime to be paid hauliers after 6 p.m. and 2 p.m. on Saturday. 200 men are affected.

Hull's new Municipal Art Gallery was opened last week. It has cost £3,000.

"BUILDERS' JOURNAL" SHILLING FUND.

AS announced last week, we propose to close this fund on Monday next, May 21st. We shall be obliged, therefore, if any of our readers who still have collecting forms will send them in by that date. It will be seen that we have now nearly reached the total of 3,000 shillings, and we trust that our readers will during the next few days send in the amount required to complete that sum.

Shillings.
Previously acknowledged... 2,708

Per John William Harrison, Ashley Street, Rock Ferry, Cheshire (Third Contribution).

E. Turner	2
J. Bird	2
T. Hogan	2
W. L. Booth	2
E. Davies	2
J. Hancock	2
J. D. Watson	2
W. Owen	1
R. Allen	1
D. L. Cleland	1
J. W. Bell	1
J. Peers	1
J. G. Lea	1

Per W. A. Osborne, 150, Old Street, London, E.C. (Fourth contribution.)

Thomas Sayers, Sydney	5
Mrs. Sayers, Sydney	5
W. A. Osborne, London	2½
Mrs. Osborne, London	2
Mrs. Dalcorn, Weston-super-Mare	2
Mrs. Stacey, Tynemouth	2
E. Stacey, Tynemouth	1
J. Lee, Tynemouth	1
A. Whitehead, Leeds	1
W. Bennett, Harrogate	1
R. W. Ledger, Harrogate	1
Mrs. Ledger, Harrogate	1
George Ledger, Harrogate	½

Per Cowley and Drake, builders, Willesden Green, N.W.; from employees and others.

H. Blight	2
C. Atkins	1
Raine and Co.	2
G. A. Wall	2
George Mitchell	1
A. Williamson	1
— Wilson	1
F. Hill	2
J. Farthing	3
W. Salter	1
F. G.	1
P. Thomas	1
H. Scamen	3
C. W.	2
R. Woolston	1
— Byfield	1
— Colwill	1
— Green	1
— Warne	1½
— Blatchford	2
— Saunders	2
— Mackley	1
— Harris	1½
A. B.	1
Meyer Mitchell	1
— Laurence	1½
— Cumnee	2
— Jameson	1
Dr. Bardsley	2
H. J. R.	2
I. H. T.	1
C. A. Lawrence	2
H. W. Meredith	2
Lee and Sons	2
Knights, Sons, and Co.	2
H. Rasey	1
Wildash and Co.	2½
— Burt (Clerk of Works)	2½
J. Drake	2½
— Shields	1
— Trump	1

— Traviss	1
— Wardle	1
— Baines	1
— Edwards	1½
— Peek	1½
T. Jones	1
L. S.	2
Collected by J. D.	3½
F. L.	1½
W. D.	1
A. C. Lee	1
J. Cowley	1
— Tucker	1
— Hill	1½
F. Johnson	1
— Rogers	1
T. Drake	1
— Murphy (foreman)	1
— Chinn	1
— Downing	1
— Arnold	1
— Midson	1
— Waters	1
— Warwick	1
— Vincent	1
S. Downing	1½
— Hill	1
— Bond	1
— Amos	1
— Grantham	1
— Bronsden	1
— Ager	1
H. Smith	1
— Elkins	1
— Mold	1
— Alford	1
— Edwards	1
— Hayes	1½
Collected by W. D.	10
Collected by G. H.	10
C. Gillingham	2½
Collected by C. C.	6½
	120

Per S. T., Ravensbourne Park, Catford.

S. T.	10
J. L.	1
A. L.	1
G. L.	1
A. H.	1
J. W. T.	6
	20

Total ... 2,893

The following additional contributions have been received by the Executive:—

FOR INDIVIDUAL SECTIONS OF THE WORK.

Messrs. Cafferata and Co. (Newark-upon-Trent).—The whole of the Plaster of Paris, Keene's, and Parian Cement for the whole of the Homes.
The South Staffordshire Blue Brick Masters' Association (West Bromwich, Staffs.).—25 000 blue bricks.
Messrs. Dixon and Co. (Liverpool and London).—A 50ft. iron church.
Messrs. Anselm, Odling and Sons, Ltd.—The marble steps for the six Homes.
The London Sand Blast Decorative Glass Works.—The whole of the ground glass for the Homes.
Messrs. Smith and Turner.—Sets of hinges for the Homes.
Messrs. Bolding and Sons, Ltd. (second gift), per Mayor of Windsor.—A bath and appliances.
Mr. William Willett.—A staircase for a Home.

FOR THE EQUIPMENT OF THE HOMES.

Messrs. Burroughs, Wellcome and Co., per Mayor of Windsor.—No. 20 tabloid medicine chest, fitted complete.
Messrs. Elkington and Co., per Mayor of Windsor.—80 table forks, 80 dessert forks, 80 dessert spoons, 18 table spoons, 80 tea spoons, 12 salt spoons, 12 egg spoons, 6 sauce ladles, 2 soup ladles, 4 gravy spoons.
Mr. Herbert Mappin (Messrs. Mappin and Co.), per Mayor of Windsor.—80 table knives, 80 dessert knives, carvers and forks.

SUBSCRIPTIONS.

	£ s. d.
Workmen of Mr. Frank Hawkey (Surbiton)	11 0 0
Mr. Frank Hawkey (Surbiton)	10 0 0
Mr. T. L. Green	10 10 0
Workmen of Messrs. J. W. Falkner and Sons	6 18 9
Workmen of Messrs. G. E. Wallis and Sons (Maidstone)	5 6 10
Workmen of Mr. T. L. Green	5 5 9
Mr. George Nelson Watts (Notting Hill)	5 5 0
Mr. Alfred Bush	5 5 0
Mr. George Axton (Shepherd's Bush)	5 0 0
Messrs. G. E. Wallis and Sons (Maidstone)	5 0 0
Workmen of Mr. William Shepherd	4 10 0
Workmen and Staff of the Crittall Manufacturing Company (Baintree, Essex)	4 7 0
Workmen of Mr. Henry Gough (Wolverhampton)	4 0 0
Workmen of Messrs. G. Wooliscroft and Son, Ltd. (Hanley, Staffs.)	3 7 10
Messrs. Flint, Brothers and Workmen	3 3 0
Workmen of Messrs. T. and W. Farniloe, Limited	2 12 9

Workmen of Messrs. T. Rider and Son, per Mr. Roberts	2 5 0
Mr. S. Powell and Workmen (Bedford Park)	2 2 0
Workmen of Mr. H. J. Appleton	2 0 0
Mr. George Ashby and Workmen	1 13 6
Workmen of Mr. Stanley G. Bird, per Mr. G. J. Newson	1 10 0
Workmen of Mr. G. Nelson Watts, per Mr. G. E. Napier (Notting Hill)	1 8 6
Workmen of Messrs. W. Scrivener and Co. (Regent's Park)	1 2 9
Mr. T. H. Batstone (Willesden)	1 1 0
Mr. F. R. Blunt (Leeds)	1 1 0
Workmen on the Redstone Park Estate (Redhill)	1 0 0
Workmen of Mr. William Hall (Liverpool)	16 4
Workmen of Messrs. William Thornton and Sons (Liverpool)	15 0
Workmen of the late Mr. Edward F. Woodward (Bri tol)	12 0
Mr. E. Parsons (Ramsgate)	10 0
The Painters in the Employ of Messrs. T. Rider and Son	7 0
Two Friends	2 6

Surveying and Sanitary Notes.

For Sewerage Works at Leeds £100,000 are proposed to be spent. A Local Government Board enquiry was held on Friday.

The death is announced of Mr. Thomas Nuttall, C.E., F.S.I., of Fernsholme, Bury. He was sixty-two years of age, and was highly esteemed as a Parliamentary surveyor.

Mr. James Green, F.S.I., was last week appointed, for the fifteenth consecutive year, chairman of the Assessment Committee of the Parish of St. Mary Abbott's, Kensington.

Institute of Sanitary Engineers.—At a meeting of the election committee held on May 9th, Mr. J. R. Siva S. Aiyar (Madras) and Mr. J. J. Marsland (Bombay) were elected members.

Keighley Sewerage System.—At the Keighley Municipal Offices last week a Local Government Board enquiry was held respecting the application of the Corporation for permission to borrow £15,670 for sewerage purposes. No opposition was made.

Mare Street, Hackney, N.E., is proposed to be widened at several points so as to obtain a uniform width of 70ft. The scheme also includes the formation of a new street from Morning Lane to Paragon Road, and the total estimated cost of the improvements is £660,750, the estimate for works being £42,000 and for land £618,750. The preamble of the Bill embodying the scheme has been proved.

County Council's Liability for Main Road Accidents.—At the Lancaster County Court on Friday last, Dr. J. J. Butler obtained £15 and costs for injuries received to a horse through its falling on a road that was being repaired by the Lancaster County Council. The macadam had been watered, and, as it was freezing at the time, the surface became like ice. The surveyor had ordered sand to be put on, but this was not done till after the accident.

The Annual Dinner of the Sanitary Institute was held at the Holborn Restaurant on Friday evening, the Duke of Cambridge presiding. Mr. T. W. Russell, in responding for the Houses of Parliament, proposed by Sir W. Preece, praised what the London County Council had done for housing the working classes, and said they were carrying out a great work amidst tremendous difficulties. If there was no room in the cities, the authorities must provide dwellings outside, and that was exactly what the Government proposed to give the Council power to do. It was said that the County Council already had sufficient powers, but that was not the case.

More Street Improvements in Leeds.—The Leeds Improvements Committee have purchased from the trustees of the Burley Church Schools sufficient land to widen that part of Cardigan Lane to 48ft. Other purchases have also been made which will enable the Committee to make a fine approach to the new Burley Recreation Ground from the Kirkstall and Bramley districts. Woodland Lane, Chapeltown, is being widened from 26ft. to 36ft, from Old Pasture Lane to Back Lane,

and the house recently purchased by the Corporation in Blackman Lane, opposite Blenheim Chapel, is shortly to be demolished, and the width of the road increased to 50ft.

"The Improvement of our Roads" was the title of Mr. A. Moresby White's paper last week before the Society of Arts. He thought that up to the present no method of road-making that was absolutely satisfactory had been discovered. The proper method was that of the railway engineer, who used large lumps of slag as a basis, and upon them placed smaller pieces, with finer material still for the surface. Not half enough money was spent in rectifying the early faults in the formation of roads. Drainage of the whole of the road was, perhaps, one of the most important things that could be attended to; but whether they would ever see any tracks made through London for the use of cyclists he did not know. He was bold enough to suggest a year or two ago that it was a matter which should not be beneath the notice of the County Council in making a great arterial road through London.

Disposal of Town Refuse.—In the course of a recent lecture on this subject delivered before the Society of Engineers, Mr. Brierley Denham Healey indicated by a table of coefficients the value of working by several systems, the efficiency of which was shown to vary from .52 to 1.0, the average of six systems being 0.7. He then showed how great was the loss of calorific value when too many furnaces were connected to one steam boiler, and observed that when using natural draught the temperature of the flue gases was considerably less than when using forced draught, the latter requiring about 2lbs. of air per pound of refuse burnt, or say 485 cubic feet per minute, for a consumption of 10cwt. per hour; whereas double that volume of air was usual for natural draught; hence the lowering of the temperature in the flues. The volume is doubled by an increment in temperature of 485deg. F., so that whether using forced or natural draught the same size of flues is necessary. The use of screened versus unscreened refuse was then discussed, the results being in favour of the latter. In conclusion, the author outlined what he considered might probably be the type of steam generator for future destructors. It may be termed a vertical water-tube boiler set between a pair of furnaces or between two ranges of flues, the circulation being so arranged that all deposit would be thrown down in the upper drum.

Wood or Asphalt Paving: Which is the More Durable?—Mr. D. J. Ross, the City engineer, has submitted a report to the London Corporation on the comparative durability of wood and asphalt paving for carriage-ways. He states that the ordinary deal blocks have been in use for paving purposes since 1871, and this class of pavement in streets where the traffic is considerable has to be relaid at intervals of from five to seven years. The Australian hardwood has not been used in the City for any length of time, but judging from observations made outside the City this class of pavement does not appear to be of that durable nature which was anticipated. In some parts of the West End the hardwood paving has been removed and deal blocks substituted. Asphalt has been in use in the City for paving purposes since 1869, when a portion of Threadneedle Street was laid with it experimentally. In nearly all the main streets of the City compressed asphalt is used, and in some of the minor streets where the traffic is small the pavements have been down for thirty years. On the Holborn Viaduct the asphalt pavement has been down for seventeen years, in London Wall for twenty years, and in Lothbury for twenty-three years. In the Poultry the pavement was in use nineteen years before it was relaid, and in Prince's Street the asphalt carriage-way lasted twenty-two years before it was renewed. The engineer reports in favour of the use of asphalt rather than wood in a thoroughfare like the Holborn Viaduct, where the carriage-way traffic represents about 12,000 vehicles in twelve hours. The lowest tender for asphaltting it was £5,980 13s. 6d.; a hardwood pavement would cost £6,000.

Engineering Notes.

Jeffrey Street Bridge, Edinburgh, an iron structure crossing the Waverley station from Jeffrey Street to the Low Calton, has been opened.

Eastbourne Electric Lighting.—The Eastbourne Town Council has decided to expend £33,562 on a new electricity generating station and on the improvement of the present installation.

Electric Lighting at Hull.—A Local Government Board enquiry was held last week into the application of the Hull City Council for sanction to borrow £42,000 for the extension of the electric lighting system.

Harrogate Works.—The Harrogate Corporation propose to spend £35,000 on repairing and covering a disused reservoir in Irongate Bridge Road, and in providing a new high-level tank and three additional filter beds and extending the mains. A Local Government Board enquiry has been held.

London Water Supply.—Last week the Bill of the East London Water Company came before a Select Committee of the House of Commons. The company seeks powers to raise additional capital to the amount of £1,800,000 for the construction of two new reservoirs at Chingford and the provision of new mains and connections.

Ilfracombe Improvement Bill.—By a Bill which recently came before a Select Committee of the House of Commons the Urban District Council of Ilfracombe proposes to spend £44,000 on constructing additional waterworks for the supply of their district and the parishes of Berrynarbor, Combemartin and Morthoe. The supply will be from Exmoor.

Railway Travelling at 120 Miles an Hour.—Mr. Behr, the inventor of the mono-rail system, gave evidence last week before the Select Committee considering the Bill to promote the 110 miles an hour railway between Manchester and Liverpool. He said it would be quite easy on the one-rail system to run trains at a rate of from 100 to 120 miles an hour with safety, and the chief engineer of the Belgian State Railways agrees with him.

Railway Improvements at York.—Alterations are being made to the western side of the passenger station at York, from which access will be given to a new platform and additional lines. Large new stables have been erected in Leeman Road, and a scheme is on hand for the erection of new management offices in Tanner Row opposite the present headquarters. The estimated cost of this scheme alone is £80,000. The existing carriage works at Holgate Beck are proposed to be extended and large new shops erected.

West London Tramway Extension.—The London United Tramways Company are seeking Parliamentary powers this session to construct extensions to their lines aggregating seventeen miles. These extensions include a line between Acton and Hanwell, a continuation along the Staines Road to Baber Bridge of the line already authorised to Hounslow, and a line between Hampton Court and Kingston. The necessary electrical energy will be generated at a single central station, in Chiswick Road, now in course of erection.

River Ely Subway.—On Monday last the new subway under the river Ely between Penarth Dock and Grangetown was opened. Mr. Sibbering, chief engineer to the Taff Vale Railway Company, was the designer, and Mr. Thomas Taylor, of Pontypridd, the contractor, work being started in April, 1897. The subway is 400 yards in length. It has an inside diameter of 10ft. 6in., the footway is 6ft., and there is 7ft. 6in. of headroom. Altogether the construction has cost between £25,000 and £26,000. The subway is bound to give a great impetus to pedestrian traffic between Penarth and Cardiff, as it is a decided public convenience, in marked contrast to the old ferry.

Keystones.

At St. Paul's Church, Hyde, a new chancel and Lady chapel have been provided at a cost of £1,200.

An Exhibition of Art Posters is now open at the Crystal Palace, and will remain open for a few weeks.

Ahiokill Catholic Church, Cork, has been renovated under the supervision of Mr. M. A. Hennessy, architect, of Cork.

What the Academy Receives.—Fourteen thousand pictures were offered to the Royal Academy this year. Twelve thousand were rejected!

At St. Paul's Church, Huddersfield, a new organ has been erected at a cost of about £1,000. Messrs. Abbott and Smith, of Leeds, were the builders.

A Board School in Napier Road, Wallend, is being built for the East Ham School Board. The architect is Mr. R. L. Curtis, of 120, London Wall, E.C.

Christ Church, Chelsea.—Lady Cadogan laid the foundation-stone last week of the new chancel which is being added, together with a new organ loft and enlarged vestries, to this church.

Statue of the Queen for Dublin.—It has been decided to erect a statue of Her Majesty in the grounds fronting Leinster House, Kildare Street, Dublin. The cost will be about £7,000.

New Park for Newport, Mon.—The Beechwood Estate, consisting of twenty-two acres and a modern well-built house, has been purchased by the Corporation for £11,000 as a public park for the Maindee district.

New Baths at Chesterfield have been erected under the supervision of the surveyor, Mr. Nicholas, at a cost of £700. They are situate in South Place. Mr. R. Peck was the contractor, and Mr. Haslam, of Hardstaff, the heating engineer.

A new Reredos and Altar at Benhilton Church, Surrey, have been erected from designs by Mr. W. Hilton Nash, F.R.I.B.A., of Cannon Street, E.C., the work being executed by Messrs. Harry Hems and Sons, of Exeter, in Devonshire-grown oak.

At St. George's Church, Edgbaston, Birmingham, a new stained-glass window has been erected. The window, which has been carried out by Mr. Dunstan J. Powell, of the firm of John Hardman and Co., is at the west end of the building and consists of three large lancet lights, in the centre one of which is the figure of St. George, the patron saint of the church.

New Police Headquarters for Chelmsford: Result of Competition.—Thirty sets of designs were sent in for this competition. The first premium of £100 was awarded to Messrs. Brown and Field, architects, of Ipswich; the second of £50 to Mr. George E. Clare, of Chelmsford; and the third of £25 to Messrs. Charles and W. H. Pertwee, of Chelmsford. The second premiated designs are the ones from which it is proposed to erect the buildings, which are estimated to cost £14,500, as against £19,000 for those shown in the first premiated design.

Garden Cities.—From the particulars and letters which we have already published our readers are familiar with the project for forming "Garden Cities" in which the advantages of town and country shall be combined, and the evils of overcrowding overcome. We have now received a letter from Mr. John McNeill, of 432, West Strand, saying that, "if there can be found sufficient persons willing to combine for the purchase and development into the first 'Garden City' of an estate of about 6,000 acres, no difficulty need be experienced in securing the necessary skill and capital to attain that end." Any of our readers who feel interested in the proposal can obtain the fullest and latest particulars from the Garden City Association at 11, New Court, Carey Street, W.C.

New Masonic School at Bushey.—The Duke of Connaught laid the foundation-stone of a new school of the Royal Masonic Institution for Boys at Bushey on Saturday last.

Steeton Mechanics' Institute.—The new Mechanics' Institute at Steeton, Keighley, has been erected from the designs of Messrs. J. Judson and Moore, architects, of Keighley.

St. Cyprian's Church, Brackley.—The memorial-stone of this church, which is to cost about £10,000, was laid on Saturday. The design was prepared by the late Sir A. Blomfield.

Rebuilding of the Old Bailey.—A private report is to be printed from the City Lands Committee recommending the adoption of one of the six designs submitted for the new sessions house.

Association of Municipal Corporations.—At the invitation of the Lord Mayor of Dublin, 150 corporations have decided to send representatives to attend the general meeting of the Association on June 2nd.

Totnes Cottage Hospital.—This building, the corner stone of which was laid recently, is being erected on the Bridgetown Road, and will cost about £2,000. It is to be of red brick, with a steep roof covered with Bridgewater tiles. Mr. E. Richards is the architect.

The death is announced of Mr. Charles Evans-Vaughan, of Adelphi, W.C., at the age of forty-three years. He designed the town hall buildings in Rosebery Avenue, which cost nearly £20,000, and was elected a Fellow of the Royal Institute of British Architects in 1887.

Tender for the Extension of R.A. Hospital, Devonport.—The tender of Mr. Thomas May, builder, of Plymouth, amounting to £4,636, has been accepted for extending and altering this building. The work is to be begun shortly, and will be carried out under the superintendence of Mr. H. J. Snell, architect.

The Yorkshire College at Leeds.—The extensive additions to the textile and dyeing departments of this institution, which have been carried out through the munificence of the Worshipful Company of Clothworkers of the City of London at a cost of £25,000, were formally opened on Friday last. Messrs. Alfred Waterhouse and Son were the architects.

Devon and Exeter Architectural Society: Three Towns Branch.—The fourth annual meeting of this society was held at Plymouth on Wednesday last, when the following officers were elected for the ensuing session:—Chairman, Mr. Henry G. Luff (re-elected); committee, Messrs. Parker, May, Dweilley, Bazeley and Lethbridge; honorary secretary and treasurer, Mr. B. Priestley Shires (re-elected).

Church Crafts League.—A general meeting was held on Wednesday last at the Church House, Westminster, the Bishop of Rochester being in the chair. The inaugural meeting was held at Leighton House in February, and the results of the first few months' work have been very encouraging, a good number of applications for advice as to church decoration having already been dealt with by the committee. Any persons wishing to have particulars of the aims of the League are invited to write to the secretary at the Church House, Westminster.

The Will of John Ruskin.—The gross value of Mr. Ruskin's estate has been sworn to be £10,660, and the net value at £10,311. His father's estate, almost the whole of which he inherited, amounted to about £200,000. Mr. Ruskin has left Brantwood, at Coniston, and all his real estate, as well as the bulk of his personal estate, including his unpublished manuscripts and his copyrights, to Joseph Arthur Palliser Severn and his wife, earnestly praying them never to sell Brantwood or any part of it, nor to let any part of it on building lease. Mr. Ruskin had left some of his art treasures to the Bodleian Library at Oxford, but he revoked this bequest in a codicil, and left these treasures in trust to go with his residuary estate, with the desire that they should ever remain at Brantwood. These art treasures include a portrait by Titian, and several drawings by Turner and by Ruskin himself.

Views and Reviews.

"PRACTICAL" BUILDING CONSTRUCTION.

The rapid succession of new editions of all the recognised works upon building construction is doubtless a healthy sign of a continuing demand for knowledge, upon the part of those who need it most, of how to secure sound building. At the same time it is a pity that these books should all be of one stereotyped pattern, based upon the requirements of the South Kensington examinations in the subject, and closely following the lead of the first book written with a view to preparing students for those examinations, and to a large extent regardless of the requirements of the practical constructor, and of the changes which have taken place in materials and in methods during the last twenty years. It is questionable, indeed, whether the book now before us ought not to have been entirely rewritten and re-illustrated before it was put upon the market again. Having numerous good points, it is also in many respects hopelessly out of date, and many of the drawings, while apparently clear and to a large scale, are seen upon examination to be merely clumsy, the work of one who is either ignorant or careless of minor exactitudes. Take, for instance, Fig. 931, which shows a lewis exactly fitting the hole sunk in the stone; or Fig. 450, with its tie-rod flattened without being widened before it is enclosed in the cover plates, thus dangerously lessening its sectional area; or Fig. 977, with the shearing stress inaccurately shown; or the inadequate and "faddy" chapter on sanitation; remember, too, that these are only instances taken at random of common faults; so that it will be recognised that before another edition is produced the book calls for a much more thorough revision than it has received upon the present occasion.

M.

"Practical Building Construction" (Third Edition, Revised). By John Farnell Allen. London: Crosby Lockwood and Son, 7, Stationers' Hall Court. Price 7s. 6d.

MR. F. H. EVANS'S PHOTOGRAPHS.

A little exhibition which should not be missed will be open until the 26th instant at the Royal Photographic Society's premises, 66, Russell Square, W.C. Mr. F. H. Evans, in his capacity as bookseller was one of the first to discover the genius, perverse as it was, of the unfortunate Aubrey Beardsley, and his photographs of the young artist, perhaps because the least flattering, are considered the very best. But the subject, provided the sun shines, is indifferent to the photographer, and the reader may now be reminded that of Kelmscott Manor, that beautiful Thames-side homestead, there are no photographs approaching nearly in truth and beauty to those which Mr. Evans has taken. Mr. Morris's own occasional lectures on architecture were illustrated by lantern slides taken from Mr. Evans's negatives, and Morris himself would say that they seemed to make the buildings he loved so well look even more beautiful than he had supposed them to be. A photograph, like a rare stone depends to a very great extent on its setting for its effect, and one may learn in this room how such a thing should be treated, if it seems in itself to be worth keeping. There are choice little bits of landscape conveying, although so tiny, that sense of the vast in Nature which has such a strangely subduing effect on the limited mind of a man, and these are to me as dumb music; but I write after all to advise as many as can to see Mr. Evans's photographs of Ely and other cathedrals, and to decide for themselves whether they are praised overmuch.

E. R.

The Gladstone Statue.—The commemorative statue of Mr. Gladstone erected in the Central Lobby of the Houses of Parliament will be unveiled on Saturday next, which will be the second anniversary of Mr. Gladstone's death. The ceremony will be performed by Sir H. Campbell-Bannerman.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—				
May	18	Radcliffe, Lancs.—Church	W. R. Moore...	J. B. Thornley, Architect, Darwen.
"	18	Snapdown, Devon—Reinstating	G. H. Wilkinson	Farm Bailiff, High Bullen, Chittlehamholt.
"	18	Workington—Alterations	Urban District Council	W. G. Scott and Co., Victoria-buildings, Workington.
"	19	Farnham—Offices	J. E. Miller	Leaning and Sons, 28, John-street, Bedford-row, W.C.
"	19	Hunton, near Bedale—Public House	Town Council	T. F. King, Architect, Edgley, Leyburn.
"	21	Okehampton, Devon—Rebuilding	County Council	J. A. Lucas, Architect, Okehampton.
"	21	Northumberland—Buildings and Alterations	Urban District Council	J. Cresswell, Moot Hall, Newcastle-on-Tyne.
"	21	Old Hill, Staffs.—House	School Board	D. Wright, Council Offices, Old Hill.
"	21	Aberdeen—Alterations		W. Ruxton, 84, Union-street, Aberdeen.
"	21	Blackpool—Church		Anderson, Simon, and Crawford, 16, Rutland-sq., Edinburgh.
"	21	Bradford—School		E. P. Peterson 48, Sunbridge-road, Bradford.
"	21	Samlesbury, Lancs.—Chapel		J. B. Thornley, 45, Market-street, Darwen.
"	21	Western Point, Runcorn—School	A. F. Bassett...	J. A. Sauer, Weaver Navigation Offices, Northwich.
"	21	Illogan, Cornwall—Farmhouse	School Board	H. B. Paull, Tehidy Office, Camborne.
"	22	Walthamstow—School		W. A. Longmore, 7, Great Alie-street, E.
"	22	Leigh, Surrey—Additions		W. Buck, North-street, Horsham.
"	22	Halifax—School		A. G. Dalzell, 15, Commercial-street, Halifax.
"	24	Salford—Chapels	Cemetery Committee	Sharpe and Foster, 23, Deansgate, Manchester.
"	24	Bradford—House	Corporation	F. Wild, 9, Charles-street, Bradford.
"	24	Derby—Rebuilding Bridge	County Council	J. Story, County Offices, St. Mary's-gate, Derby.
"	24	Halifax—Houses		B. Horsfall and Son, 22A, Commercial-street, Halifax.
"	24	London, N.W.—Floor Works	Metropolitan Asylums Board	T. D. Mann, Clerk, Carmelite-street, Embankment, E.C.
"	24	Manchester—Library	Corporation	J. Gibbons, 25, Cross-street, Manchester.
"	24	Mayford—Swimming Bath	London County Council	Architect, Council Offices, Spring-gardens, S.W.
"	26	Portslade, near Brighton—School	Portslade Industrial School Managers	T. Simpson and Sons, 17, Ship-street, Brighton.
"	27	Colne, Lancs.—Engine Shed	Lancs. and Yorks. Ry. Co.	Engineer, Hunt's Bank, Manchester.
"	28	Sheffield—Additions	Tramways Committee	C. F. Wike, Town Hall, Sheffield.
"	29	Stowmarket—Foundations	Rural District Council	Taylor, Sons, and Crimp, 27, Great George-street, S.W.
"	30	Winsford, Cheshire—Drill Hall		J. H. Cooke, Solicitor, Winsford.
"	31	Cast'e Heddingham, Essex—Alterations	St. John, Hampstead, Vestry	Clerk, Parish Room, St. James's-street, Castle Heddingham.
"	31	London, N.W.—Boiler House	East Ham Urban District Council	Surveyor, Vestry Hall, Haverstock Hill, N.W.
June	4	London, E.—Public Buildings	Vestry	Surveyor, Public Offices, East Ham, E.
"	4	Plumstead—Town Hall	Town Council	E. Hughes, Vestry Hall, Maxey-road, Plumstead.
"	12	Brighton—Alterations	Hackney Vestry	F. J. C. May, Town Hall, Brighton.
"	12	London, N.E.—Buildings	Admiralty	Gordon and Gunton, Finsbury House, E.C.
"	15	Cromer, Norfolk—Coastguard Buildings		Director of Works, Admiralty, Northumberland-av., E.C.
ENGINEERING—				
May	19	Shotton Colliery, Durham—Sinking Shafts	Horden Collieries Limited	I. I. Prest, Sidmouth-avenue, Newcastle-under-Lyme.
"	19	London, W.—Boilers	St. Marylebone Guardians	W. J. Fraser and Co., 98, Commercial-road, E.
"	19	Glasgow—Cables	Corporation	W. A. Chamen, 75, Waterloo-street, Glasgow.
"	21	Melrose, Roxburgh—Waterworks	District Committee	Buchanan and Bennett, 12, Hill-street, Edinburgh.
"	22	London, W.—Electric Plant	Central Electric Supply Co. Ltd.	Manager, Electric Supply Co., 19, Carnaby-st., Golden-sq., W.
"	22	Pershore—Sewerage and Water Supply Works	Rural District Council	A. E. Baker, Union Offices, Pershore.
"	22	Southampton—Machinery	Corporation	W. B. G. Bennett, Municipal Offices, Southampton.
"	22	London, N.—Deepening Well	Tottenham Urban District Council	Taylor, Sons, and Crimp, 27, Great George-street, S.W.
"	23	Workop—Dynamos	Urban District Council	A. B. Mountain, Electrical Engineer, Huddersfield.
"	23	Lochgilthead, Scotland—Reservoir	Commissioners	The Town Clerk, Lochgilthead.
"	24	Taunton—Refuse Destructor	Town Council	J. H. Smith, Municipal Offices, Corporation-st., Taunton.
"	24	Bradford—Dynamos	Corporation	R. A. Chattock, Town Hall, Bradford.
"	25	Salisbury—Cylinders	Urban Sanitary Authority	J. C. Bothams, City Surveyor, Salisbury.
"	26	Middlesbrough—Heating	Baths Committee	G. Bainbridge, Town Clerk, Middlesbrough.
"	26	Wemyss Bay, Scotland—Pier Extension	Caledonian Railway Co.	Engineer, Buchanan-street Station, Glasgow.
"	28	Portsmouth—Bridge	Lighting Committee	A. Hellard, Town Hall, Portsmouth.
"	28	Leeds—Electric Lighting Plant	Harbour Commissioners	H. Dickinson, 1, Whitehall-road, Leeds.
"	28	Belfast—Crane Repairs	Urban District Council	G. F. L. Giles, Harbour Master, Belfast.
"	28	Ilford—Effluent Outfall	Rural District Council	Taylor, Sons, and Crimp, 27, Great George-st., Westminster.
"	29	Creeting St. Peter, near Stowmarket, Suffolk—	Tynemouth Corporation	J. Taylor, Sons, and Crimp, 27, Gt. George-st., Westminster.
"	29	Ewesley, Northumberland—Reservoir	Corporation	Borough Surveyor, Tynemouth.
June	9	Leominster—Valves	Corporation	J. Budd, Town Hall, Leominster.
"	9	Leominster—Tank	Town Council	J. Budd, Town Hall, Leominster.
"	11	Crewe—Electric Wiring	Corporation	F. Cooke, Municipal Offices, Crewe.
"	16	Bacup—Reservoir	Ferry Committee	J. Diggle, 3, Longford-street, Heywood, Lancs.
"	16	Middlesbrough—Crane	Peruvian Government	F. Baker, Municipal-buildings, Middlesbrough.
July	23	Callao—Reconstruction of Railway		Commercial Department, Foreign Office, S.W.
IRON AND STEEL—				
May	22	Egremont, Cheshire—Railings	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont, Cheshire.
June	9	Leominster—Water Mains	Corporation	J. Budd, Town Hall, Leominster.
PAINTING—				
May	21	West Ardsley, Yorks.—Colouring, &c.	School Board	J. W. Furness, Clerk, West Ardsley.
"	22	London, E.—Painting	West Ham School Board	W. Jacques, 2, Fen-court, E.C.
"	22	Southampton—Painting	Corporation	W. Matthews, 18, French-street, Southampton.
"	24	Rotherham—Painting	School Board	W. H. Corbridge, School Board Offices, Rotherham.
"	24	Smethwick—Painting	Gas Committee	B. W. Smith, Gasworks, Smethwick.
"	25	Ashford, Middlesex—Painting	West London School District	Superintendent, District School, Ashford, Middlesex.
"	26	Manchester—Painting	Libraries Committee	City Surveyor, Town Hall, Manchester.
June	11	Wanstead, Essex—Painting and Repairs	School Board	J. T. Bressey, 70, Bishopsgate-street Within, London, E.C.
ROADS—				
May	18	Derby—Street Works	Keighley Rural District Council	W. Swindell, Imperial-chambers, Albert-street, Derby.
"	18	East Morton, near Bingley, Yorks.—	Rural District Council	H. M. Butterfield, 3, Laythorpe-terrace, East Morton.
"	18	Castle Donington, Derby—Granite and Slag	Urban District Council	J. W. Newbold, Beckett-street, Derby.
"	18	Hoyland, near Barnsley—	Rhonda Urban District Council	W. P. Young, Town Hall, Hoyland.
"	19	Pentre, Glamorgan—Street Works	Bermoudsey Vestry	W. J. Jones, Council Offices, Pentre.
"	21	London, E.—Paving	District Council	Surveyor, Town Hall, Bermoudsey.
"	22	Wilkesden—Paving and Road Making	Urban District Council	Engineer, Public Offices, Kilburn, N.W.
"	22	Aylesbury—Materials	Urban District Council	J. H. Bradford, 2, Rickford's Hill, Aylesbury
"	22	Kushden, Northants—Granite and Slag	Urban District Council	W. B. Madin, Vestry Hall, Rushden.
"	22	Southall, Middlesex—Paving	Board of Works	H. R. Felkin, High Street, Southall.
"	22	Lewisham—Kerbing, Paving, &c.	Urban District Council	Surveyor, Town Hall, Catford, S.E.
"	23	London, N.E.—Granite	Hackney Vestry	F. W. Pearce, Town Hall, Twickenham.
"	23	London, N.E.—Kerbing	Hackney Vestry	N. Scorgie, Vestry Hall, Hackney.
"	23	London, N.E.—Wood Paving	Hackney Vestry	N. Scorgie, Vestry Hall, Hackney.
"	23	Hayward's Heath, Sussex—Granite	Cuckfield Urban District Council	N. Scorgie, Vestry Hall, Hackney.
"	23	London, S.E.—Making-up	Plumstead Vestry	E. Waugh, Clerk, Hayward's Heath.
"	24	Salford—Roads	Cemetery Committee	Surveyor, Vestry Hall, Plumstead, S.E.
"	24	Bexhill, Sussex—Street Works	Urban District Council	The Engineer, Town Hall, Salford.
"	24	Blackpool—Street Works	Corporation	G. Ball, Town Hall, Bexhill.
"	26	Ely—Materials	Urban District Council	J. Wolstenholme, Municipal-buildings, Blackpool
"	26	Diss, Norfolk—Granite	Urban District Council	W. McKelvie, City Surveyor, Ely.
"	28	Cheltenham—Wood Paving	Corporation	S. Lait, Surveyor, Mere-street, Diss.
"	28	Woodford, Essex—Tar Paving Repairs	Urban District Council	Surveyor, Municipal Offices, Cheltenham.
"	28	Hanwell—Granite, Kerb, and Pitching	Urban District Council	W. Farrington, Council Offices, Woodford Green.
"	29	Braintree, Essex—Grants	Urban District Council	Surveyor, Council Offices, Hanwell.
"	30	Burgess Hill, Sussex—Flints	Urban District Council	H. H. Nankivell, Vestry Hall, Braintree.
"	30	Thame, Oxon—Granite	Urban District Council	A. F. Hardwick, Clerk, Burgess Hill.
"	30			D. W. Slocombe, 27, Park-street, Thame
SANITARY—				
M	18	Fletton, Peterborough—Sewerage and Sewage Disposal	Norman Cross Rural District Council.	G. and F. W. Hodson, Engineers, Loughborough.
"	19	Salisbury—Drainage	Urban District Council	W. Holt, Council Offices, Salo.
"	22	Aspull, near Wigan—Removal of Nightsoil	District Council	L. Athron, Council Offices, Aspull.

Architecture and Crafts

AT THE

Royal Academy,

1900.

THE walls of the Architectural Room at the Royal Academy are again covered with gilt frames containing drawings of various kinds, purporting to represent architectural work in progress or recently completed. One is inclined to ask how far, if at all, does this collection express the current of progressive thought in modern architecture? All sorts and sizes of buildings are represented; here are the designs for the huge palaces which are being erected to house some of the great departments of State; there are buildings for municipalities—town halls, public libraries, baths, etc.—also large blocks of business premises for companies which control great commercial interests, new schools, churches, private mansions, smaller residences, humble cottages.

* * * * *

Coming to a more detailed consideration of the drawings, the works of the Academicians will naturally attract first attention. Mr. Aitchison, Mr. Bodley, and Mr. Alfred Waterhouse are unrepresented, and Mr. Jackson has only one small drawing of some new buildings at Cambridge University, an afterthought apparently to his original intention of not exhibiting. Mr. Aston Webb exhibits a large frame showing elevation, perspective, and plans for the new buildings for the Royal College of Science, a dignified and well-balanced work of which we give the perspective view.

The new associate, Mr. John Belcher, has several prominent drawings, three being devoted to his building for the Eastern Telegraph Company in Finsbury Pavement, a characteristic piece of work, its purpose indicated by the details and by the large sphere which crowns the central feature. Mr. Belcher also shows the Château Mauricien, Wimereux, and the interior of the Moot Hall, Colchester. Mr. R. Norman Shaw, in conjunction with Messrs. Willink and Thicknesse, has a large drawing of Parr's Bank, Liverpool, on the east wall, which has been hung too high for proper inspection. The building is very simple in design. The base is of grey granite, the upper part shows white with narrow green bands, but the drawing does not indicate what materials are used. Among the other exhibitors, Mr. John Brydon exhibits a large wash drawing, by Mr. C. W. English, of the circular court to his new Government Offices in Parliament Square. It is to be regretted that neither Mr. Brydon nor Mr. William Young exhibit their drawings for the two blocks of Government Offices. The latter has only a model for the inner hall of a country mansion, which is of no particular interest. Mr. T. E. Colcutt shows a classical piece of work in his design for Lloyd's Register Building. Mr. E. W. Mountford is only represented this year by his designs for part of the new Sheffield Infirmary and the Town Hall, Hitchin, the latter in conjunction with Mr. Geoffry Lucas. Both are interesting pieces of work. Mr. Mervyn E. Macartney has five exhibits, all of much interest, the best, if one can be selected, being a competitive design for a public building, probably the most powerful piece of draughtsmanship in the room. Mr. A. N. Prentice exhibits a fine water-colour drawing of The Retreat, Lakenhead—a quaint old-world house befitting its name. The two drawings by Messrs. Ernest George and Yeates are the first two in the room, and both exceptionally pleasing, one, of Holwell Hall, Herts, is a house in the Georgian style; the other shows the oak screen and staircase in the hall, Edgworth Manor, Cirencester. Mr. H. T. Hare exhibits his design for Wolverhampton Free Library. Mr. Gerald C. Horsley shows some additions to Balcombe Place, Sussex, including a fine music room, which should be seen. Mr. E. S. Prior's new Medical Schools, Cambridge, form a particularly severe and restrained building, in harmony, however, with its purpose. Mr. Edgar Wood exhibits a beautiful water-colour drawing of a house at Edgerton, Huddersfield. Mr. A. T. Bolton has drawings of St. Stephen's new National Schools at Paddington, and Mr. T. H. Mawson several drawings of his formal garden designs. Mr. W. H. Atkin Berry and Mr. Jas. Ransome exhibit neat designs for domestic work, which we illustrate. Messrs. Mallows and Grocock have a drawing for the Science and Art Schools, Leamington, and, in conjunction with Mr. Russell, exhibit a design for the Plumstead Municipal Buildings, the second premiated design for the same buildings being shown by Messrs. Hall, Cooper and Davis. Messrs. Harrison and Ward have made an excellent design for the 11 ft. frontage of No. 53, Maddox Street, W.; they also exhibit a quiet-looking house at Warlingham, Surrey. Mr. Temple Moore's designs for a church at Sledmere Park, Yorks., show a very elaborate interior. Mr. R. W. Schultz has a picturesque and beautiful drawing showing the restoration of an old Scottish keep, Wester Kames Tower, and one of a house, "Inholmes," Whitney, which we illustrate. Other drawings are those by Messrs. Dare Bryan, M. S. Hack, Briggs and Wolstenholme, M. H. Baillie Scott, and Cheston and Perkin. Mr. C. H. M. Mileham has a quiet design for ecclesiastical work at Plumstead.

The above is extracted from the INTRODUCTION to the SPECIAL MAY ISSUE of

"THE ARCHITECTURAL REVIEW,"

which is entirely devoted to Architecture and Crafts at the Academy, and which is the first complete record that has yet been published. Fuller particulars are given on the next page.

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Architecture and Crafts

AT THE

Royal Academy,

1900.

THE demand in former years for the series of Special Supplements dealing with Architecture at the Royal Academy, has shown the Proprietors of the "ARCHITECTURAL REVIEW" that there is a desire to preserve in permanent form a record of current architecture and design.

The pre-eminent position held by the "ARCHITECTURAL REVIEW" in the profession enabled the Editor to secure the right of reproducing all the chief Architectural drawings exhibited at this year's Academy.

Instead of publishing, as formerly, special supplements in succeeding monthly issues, the whole of the May issue of the "ARCHITECTURAL REVIEW" is devoted to Academy Architecture, and this issue, largely increased in size, forms the most complete and permanent record of current architecture and design.

Although the Royal Academy was only opened to the Public on Monday, May 7th, this issue was published on the 11th, and as all the designs referred to are given their reference numbers, intending visitors to the Architectural Section of the Academy will find this number an invaluable guide.

There are over one hundred examples shown in this special issue, and the following is a list of the Architects and Craftsmen whose designs are given :—

AIKMAN, W.	HALL, COOPER AND DAVIS.	MOUNTFORD, EDWARD W.
AUSTIN, RUPERT C.	HARE, HENRY T.	NEWTON, PERCY E.
BATEMAN AND BATEMAN.	HARRISON AND WARD.	NICHOLSON, CHARLES A.
BELCHER, JOHN, A.R.A.	HORSFALL, JESSE.	NIVEN AND WIGGLESWORTH.
BERRY, W. H. ATKIN.	HORSLEY, GERALD C.	ORR, ARTHUR A.
BOLTON, ARTHUR T.	IBBERSON, H. G.	PAWLEY, C. J. C.
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BRYAN, HENRY D.	LUCAS, GEOFFRY.	QUENNEL, C. H. B.
CAVE, WALTER.	MACARTNEY, MERVYN E.	RAINE, HERBERT.
CHESTON, H., AND PERKIN, J. C.	MALLOWS, C. E., AND GRO-	RANSOME, JAMES.
COLLCUTT, T. E.	COCK.	RUSSELL, MALLOWS AND
CORLETTE, HUBERT C.	MARTIN, GEORGE D.	GROCK.
CRANE, LIONEL F.	MAWSON, T. H., AND GIBSON,	SCHULTZ, ROBERT WEIR.
DAWBER, E. GUY, AND WHIT-	D.	SCOTT, J. OLDRID.
WELL.	MAWSON, THOMAS.	SCOTT, M. H. BAILLIE.
DRURY, ALFRED, A.R.A.	MAY, E. J.	SHRIGLEY AND HUNT.
ELWOOD, G. M.	MILEHAM, CHARLES H. M.	STEELE, FLORENCE H.
FALKNER, HAROLD.	MINTY, JAMES A.	TEMPLE, C. H.
FISHER, ALEX.	MITCHELL, ARNOLD.	WARD, W. H.
GEORGE AND YEATES, ERNEST.	MOORE, TEMPLE.	WEBB, ASTON, A.R.A.
GLEICHEN, COUNTESS F.	MOUNTFORD, E. W., AND	WHELLOCK, ROBERT P.
HACK, M. S.	LUCAS, GEOFFRY.	WOOD, EDGAR.

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COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
SANITARY—Continued.			
" 22	Birmingham—Sewers	Public Works Committee	J. Price, Council House, Birmingham.
" 22	Isleworth—Sewer Works	Southall-Norwood Urban D.C. ...	H. R. Felkin, High-street, Southall.
" 22	Northwich—Outfall Sewage Works	Urban District Council	H. Bancroft and Son, 88, Mosley-street, Manchester.
" 28	Ilford—Drainage Works	Urban District Council	Taylor, Sons, and Crimp, 27, Gt. George-street, S.W.
" 28	St. Anne's-on-Sea—Sewering	Urban District Council	H. Bancroft and Son, 88, Mosley-street, Manchester.
" 30	Lintz Colliery, Durham—Sewer	Tanfield Urban District Council	R. Heslop, Surveyor, Burnopfield, R.S.O.
June 5	Whickham, Durham—Sewerage Works	Urban District Council	J. P. Spencer, 13, Grainger-st. West, Newcastle-on-Tyne.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
May 31	Honiton, Devon—Supplying Town with Water... ..	£21, £5 5s.	Town Clerk, Honiton.
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhamsted—Girls' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamsted.
" 30	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."
July 16	Falmouth—Sewerage Scheme	£100, £50, £25	J. H. Gegg, Town Clerk, Falmouth.

Trade and Craft.

Carriage and Wicket Gates.

As a maker of high-class joinery, and especially of wood chimney-pieces, Mr. John P. White, of the Pyghtle Works, Bedford, is well known to many of our readers. We now wish to speak of his carriage and wicket gates. It is a satisfactory sign of the times that the level of design and general handicraft has been raised and that there has been a shaking-off of the old spiritless precedents and the adoption of principles and models like those of the great workers of the past. Under this influence the architect, besides attempting to improve the main design of his building, has sought to make the appurtenances in keeping with the general spirit of his design, though it must be admitted there still remains a wide margin for improvement. But the smaller things are beginning to receive his consideration, and one of these is the design of the gates which bar the carriage drive or the garden path. Mr. White has endeavoured to meet the demand for well-designed gates, and in the preface to his catalogue says: "It has hitherto been impossible to obtain either gate or wicket ready made which did not too closely recall the detail and stop chamfering of the Gothic revival. With the assistance of Mr. J. S. Cooper and Mr. C. H. B. Quennell, I have endeavoured to bring gate design up to date. The prices will be found as low as is consistent with the best workmanship, and all hinges, latches, &c., will be of the best make." Of the many kinds shown in the catalogue, design No. 3 for a carriage gate and wicket is most pleasing; the gate is 10ft. wide and the wicket 3ft. 9in. wide. Design No. 5 shows a combination carriage and wicket gate (without a dividing post), the wicket being arranged to open separately, while No. 9 shows a garden gate consisting of two square side posts with round ball tops supporting arms for a lamp hung in the middle, the gate itself consisting of a number of upright bars extending through a braced framework. At the end of the catalogue—a copy of which can be had on application—is an illustration of the "Biddenham" design for a garden seat; this is strong, elegant and evidently comfortable. The accompanying illustration of a garden gate, taken from Mr. White's catalogue, is a fair example of the skill and taste he has brought to bear on this much neglected subject.

New Companies.

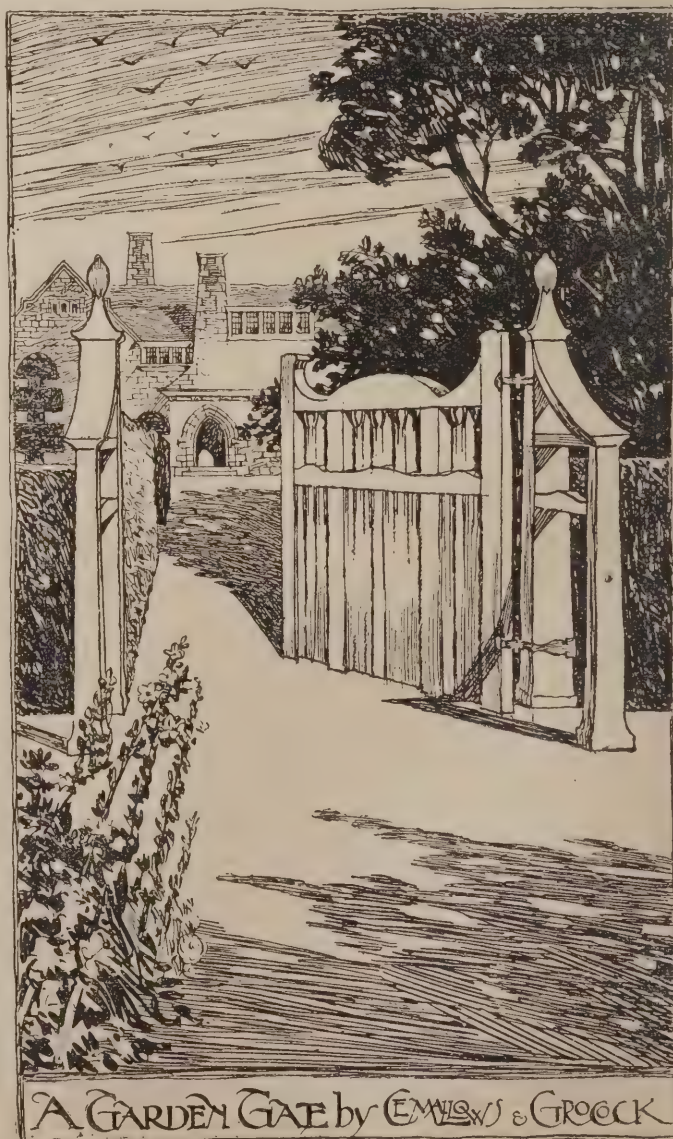
Metallic Paint Company, Limited.

This company was registered on May 4th with a capital of £3,000 in £1 shares, to adopt an agreement with F. J. Nicholls, H. Morton, and R. G. Laws, and to carry on the business of manufacturers of and dealers in preparations for coating iron, steel, wood, stone, and other materials. The first directors (to number not less than two nor more than five)

are M. W. Aisbitt, R. G. Laws, and another to be appointed by the vendors. Registered office: 51, Mount Stuart Square, Cardiff.

The Intermico Ventilating and Engineering Company, Limited.

This company has been registered in Scotland with a capital of £6,000 in £1 shares (2,000 six per cent. preference), to take over the business of a firm with similar title, of which James Speirs Paterson is sole proprietor.



New School Buildings at Norwich are being erected in connection with the Unthank's Road Baptist Church from plans prepared by Mr. H. F. Scott, the contractor being Mr. S. R. Wilkins. The estimated cost is £1,800. There will be a central hall 67ft. by 32ft. 6in.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

ABBEYDALE (Sheffield).—For three almshouses, conveniences, and boundary wall, Abbeydale and Bushey Wood-road, Abbeydale, for Mr. Christopher Carter. Messrs. Hall and Fenton, architects, 14, St. James-row, Sheffield. Quantities by the architects:—
 Mastin and Son £1,839 0 0 E. Fox, Broad-
 Margonison ... 1,516 11 0 way, near
 W. Harrison ... 1,498 8 3 Sheffield ... 1,337 18 6
 Bee and Son ... 1,471 11 0 J. S. Yeauby ... 1,379 1 9
 J. Morton ... 1,551 2 0 E. Hancock ... 1,308 0 0
 * Accepted.

ASHTON-UNDER-LYNE.—For the erection of six houses in Crowthorn-road. Messrs. J. H. Burton and J. A. Percival, architects, 150A, Stamford-street, Ashton-under-Lyne.—

General (except plumbing).	Boundary Walls.	Total.
W. Hurst ... £1,836 10	... £116 10	... £2,013 0
Fitton and Bowness ... 1,836 0	... *	... 1,836 0
T. Dean ... 1,830 0	... 135 0	... 1,965 0
J. Gibson and Son ... 1,815 0	... 131 0	... 1,945 0
Pike and Son ... 1,801 10	... 112 15	... 1,914 5
Kirkby Bros. ... 1,769 0	... 116 0	... 1,885 0
C. Evans ... 1,720 0	... 120 0	... 1,840 0
E. Marshall ... 1,693 0	... 105 0	... 1,803 0
J. Ridyard, Ashton ... 1,640 0	... 113 10	... 1,753 10

* Included in general. † Accepted.
BEESTON (Notts).—For forming, excavating, levelling, sewerage, ballasting, channelling, and metalling a road 40ft. wide in the township of Beeston, Notts. Mr. Fred. C. Martin, civil engineer, Angel-road, Nottingham. Quantities by engineer:—
 H. H. Barry ... £1,780 0 0 Bower Bros. ... £1,536 6 3
 B. Roberts ... 1,700 8 3 A. B. Clarke ... 1,530 0 0
 Cox and Son ... 1,652 2 8 W. Cordon ... 1,420 0 0
 Cope and Rayner 1,600 0 0 S. Richmond, Lenton (accepted) ... 1,394 0 0
 * Accepted.

BLAINE (Mon.).—For the erection of schools, for the Abernethy School Board. Mr. R. L. Roberts, architect, Victoria-chambers, Abercarn, Mon. Quantities by the architect:—

Williams and Sons £1,300 0 0	Gaen Bros. ... £3,799 6 9
T. L. Morgan ... 4,210 0 0	J. Jenkins, New- port ... 3,760 0 0
Evans and Sons 4,099 16 6	port ... 3,760 0 0
D. Davies ... 3,890 0 0	E. A. Thomas ... 3,570 0 0
A. P. Williams ... 3,880 0 0	

* Accepted.
BOURNEMOUTH.—For erecting a fire station and works in connection therewith. Mr. F. W. Lacey, M.Inst.C.E., borough engineer and surveyor:—
 Hoare and Sons ... £5,547 McWilliam and Son,
 Jones and Son ... 5,008 West Station Works,
 Jenkins and Sons ... 4,869 Bournemouth* ... £4,300
 * Accepted.

BRISTOL.—For additions and alterations to St. Peter's Hospital, the offices of the Guardians of the Poor of the city and County of Bristol. Mr. W. S. Skinner, architect, Edinburgh-chambers, Baldwin-street, Bristol:—

Alternative for Public Gallery.	
Wm. Church ... £6,103	... £137
E. Love ... 5,684	... 140
E. Walters ... 5,680	... 133
G. Humphreys ... 5,500	... 110
H. H. Forse ... 5,340	... 140
W. Cowlin and Son ... 5,267	... 140
Stephen Bastow and Co.* ... 5,196	... 128
M. Durnford ... 4,770	... 117
S. R. Gorvett ... 4,698	... 120

[All of Bristol.] * Accepted.

COLWYN BAY.—For making up, &c., the West Promenade, for the Urban District Council. Mr. W. Jones, C.E., District Council Offices, Colwyn Bay:—

	Contract A.	Contract B.
Grodwell and Co. ...	£5,451	£11,350
Anthony Fasey and Son ...	5,450	760
J. Riggs ...	4,574	719
Sheffield and Evans ...	4,568	525
Rowland E. Williams ...	4,119	543
Geo. Law, Kidderminster* ...	3,841	512
Mooney and Co. ...	—	574
Roberts and Ellis ...	—	456

* Accepted.
LIVERPOOL.—For the erection of sanatorium, Birch Hill, near Frodsham, for the Hospital Committee. Messrs. Willink and Thicknesse, architects, 14, Castle-street, Liverpool:—

Holme & Green £11,851 0 0	J. Pilkington ... £9,682 0
W. H. Forde ... 11,547 0 0	T. Woods ... 9,619 0
Wm. Nickson ... 10,778 15 7	Tomkinson & Sons 9,567 0
C. W. Davenport 10,192 6 9	Beckett and Co. ... 9,434 0
Henshaw & Sons 10,150 0 0	Isaac Dilworth ... 9,200 0
Brown & Back-house 9,981 0 0	Wm. Hall ... 8,873 0
Morrison & Sons 9,800 0 0	A. Allen ... 8,675 0
Hughes & Stirling ... 9,750 0 0	Gerrard and Sons, Swinton* ... 8,307 0

* Accepted.
LONDON.—For St. Columb's Church, Lancaster-road, Notting Hill, London, W. Mr. C. Hodgson Fowler, architect. Quantities by Messrs. C. John Mann and Son, 29, Great George-street, Westminster, S.W.:—

	Alternative reduces amount by:—
Foster Bros. ... £8,983 0	... £400 0
Balsam Bros. ... 8,800 0	... 600 0
G. Lyford ... 8,494 0	... 721 0
Bulard and Co. ... 8,135 0	... 600 0
G. Jackson ... 8,037 0	... 679 0
W. Gibson ... 7,800 0	... 600 0
J. Christie ... 7,700 0	... 730 0
Chessum and Sons ... 7,432 16	... 593 0
G. F. Halliday ... 7,373 10	... 668 10
Hibberd Bros. ... 7,290 0	... 675 0
John Appleby ... 7,225 0	... 700 0
F. G. Minter ... 7,050 0	... 600 0
Veale and Carlet ... 6,593 0	... 550 0
Gough and Co. ... 6,594 0	... 600 0
Chas. Ansell ... 6,461 0	... 515 0
F. T. Chinchin ... 6,460 0	... 600 0
Godson and Sons ... 6,329 0	... 550 0

MAIDSTONE.—For the erection of electricity station and destructor house, Fairmeadow, for the Urban District Council. Mr. T. F. Bunting, Borough Surveyor, Fairmeadow, Maidstone:—

Pryor and Co. ... £9,000	Neale and Co. (shaft and flues only) ... £3,250
Wallis and Sons ... 9,563	
Maidstone* ...	

[Surveyor's estimate, £3,881 2s. 8d.] * Accepted.
MONTROSE.—Accepted for the erection of sheds at the dock, for the Montrose Harbour trustees. Mr. G. C. Buchanan, harbour engineer, Dundee:—

Foundations.—T. S. Dick, Broughty Ferry Brickwork and Masonry.—T. S. Dick, Broughty Ferry	
Joinery.—J. and W. Craigie, Montrose	
Steel Work.—G. B. Smith and Co., Glasgow	
Glazier.—The Pennycook Patent Glazing and Engineering Co., Ltd., Glasgow	£2,557 10 8
Cast-iron Work.—Montrose Foundry Co.	
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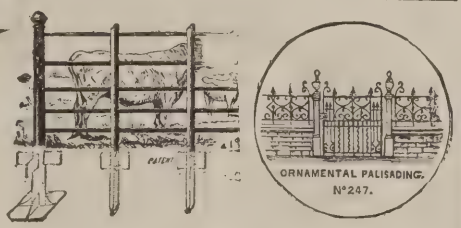
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LONDON.—For pulling down and rebuilding "The Neptune" public-house, Somers Town, N.W. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked-lane, King William-street, E.C., and Bromley-by-Bow, E. :—
C. Dearing and Son ... £4,530 | Sheffield Bros. ... £4,305
Antill and Co. ... £4,500 | Courtney & Fairbairn* 4,127
G. E. Todd and Co. ... £4,433 | * Accepted.

NORTHAMPTON.—For the erection of coal office at the L. and N.W. Coal Wharf, Northampton, for Messrs. R. Wiggins and Company. Messrs. Mosley and Scrivener, architects, Fish-street, Northampton. :—
J. M. Panting ... £30 0 | A. P. Hawtin ... £65 0
E. J. Chown ... 75 0 | J. Robinson ... 62 10
E. D. Sharmar & Son ... 71 10 | W. Beardsmore ... 60 10
Wilford and Judkin ... 70 9 | H. Branson* ... 58 0
Woodford and Smith. ... 70 0 | * Accepted.

PORT TALBOT (Wales).—For the erection of a house and surgery at Port Talbot for Dr. Hartland. Mr. Frank B. Smith, architect, Port Talbot. :—

T. H. Owens ... £1,330 | G. and F. Gaven ... £1,163
D. Gurnea ... 1,385 | Morgan Cox ... 1,155
Davies and Sons ... 1,284 | Stephen Rees ... 1,145
Thos. Jenkins ... 1,275 | Levert n Bros., Aber-
Jno. Nicholas ... 1,180 | avon* ... 1,056
* Accepted.

RAMSEY.—For proposed new schools at Ramsey, Essex, for the Ramsey School Board. Mr. J. W. St. architect, Colchester, Harwich, and 54, New Broad-street, E.C. Quantities by the architect:—

Beaumont ... £3,503 | Bennett ... £3,202
West ... 3,495 | Smith and Beaumont. ... 3,189
Dupont and Co. ... 3,377 | Saunders, Dovercourt* 3,198
* Accepted.

WINCHESTER.—For the erection of public baths for the Corporation of the City of Winchester. Messrs. Lansdell and Harrison, architects. Quantities by Messrs. Northcroft, Son, and Neighbour:—

Martin Wells and Co., Aldershot ... £11,890 0
J. S. Kimberley, Banbury ... 10,819 0
F. Bascomb, Winchester ... 10,254 10
C. Ansell, Lambeth ... 9,943 0

WORKING.—For the erection of a detached house for Mr. P. Macdonald. Mr. William G. Jones, architect, Woking:—
Jas. Whitburn ... £980 | A. A. Gale ... £900
Geo. Allard ... 975 | Drowley and Co.* ... 819
Ingram and Son ... 943 | * Accepted.
[All of Woking.]

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Lard Oil	per cwt.	1 17 0	—	—
Linseed Oil	per cwt.	1 14 3	—	—
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Do., Russian	per gal.	0 0 6 1/2	0 0 6 1/2	—
Pitch	per barrel	0 8 6	0 9 0	—
Tallow, Town	per cwt.	1 5 6	1 9 6	—
Tar, Stockholm	per barrel	1 6 0	—	—
Turpentine	per cwt.	2 5 0	—	—

	£ s. d.	£ s. d.
Lead, white, ground, carbonate per cwt.	1 2 10	—
Do. red	1 0 4 1/2	—
Soda crystals	2 17 6	3 0 0
Shellac, orange	3 0 0	—

METALS.

	per ton	£ s. d.	per ton	£ s. d.
Copper, sheet, strong	do.	88 0 0	—	—
Iron, Staffs., bar	do.	10 15 0	11 10 0	—
Do. Galvanised Corrugated sheet	do.	15 0 0	—	—
Lead, pig, Spanish	do.	17 2	—	—
Do. do. English common brands	do.	17 12 6	—	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0	—
Do. pipe	do.	22 0 0	—	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0	—
Do. floor brads	do.	11 15 0	12 15 0	—
Steel, Staffs., Girders and Angles	do.	8 15 0	9 5 0	—
Do. Mild Bars	do.	9 12 6	10 0 0	—
Tin, Foreign	do.	138 10 0	134 0 0	—
Do. English ingots	do.	137 10 0	—	—
Zinc, sheets, English	do.	27 10 0	23 10 0	—
Do. do. Vieille Montaigne	do.	27 7 6	—	—
Do. Spelter	do.	21 15 0	—	—

TIMBER.

Soft Woods.

	per load.	£ s. d.	per load.	£ s. d.
Fir, Dantzic and Memel	per load.	3 0 0	4 0 0	—
Pine, Quebec Yellow	per load.	4 7 6	6 0 0	—
Do. Pitch	do.	8 6 0	4 2 0	—
Laths, log, Dantzic	per fath.	4 10 0	5 10 0	—
Do. Petersburg	per bundle.	0 1 4 1/2	0 1 5	—
Deals, Archangel 2nd & 1st per P. Std.	do.	15 10 0	23 0 0	—
Do. do. 4th & 3rd.	do.	12 15 0	14 0 0	—
Do. do. unsorted	do.	12 5 0	12 10 0	—
Do. Riga	do.	6 15 0	8 10 0	—
Do. Petersburg 1st Yellow	do.	14 0 0	16 10 0	—
Do. do. 2nd	do.	8 15 0	12 0 0	—
Do. do. Unsorted	do.	14 5 0	—	—
Do. do. White	do.	11 5 0	—	—
Do. Swedish	per P. Std.	12 0 0	14 5 0	—
Do. White Sea	do.	17 10 0	18 0 0	—
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0	—
Do. do. 2nd	do.	18 15 0	—	—
Do. do. 3rd & 4th	do.	9 0 0	9 15 0	—
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0	—
Do. do. 3rd & 2nd	do.	9 5 0	10 10 0	—
Do. New Brunswick	do.	7 5 0	8 0 0	—
Battens, all kinds	do.	8 5 0	10 15 0	—
Flooring Boards, 1 in. prepared, 1st	per square	0 10 6	0 10 9	—
Do. 2nd	do.	0 9 9	0 10 6	—
Do. 3rd & 4th	do.	0 19 0	—	—

HARD WOODS.

	per load.	£ s. d.	per load.	£ s. d.
Ash, Quebec	per load.	3 17 6	4 10 0	—
Birch, Quebec	do.	3 12 6	3 17 6	—
Box, Turkey	per ton	7 0 0	15 0 0	—
Cedar, Lin., Cuba	per ft. sup.	0 0 4 1/2	—	—
Do. Honduras	do.	0 0 3 15/16	—	—
Do. Tobasco	do.	0 0 3 7/16	—	—
Elm, Quebec	per load.	0 12 6	5 10 0	—
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 5 1/2	—	—
Do. African	do.	0 0 2 11/16	—	—
Do. St. Domingo	do.	0 0 6 7/8	—	—
Do. Tobasco	do.	0 0 3 31/32	—	—
Do. Cuba	do.	0 0 6 31/32	—	—
Oak, Dantzic and Memel	per load.	3 15 0	5 7 6	—
Do. Quebec	do.	4 12 8	5 0 0	—
Teak, Bangoon, planks	do.	8 10 0	14 10 0	—
Wainscot, Riga (Baulk)	do.	8 15 0	5 15 0	—
Do. Odessa Crown	do.	8 15 0	5 15 0	—
Walnut, American	per cub. ft.	0 2 9	0 8 5	—

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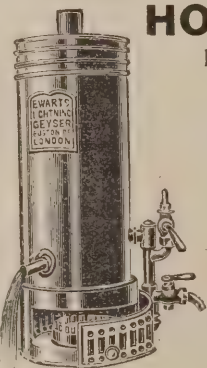
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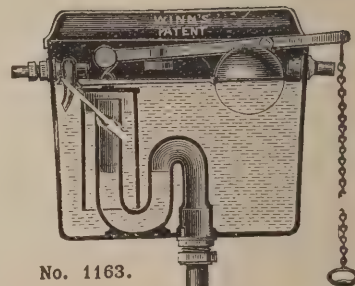
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No. CCLXXVI.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

Architecture and the "Man in the Street." IT has been said that the Gothic Revival was doomed to decay

because those who preached it were not the mouthpieces of any national demand, but only an example of the ease with which the active few may trade on the general indifference. It has even been suggested that the stern and almost bigoted partisanship of the leaders was the cloak of insincerity, and that their convictions were really as weak as the number of their followers was exiguous. It seems ridiculous to have to say that this aspersion is absolutely baseless, and that the enthusiasm for those particular architectural forms, and all that they meant, was probably the most genuine emotional outburst of our day. That the people at large was outside the movement, indifferent to it, if not unaware of it, is true, but when the comfortable assurance is given us that the architecture of to-day is sound because the nation is at its back, the doubt obtrudes itself whether any people has ever yet been really interested in matters architectural, except perhaps in the great days of cathedral building, when religion and art were as closely allied as they ever will be this side of the millennium.

All precedent is against this highly desirable state of things. Even in Athens, with every circumstance favourable to it, the really sympathetic feeling for architecture was by no means universal. We find the intellectual man, for example, taking up just the same position of tolerant superiority with which we are familiar in London now.

Xenophon's "Memorabilia" are a perfect storehouse of the *obiter dicta* of Socrates on almost every conceivable subject. Generals in embryo, budding politicians, and, of course, young architects among the rest, thronged together to sit at his feet and gather wisdom there, and, though Xenophon was, as Coleridge wisely said, less truly "Socratic" than Plato, the literal exactitude of a man who, like Boswell, was somewhat deficient in the finer perceptions, without which his master could not be thoroughly comprehended, is a quality inestimably precious to us.

Here, then, freely rendered, is the somewhat chilling reply of Socrates to the enquiring architectural student: "He, then, who is to have a house of the right kind must so contrive that it shall be both superlatively pleasant to live in and superlatively useful. Is it not pleasant to have a cool house in summer and a warm one in winter, and is it not the fact that, in those houses which face the south, in winter time the low sun shines under the colonnade, and in summer, sailing overhead, leaves it in shade? If this is a desirable consummation ought we not to

build higher on the southern side, so that the winter sun may not be cut off, and lower on the north, so as to escape the cold winds? Put shortly, then, that house in which a man can be sure of finding the most congenial kind of shelter at all seasons, and most securely house his belongings, may be reasonably said to excel both in pleasantness and in beauty. Painting and decorative work will detract from our sense of well-being rather than add to it."

So severely utilitarian a contribution to architectural lore, uttered under the very shadow of the Parthenon, is a somewhat hard morsel to swallow, and, if we make a seven-league stride over some twenty centuries, we shall catch from the lips of the immortal doctor something very like an echo of the final words.

The occasion was a meeting of Dr. Johnson and Boswell with Gwyn the architect—a "fine, lively, rattling fellow," Boswell calls him—in the Oxford coach. Johnson expressed his disapprobation of

ornament for its faults, for its tendency to redundancy, for its fatal gift of obscuring blunders; they appear rather to found their opinions on a strained and false application of dry, almost brutal, common sense to the subject matter of an art. This, or something like it, is the characteristic "State" view of architecture in this country, and it was only slightly burlesqued when a well-known Parliamentary arose in the House and declared his preference for a Surrey-side soap factory over New Scotland Yard. Unfortunately, this attitude is far from being the monopoly of official circles. How many Londoners, for instance, as they cross the bridge to Westminster, have a glance for the building in question? Of those who do look, how many see anything in it, or carry anything away from it? The plain truth is that half London is perfectly well satisfied with the type of design which finds its expression in Gower Street as it was; the other half is no less content with Gower Street as it is. The meanness of the one, the cheap meretricious-



THE SCHOOLS, PORT SUNLIGHT. DOUGLAS AND FORDHAM, ARCHITECTS. (See p. 279.)

ornamental architecture, such as magnificent columns supporting a portico, or expensive pilasters supporting merely their own capitals, "because it consumes labour disproportionate to its utility." For the same reason he satirized statuary. "Painting," said he, "consumed labour not disproportionate to the effect, but a fellow will hack half a year at a block of marble and make something in stone that hardly resembles a man. The value of statuary is owing to its difficulty. You would not value the finest head cut upon a carrot."

Dr. Johnson, Boswell explains, kept Gwyn "in proper subjection, but with kindly authority," a considerateness which made the latter pluck up and deal a home thrust in return. "What, sir," he said, "will you allow me no value to beauty in architecture or in statuary? Why should we allow it then in writing? Why do you take the trouble to give us so many fine allusions and bright images and elegant phrases? You might convey all your instruction without these ornaments." Johnson smiled with complacency, but said, "Why, sir, all these ornaments are needful, because they obtain an easier reception for truth; but a building is not at all more convenient for being decorated with superfluous carved work." This contemptuous setting-aside of decoration does not seem to rise from any actual love of simplicity in either instance. Neither Socrates nor the arbitrary doctor reject

ness of the other, have nothing revolting for the untrained eye.

For the millions, indifference is the normal state, and the attitude is perhaps more dignified in itself and less distressing to others than the emotional vagaries of those laudable persons who both proffer advice and lavish applause with generous but mistaken fervour. Not long ago these good people were falling into raptures over the Boadicea group, which is after all only a platitude. No place was too good for it, if we were to believe them—the top of the screen at Hyde Park Corner, the centre of Parliament Square; even, irony of ironies, the site of the Gordon statue, deposed. Give these same enthusiasts an individual piece of work, like Mr. Gilbert's statue of the Queen, and they feel vaguely that fun is being poked at them, and resent it. They are, in fact, the geese who guard the citadel of bad and commonplace tradition; whether cackling in jubilation, or raising the hiss of terrified perplexity, they are unerringly and everlastingly wrong. If the ranks of the army which, to sanguine eyes, is marching under the banner of architecture, are recruited from such material as this, then it is no better than an armed mob; but the army in sober reality is the merest phanton. All we have any real warrant for saying is that, while the body of cultivated opinion, outside the professional ranks, was perhaps never larger or better inspired than at present, or munici al authori-

ties more alive to the duty of cultivating what is beautiful, and setting an example to private enterprise, architecture itself rejoices in the vitality which springs from these larger opportunities, from the greater appreciativeness of the public, from a more pervading sense in the artist of his privileges and responsibilities. All these will gather force as the years go on, but the nation as a whole is not interested yet.

A. E. S.

"Restoring" Doncaster Parish Church.

FORTY-SEVEN years ago, in 1853, the ancient parish church of St. George, Doncaster, was destroyed by fire. It was a great calamity, for this was one of the finest churches of Yorkshire, and its great central tower was not only a prominent landmark for many miles around, but had also a peculiar place in the affections of Doncaster people, who are not all engrossed in the St. Leger, or others of the races for which Doncaster is more notable to the outside world than as a centre of spiritual activity. The church had, of course, to be rebuilt, and almost equally of course it was designed by Sir Gilbert Scott, even although there was a very competent architect in Doncaster, to whom the work should have fallen. Scott was at that period rather more than a fashion. Indeed, he was almost a superstition. Like the great William of Wykeham, four centuries and a half before, "everything was done by him, and without him nothing." We owe an apology to the shade of Wykeham for the conjunction of his name with that of Scott, but let that pass. Scott literally overran the country, and was the Whiteley of architectural practice for some thirty years—a veritable Universal Provider. Did you want a church built or a cathedral restored he was your man; and equally your man if the commission for a Government office was going, or the building of a railway terminus to be had. No false pride about him; a Gothic railway terminus while you waited, and, although confessedly unable to properly design in Renaissance, rather than lose the work, he designed an "Italian Renaissance" block of Government offices in Whitehall, which is an admitted failure. The man was too busy. With insatiable greed, he grabbed everything and lacked the time to perform his work with due care. Apart from the inevitable unchanging Scott formulæ in design, we have another quarrel with him. He took little or no care to select his building stone, with the result that the works he did are even now going to decay. From one point of view—that we shall have so many characteristic pieces of Scott the less—this may be no loss; but for many good folk who need safe churches to worship in, and cannot readily distinguish between good, bad, or indifferent architecture, it is distinctly disappointing to find stones falling and carving crumbling before a building is fifty years old. Thus, there is some natural indignation in Doncaster that necessity should arise for the present restoration of the church that Scott rebuilt from the ground in 1853, and for which appeals for a sum considerably over a thousand pounds are being circulated. A wrong choice of stone is in this case said to be the cause of the decayed condition of much of the exterior work, and probably the greater part of the crocketing and the whole of the undercut foliage carving will have to be renewed. Carving of the most conventional kind it is, and in its endless unchanged repetition typical of the uninspired nature of the designer. No inspired artist he; no resourceful Sedding; no enthusiastic Street!

C. G. H.

On Reflection.

Something Missing. It would be futile to deny that there is a general lack of uniformity in our London street architecture, though it is doubtful whether artistic people would agree to call this a defect. Many, having in their minds memories of the old portions of Continental towns, declare that diversity of style—or perhaps we should say appearance—makes a picturesque street. Others, impressed with modern Brussels or Paris, declare as emphatically that the Quadrant in Regent Street is our only piece of street architecture that justifies its existence. It is not our intention to treat upon this vexed question which is being so vigorously discussed in connection with the Strand improvements. We wish to point out that, having adopted the "close formation" order of building, it must be continued, and that any permanent gap in our serried ranks of tall houses and shops constitutes a public eyesore. If it is necessary to emphasise the point, we would ask the reader to walk down Oxford Street and Holborn and see the new stations of the Central London Railway Company. The Company does not apparently intend to carry its building operations above the ground floor, and thus we have great gaps in the lines of houses, disclosing dirty back-fronts and outbuildings behind. In such an overcrowded city as London we should have thought suites of offices or flats above the stations would be a paying investment. Possibly the stations are not intended to be left in their present condition, and we sincerely trust not, for these gaps, as we said before, are an eyesore, and their irritating effect is heightened by the protection of black roofing felt, fixed with white battens, which covers the discarded party walls.

Nottingham. THE forthcoming opening of the Nottingham Central Station marks the completion of a great railway undertaking, and the dawn, let us hope, of a brighter architectural era in that city. Architecturally speaking, Nottingham is one of the queerest cities in the provinces. Most of our cities have more or less well-defined areas, their central business quarter, their first class dwelling quarter, their second class dwelling quarter, their slum district, and their factory division. Nottingham is unique in having all these divisions hopelessly mixed up. It is a city without beginning or end. Public buildings, private dwellings and factories are mixed up in endless confusion. Dirty warehouses and workshops face the Guildhall and loom up at the back of the University College. Furnace chimneys rise in the middle of the residential quarters and slums within a stone's throw of the market place. The new railway has rendered immense service to the city in sweeping away a large portion of the old slums quarter; but there is still much property round London Road and in the Smeinton district that could well be spared. There are three high-class dwelling quarters—"The Park," Carrington, and the little village, now practically a suburb, of West Bridgford on the south side of the Trent. The Park lies to the west of the Castle, being part of the Newcastle estate, and contains some of the best houses in the city, and although the majority of them have no architectural style or merit, they are preferable to the showy and pretentious dwellings at Carrington which breathe the spirit of the *nouveau riche*. West Bridgford, the newest residential quarter, consists mainly of comfortable semi-detached houses for professional men and prosperous tradesmen. But the great blot upon the architecture of Nottingham appears to date from the past lace trade boom. It is the

great area of mean, cheap, speckled-pink brick dwellings which lies to the north-west of the town round Shakespeare Street, Dryden Street, Mansfield Road, and away west of the Forest to Radford and Basford all round the Grand Theatre. The enormous area covered by these houses makes the city practically hopeless from an architectural point of view. That the building of this low type of dwelling was a grievous mistake can easily be seen, but the mischief is irreparable. Still, there is much that the corporation might do. The clearing away of the miserable houses between Parliament Street and the Guildhall and the laying out of the space as a public square, and the clearing of the factories and workshops between the University College and Burton Street, and the extension of the College buildings as a technical institute or some similar worthy institution would make a fine centre to the city. The corporation might, too, consolidate the public offices by erecting a building for the Water and Rates Departments on the site at the back of the Guildhall. This would involve the destruction of the Circus shed. It is extraordinary that a city which has laid out boulevards and a riverside promenade could permit the erection of such a place in close proximity to its chief public buildings.

The Slum of To-morrow.

"WHY pay rent?" is a startling line that frequently greets one in our suburban papers. "Why pay rent?" when for a small sum down and instalments for half a lifetime you can "buy" a modern freehold villa residence with tiled forecourts, electric bells, bath h. and c., &c., &c., secured to you by free deeds, the whole paradise situated in a rising and salubrious neighbourhood, within easy access of 'bus and rail, and with excellent views of two board schools, an iron mission church, the local workhouse, and 500 similar freehold desirable modern villa residences. Undoubtedly this speculative work must pay, or the advertisements would not appear with their accustomed regularity, but we pity any man gulled by these advertisements into buying such property. Put up to sell, they need repairs before the ink is dry on the title deeds, and these repairs are but the first of a long series of similar attentions which leave the house-owner at the end of five years with the unpleasant conviction that he has practically reconstructed the house at about half its original cost. We recently came across a street of such houses in the Fulham district, and on most of them the word "sold" was prominently displayed. In a few years the owners will probably feel that it is they who have been "sold." But if the owners are in sorry plight the community at large also suffers. The freehold villa residence of to-day will be the slum of to-morrow. The majority of buyers belong to the poorer middle class, and they cannot afford the necessary repairs. In time their houses will sink into decay and ruin, a lower class of tenant will inhabit them, a class never very prone to the cleanliness that is next to godliness, and so this property will increase in squalor and filth until it becomes the slum pure and simple. When one thinks of the enormous belt of these houses all round the metropolis the prospect for future generations is appalling, for it will be beyond the power of any County Council to buy out and clear away. A remedy for the evil would be greater powers to the authorities, powers to control the erection of buildings, and to see that if capital is limited the money is spent on sound bricks, good mortar, and well-seasoned timber instead of on the soft rubber-brick fronts, artificial stone dressings, tiled pavements, electric bells and other gimcrack attractions upon which the sale of this rotten property depends.



THE VILLAGE SHOP, PORT SUNLIGHT. GRAYSON AND OULD, ARCHITECTS.

Modern Industry and the Village.

By ESTHER WOOD.

TO say that architecture reflects the social and industrial habits of a people, and changes as they change, is, of course, a truism. Modern industry builds its peculiar monuments upon the ruins of a pastoral society, and factory labour has broken the bonds which tied the peasantry to agricultural estates. The ideal village of the painters and poets—the picturesque hamlet with its old church, manor house, and cottages—is passing away, and its population is being absorbed in towns and cities which have wholly altered the face of its life. But while we may deplore the loss of so much that is romantic and beautiful in the village of olden time, we must remember that modern industry has its reconstructive as well as its destructive side. Architecturally considered, there seems to be no reason why the growth of town life should mean the triumph of all that is hideous and degrading, though it is the fashion with many writers to assume that it must be so, or that the centres of work and trade should not be as dignified and artistic as talent can make them.

The building of the modern industrial village or factory town is based, of course, on conditions very different from those which brought together, in the course of centuries, the straggling cluster of homesteads which hung upon the goodwill of the parson's wife and the squire. Labour to-day is more highly organised, more centralised now than ever before; and our "captains of industry" are finding it among their social functions to provide large residential colonies for their employees, a provision from which the "model" village or township naturally springs. When built upon a philanthropic basis, it may naturally become like Saltaire—as mean, sordid, and insanitary as an ordinary slum. On the other hand, it may be made as healthy, comfortable and picturesque as Bournville, the settlement which Messrs. Cadbury have found so commercially profitable, thereby happily removing it from the sphere of economic dispute. Similar and very successful experiments have been made in France by Leon Harmel and other manufacturers, and in England by Mr. W. P. Hartley, at Aintree, Liverpool; by Messrs. Lever Brothers, at Port Sunlight, Birkenhead; and by the proprietors of Cresswell, a small mining town near Bolsover. It is from the two last-named that our present illustrations are taken.

The dominant idea in the building of Port Sunlight has been to get away as far as possible from the Saltaire type—the monotonous rows of square-set streets, with dwellings all one shape and size, which at the best could only result in a feeble copy of New York; and to proceed with as much diversity of treatment as a pleasant and open suburb would allow. The insuperable difference between the modern village and that which has slowly grown out of the past is that the latter bears the stamp of many ages, many traditions, many generations of men; while the former, springing up, as it were, in one night, for a new generation without local sentiment or history, is apt to depress us with its hard newness and isolation of interests in life. The problem for the modern architect on such an estate is to find in these fresh conditions of house building a dignity and beauty of their own; to atone for lack of tradition and precedent by originality and fertility of design, as well as a certain sympathetic reverence for the future and for things that are new. His task is to give to the working miner and the "Sunlight" soap manufacturer

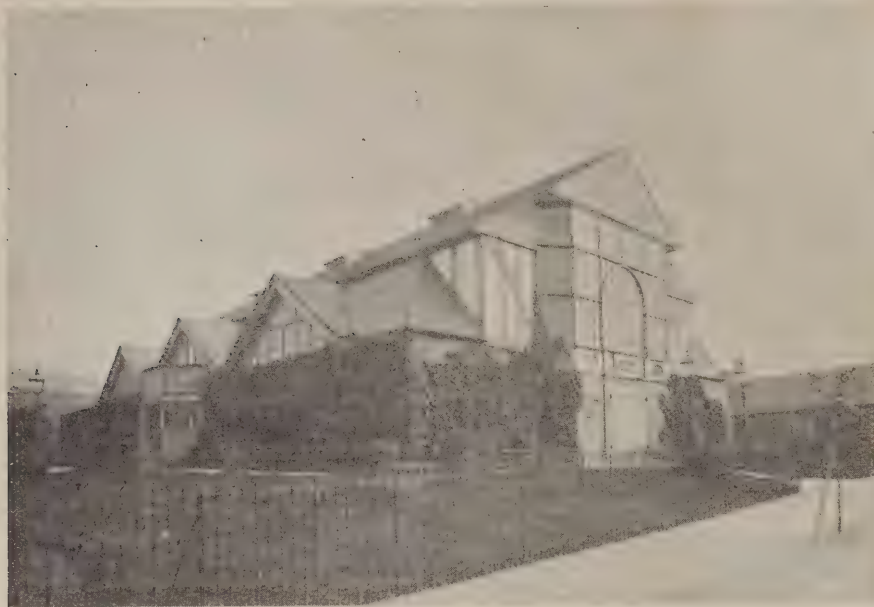
a home, which, without aping a suburban villa, shall be admirable and even enviable to his neighbours, and to secure for the public something pleasant to look upon in the place of the landscape he is bound to destroy. Instead of coming together haphazard at the will of the jerry-builder, or being ranged in solemn blocks like barracks or penitentiaries, the modern industrial colony is rationally and symmetrically built from its centre to its edge, with its street-plan fully worked out beforehand and due provision made for parks and gardens, markets and public buildings, and every necessity of social life. It should also be possible to be systematic without finality—leaving ample margins for something to be added year by year, and thus securing some hint of what one misses in a mass of contemporary work, the sense of natural growth and enlargement, expressing the development of the life within.

The village of Port Sunlight has great advantages of site, being grouped on each side of a valley, which gives opportunity for a central bridge, making a very picturesque feature in the general plan. Bridge Street thus becomes the central thoroughfare across the village, and the schools at the centre of it are given a convenient position and an open aspect. Round these the various groups of houses are broadly scattered and well broken up, and have ample gardens and footways.

The public buildings first claim attention. It may be noted in passing that from Port Sunlight estate both the church and the public-house are absent. The schools are used, however, for public meetings of many kinds, and might easily pass for a church in appearance. They are of brick, with Runcorn stone dressings, mullioned windows, and steep slated roofs; and they have at one end a broad octagonal tower, out of which a flèche rises from within the parapet wall. The grounds are enclosed by light railings and planted with shrubs, and the wide pavement is set with seedling trees. The principal shop is a cheerful and prosperous-looking emporium, occupying a large corner site near the schools. Messrs. Grayson and Ould are the architects. With a base of Runcorn stone, the upper part is somewhat elaborately half-timbered, and has a handsome mullioned bay projecting from the centre of the residential floor. The roof is of tiles, forming wide gables right and left. The shop door stands anglewise to the cross roads, and has over it a signboard hung in a light wrought-iron frame. The construction of the private door, with its simple vertical boarding framed into top and bottom rails, is very pleasing. The village club is a roomy and hospitable building, standing alone, with a



THE VILLAGE CLUB, PORT SUNLIGHT. GRAYSON AND OULD, ARCHITECTS.



THE DINING HALL, PORT SUNLIGHT. WILLIAM OWEN, ARCHITECT.

Runcorn base and brick up to the first floor. The upper part is thence carried out in half-timber and plaster, with the vertical timbers framed in top and bottom cross-pieces. There is a tiled roof, broken by dormer windows, and a cupola rises at the back. The first floor projects in front over an open verandah extending across the width of the house. The windows are mullioned and the entrance doors simple and austere.

The general dining hall is a remarkable structure, and at first sight puzzles us as to whether we are approaching one end of the Crystal Palace or the tropical house at Kew. It is not, however, so entirely ugly as the illustration might suggest. The red tiles with which the gable is hung relieve considerably the bald and uninteresting frontage, and the side that looks out upon the grounds is much more inviting and pictorial. A closer inspection reveals many excellent structural qualities, and the building is well adapted for its practical purpose, being substantial, roomy, and well ventilated in the roof. It is doubtless the immense expanse of windows, projecting in a bay over what looks like a stable door, that gives it the hard hot-house or menagerie appearance. The roof is tiled and the first floor half-timbered with oak left clear. The dining hall, as a public institution, will doubtless take an increasingly prominent place in the building of industrial colonies, the result, of course, being to economise the time and labour of the employees in preparing private meals, and, in the case of large numbers engaged in the same industry with similar working hours, the plan of communal dining is probably convenient. There seems room, therefore, for the design of buildings that shall be more homely than a restaurant, and more business-like than a home.

But the most admirable work is certainly in the private dwellings, which show an unexpected and refreshing diversity of plan. The first group is by Messrs. Douglas and Fordham, the architects of the schools. These houses stand high in pleasant sloping gardens, and are of plaster and half-timber, with a shallow base of Runcorn stone to the under side of the plinth. Above is half-timber work filled in with plaster, the beams running chiefly in vertical lines, with sparse diagonal crossings. In the first, the transference of the reception-room window to the side of the house is very bold and unconventional, since it leaves the lofty but simple front door to fill the lower half of the chief elevation, which it does admirably. The ground floor windows are brought out in slated bays; the upper ones have leaded lights. The roofs are tiled, and the end gable is faced with slabs of stone laid in cement, which cease at the ground floor and spread out to cover the porch.

The second group, by Mr. William Owen, is no less original and interesting. In this case the Runcorn stone not only covers the ground floor elevation, but runs up at one corner in a curve to the roof, thus making the end of the house, as far as the gable, of Runcorn stone entirely. In the frontage the stone ceases at the level of the first floor, save in one projecting bay of the same, which rises from the ground and goes through the slate roof above. Some of the chimneys are circular with diagonal mouldings, others are tall and square, transversely set. The same simplicity in the front doors is again noticeable, and also the agreeable slope of the garden towards the road.

The third group is by Mr. Heron Matear. Here we have Runcorn stone to the sill-line of the ground floor, with plaster and half-timber used diversely above it. The first floor projects very slightly, and the most conspicuous object in the group is the tall, isolated chimney-stack, which seems to require some further relation to the roof.

The accompanying plan of Cresswell village, built by the Bolsover Colliery Company, indicates the arrangement of the cottages in a more symmetrical manner than on the Port

Sunlight Estate. The north centre is occupied by the schools, with the general stores and clubhouse on either side of them. The oblong space in the centre of the village is laid out as a recreation ground, and among the several types of dwelling are those shown in our illustrations. These are of plain brick, with deal woodwork painted white—the design of Messrs. Brewill and Bailey. The roofs are tiled or slated, and some of the gables are finished with copings formed of brick on edge. Economy of space, combined with ventilation and sanitation, has been the rule for the interiors, as it should be indeed, on a varying scale, in all modern house building.

THE AMERICAN CARPENTER.*

By R. H. GRIFFITH.

WHEN we presume to criticise people we ought in common fairness to disabuse our minds as far as possible of preconceived ideas, and to approach the subject like a little child, with a mind open to every impression. It requires an effort, and something like culture, to be able to sincerely say, "He who differs from me is not of necessity a fool." I do not claim to approach the subject armed with the qualifications set forth above, but should I fail in other respects, I shall try to be fair and honest in what I have to say.

American Carpenters and Carpentry.

In England we use the term "carpenters and joiners." In the States they use the term "carpenters" only, and when I speak of America I mean the United States and Canada. The American carpenters are careful of their personal appearance, affect white shirts, and work in overalls. They have but very few holidays, are good timekeepers, and are sober; those who are single—and they are a great number—live well in a boarding-house for about 4.50dols. (18s.) a week. Their wages average about 2.50dols., that is 10s., a day of nine hours, they work Saturday afternoons, and are seldom paid at an extra rate for overtime. The speed at which they work is greater than prevails with us, and each man tries continually to outstrip his neighbour; in fact, it is a continual race with them. What is wanted over there is speed and a good surface—a sort of superior jerry building. As an illustration of what I mean I will give you a couple of cases that are to the point. While

* A paper read before the British Institute of Certified Carpenters on May 5th, 1900.



HOUSES AT PORT SUNLIGHT. DOUGLAS AND FORDHAM, ARCHITECTS.

working in Detroit, and as yet unaccustomed to American methods, I found myself badly left behind in putting on mortise locks. The contractor I was working for saw me fiddling with a keyhole; he approached and pointed out to me that in making neat keyholes I was simply robbing him. "Don't you see those finger plates," said he, "they were made and bought to cover those holes." That was enough for me; I made a $\frac{3}{16}$ in. twist bit do for mortice, keyhole and spindle, and when the plates were on I was astonished to find that everything worked charmingly and looked all right. The screw heads especially looked well, for most of them had been put in with a hammer; by this means I kept my job and transmitted the custody of the wooden spoon to some one else. I did not like this way of working, but I could do it, more especially as my living depended on it. Shortly before I arrived at Seattle, a town in the State of Washington on the Pacific coast, the place had been burnt completely out and the inhabitants were living in tents. The new buildings being put



MINERS' COTTAGES AT CRESSWELL. BREWILL AND BAILY, ARCHITECTS.

on earth where the workers have the talent of organising like they have in Britain; no other country enjoys such liberty, and that without abuse. An anarchist is harmless in England; elsewhere he is dangerous.

Every citizen over twenty-one years of age has a vote in the States, but the American working-man does not count in politics, and public opinion as we understand it here does not exist over there. Bribery and corruption are rampant, intimidation is not unknown, and open voting is, or was, the rule in nearly all the different States. The chief ambition—and a very laudable one—of the American carpenter is to buy a plot of land and build a wooden house upon it. Many of them succeed in doing this. The States have a large moving population, and

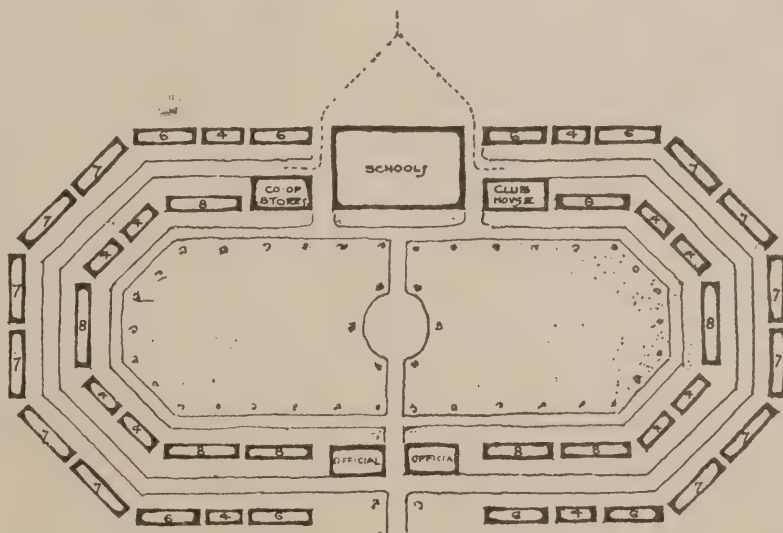
their own, calling the place Walkerville in honour of their president. They build houses and open stores, saloons, and even a bank sometimes; they lay down water pipes and an electric light plant; they have a boat on the river, and often construct a branch railway to tap a trunk line. They buy a few timber claims, and install a first-class plant. After all these preparations are complete they start running, and one by one gobble up all the smaller manufacturers in the same line in the district. Their workpeople are their slaves; they work in the company's shops, buy in the company's stores, live in the company's houses, and drink in the company's saloons. How can they help it? If they want to go away they must take the company's boat or railway; the only other alternative is to walk. If they



MINERS' COTTAGES AT CRESSWELL. BREWILL AND BAILY, ARCHITECTS.

up were very fine ones indeed, and I became an expert hand at casing windows; moulded jamb linings, panelled window backs and fine architraves I rushed up by the score with never a plug near them—I made one thing hold the other up. The mitres were neat and the joints close, they looked well and that was all that was wanted; had I done them in any other way I should have been discharged as no good. True they would not stand kicking, but then they were not put up to be kicked; should they fall down some day that was no concern of mine. Such a state of things is not good for a trade, nor for those for whom the work is done.

In both Canada and the United States, but more especially in the latter, our trade is very much sub-divided. There are erectors, finishers, bench hands and machine hands, but comparatively few capable all-round hands; a carpenter and joiner who can do all cannot do one thing quick enough. Practically speaking, there is no apprenticeship; they begin as axe and saw men and gradually develop into craftsmen. Probably that is one of the reasons why our trade occupies so low a level over there. The worst paid trade is the painters'. We come next, in company with the hod carriers. Want of proper organisation is also a factor to be taken into account. The American Brotherhood of Carpenters and Joiners is about as good as no society at all, and not to be compared in any way with the Amalgamated Society in this country. Workmen over there distrust each other; their trade movements are conducted with bounce and not with money, and consequently they invariably fail. I do not think there is another country



PLAN OF CRESSWELL VILLAGE, NEAR BOLSOVER.

travelling tradesmen are met with everywhere; they are generally single men, and they spend a good part of their savings on the railways. I know the class well, for I was a member of that fraternity for nearly nine years.

Industrial Concerns

in the States are organised on different lines to what they are here. Let us suppose that the undertaking is to be the manufacture of joinery. This is how they usually go about it. A company is floated with a large capital. They do not care to pay fancy rents, and they want to make all the profit possible from the venture, so they go out into the country, where land is cheap, and start a township of

presume to have a grievance the company will only treat with them individually, and we all know what that means. If they get desperate and strike, the company swears in a lot of special constables to protect their property, and arms them; sometimes they hire an armed force of Pinkerton detectives. These special constables and detectives, who are allowed by the State to carry and use firearms after taking an oath, are willing to shoot down their fellow-countrymen for 2dols. a day. If all these are not enough to guarantee peace, the National Guards—that is, a sort of militia force—are called out; for is not the first duty of Government to protect property? What is called the "Truck System," illegal here, is smart business over there. These



MINERS' COTTAGES AT CRESSWELL. BREWILL AND BAILY, ARCHITECTS.

large trusts become so rich and powerful that political parties, and even the Government, become their tools. The most respectable and powerful political party in the States at the present time—the Republican party—dare not legislate against them. Some day we shall probably read of an industrial revolution taking place over there; the salvation of the country will demand and justify it.

American Wood-working Machines.

America is eminently a wooden country; it is also the home of labour-saving machinery and labour-saving tools. Their wood-working machines are, without a doubt, the best in the world. Their spindles ("shapers" they call them) are double-headed and revolve in opposite directions, and are, according to my experience, far more effective than single-headed spindles. The general joiner idea does not find favour over there; a machine that can do everything takes too much time to set, and can do nothing effectively; one machine for one purpose is the best if it can possibly be afforded. It is commonly stated as a reproach that American machinery has but a short life, which more than neutralises its greater capacity. Personally, I do not consider a machine warranted to last till the crack of doom a profitable investment. Let us take the life of a machine at, say, fifteen years. By that time there ought to be a better machine on the market, and repairs, we all know, are expensive in more ways than one.

I notice that frame saws are still in vogue in this country. In the timber mills of the State of Washington, the largest of their kind, they use two large circular saws, one placed above and a little in the rear of the other, a travelling platform carrying the log. The teeth of these saws are screwed in, and when the saw is to be sharpened they are taken out, screwed on the fence of a sharpening machine—that is, a grinder—and in less time than it takes to tell an emery wheel sharpens them all at one time, and to exactly the same size. These machines cheapen production, and allow unskilled labour to enter our ranks; they are inevitable, but they destroy our trade, and joiners are not the only sufferers. I am sorry I cannot discuss these machines at greater length, as I must hasten on.

Hand Tools.

The American hand tools are, generally speaking, superior to the English. Their levels are about 2ft. 3in. long, with a plumb and a level-glass, and they are very handy indeed; most of their short-handle axes are only ground on one side; this I also think an improvement. It has now become very difficult to buy in the States a screw-

driver that has not some patent or other on it. The twist bits and socket-paring chisels are much superior to centre bits and firmer chisels. It is necessary to become used to these tools to fully appreciate their superiority. The teeth of both the rip and cross-cut saws are smaller over there than is the case with us; nine teeth to the inch make a very good saw for general purposes. American iron bench planes and block planes are familiar to you, so I need not discuss them; I may, however, say in passing that it is necessary to true up their faces, for few, if any of them, are true when bought. The American iron plough is certainly handy for some things, but, generally speaking, it is more of a gentleman's toy than a workman's tool; it does too many things. I wish to say a word or two about a very good tool they have over there, and which we very seldom meet with here; I mean the "steel square." No American carpenter is without one—indeed, he would not be happy without one. This is an extremely useful tool with great possibilities, and is used for setting out roofs, braces, and, in short, for all manner of work; some day, perhaps, it will find favour over here; it certainly deserves to. American

wooden planes are inferior and many of their patent tools are no good. There are

No Technical Schools in America

like we have in England—at least I never saw nor heard of one. There are technical colleges for the professional class, but no evening schools for the artisan. This fact and the sub-division of labour cause the American carpenter to be far behind the English carpenter in all-round technical knowledge; for example, how often have I seen joists trimmed over there with double tenons. The American carpenter is more of a schemer, more fertile in resource, more methodical and far less conservative in his ideas than the English carpenter. In the town of Seattle I once had a foreman with whom it was a liberal education to work. The building was a large one and everything was done on the job. One part of the basement was fitted up as a machine shop, another part as a workshop; temporary closets were connected with the drain, every convenience was studied, and a joiner never did what a labourer could do. Everything was prepared ready for fixing in the basement, even to the mitre boxes, saw trestles, and nail boxes for the fixers. Men never had to ask what they were to do next, and seldom changed their jobs; carts came in one way and went out another way, order and method were supreme, and everything went like clockwork. I have seen thirty joiners engaged in one day, and only four or five of them left on the job at the end of the second day, the rest having been discharged as no good; men were plentiful and jobs hard to get. I have seen these wholesale discharges take place repeatedly; the effect was reckoned good.

The hardware in America is very well packed. Let us take the hinges for example. They are made nearly all with a loose pin; you fit one part of the hinge on the frame and the other part on the door; you then lift the door into position and put in the pins. There is never any need to rimer and countersink for the screws, which are packed in the same boxes as the hinges and fit exactly; if anything is wrong you send the packer's number to the firm that supplied them. We now come to

Wooden Buildings.

These are often put up three and four storeys high; some are lined on the outside over the rough boards with a single brick veneer, tied to the boarding with hoop iron, while others are covered with clap boarding, or feather-edge boarding, fixed horizontally; all are lathed and plastered on the inside. In small houses a storey and a half high the usual mode is to



HOUSES AT PORT SUNLIGHT. WILLIAM OWEN, ARCHITECT. (See p. 279.)



HOUSES AT PORT SUNLIGHT. HERON MATEAR, ARCHITECT. (See p. 279.)

carry the joists of the top floor on a "ribbon" let into the side of the uprights; in the larger erections each storey is framed independently. When I say framed I mean toe-nailed together, for mortises and tenons are seldom seen in these kinds of erections. The roof covering is usually of cedar shingles, sawn, not split, and not wider than 8 in. The scantlings used in the frame of such buildings are 2 in. by 4 in. and 4 in. by 4 in. These buildings are durable and warm, lend themselves easily to decoration, and give every satisfaction. Cedar shingles are reckoned to have a life of twenty years, but they often last much longer. It is not uncommon sight to see a frame house—that is, a wooden house—make a journey from one site to another. Do not imagine that they are poor affairs. Often the finishing inside them is very superior, and their outside appearance very ornate. In all better-class buildings the floors are double, the top floor being laid when the buildings are finished—or "trimmed" as it is called here. It is seldom that scaffolds are used by bricklayers and masons, as they generally work overhand from the inside, their staging being trestles and planks. The system of supervision on buildings and in shops is not to watch the man, but to watch how much he does and how he does it; this is more effective and less humbugging than watching the man, for some men can work hard and do little, while others can play with their work and do a great deal.

The American carpenter's knowledge and opinion of other countries are very elementary and imperfect. They have an idea that we in England, for instance, only earn about 6d. an hour, or even less; that we only eat fresh meat about once a week, that we touch our hats to lords and dukes, and are very badly educated; in short, they are sorry for us. I have heard very remarkable statements made about England at political gatherings, and equally remarkable statements placarded on bannerettes carried in processions. Often have I heard the remark made in all sincerity by American carpenters that "they have never come across a good hand straight from the old country." They acknowledge having known English carpenters who have developed into good hands in America, but none that came over as such. In Manchester I have heard joiners and foremen declare that the American carpenters who were brought over to work during the great strike of thirteen years ago were no good at all, and had to return when the strike was over; indeed, some had to return before the strike was over. The American carpenter is better tamed than the English one. He will stand more abuse and can be driven better; in other respects he is much the same as the British carpenter. We are not regarded in the same way as other foreigners are over there; the name of Smith commands full money, while that of Sorenski or Boisvert is rated at a shilling a day less. Many Sorenskis apply to the Government to have their names changed on the ground that they are unpronounceable. Boisvert saves himself the trouble and expense by simply calling himself Greenwood. *Bois vert* in French is green wood in English.

Such, gentlemen, is our position in the land of the almighty dollar. Self-righteousness is not an amiable virtue even when justified, and in pointing out holes in other people's coats I certainly do not wish to encourage the erroneous belief so prevalent with the masses in all countries—that they are the finest people on earth, possess all the virtues, that the rest of the world are nowhere compared with them, and are fit only to be ridiculed. Many ugly things may be said with perfect truth about ourselves.

The Incorporated Church Building Society voted grants during 1899 for thirty-four new churches and twenty-five mission or temporary churches, besides six grants for rebuilding churches and twenty-eight for enlargements. The total cost of the proposed church works was £292,217, and the Society's grants came to £16,035, in addition to £665 for mission buildings.

KK 2

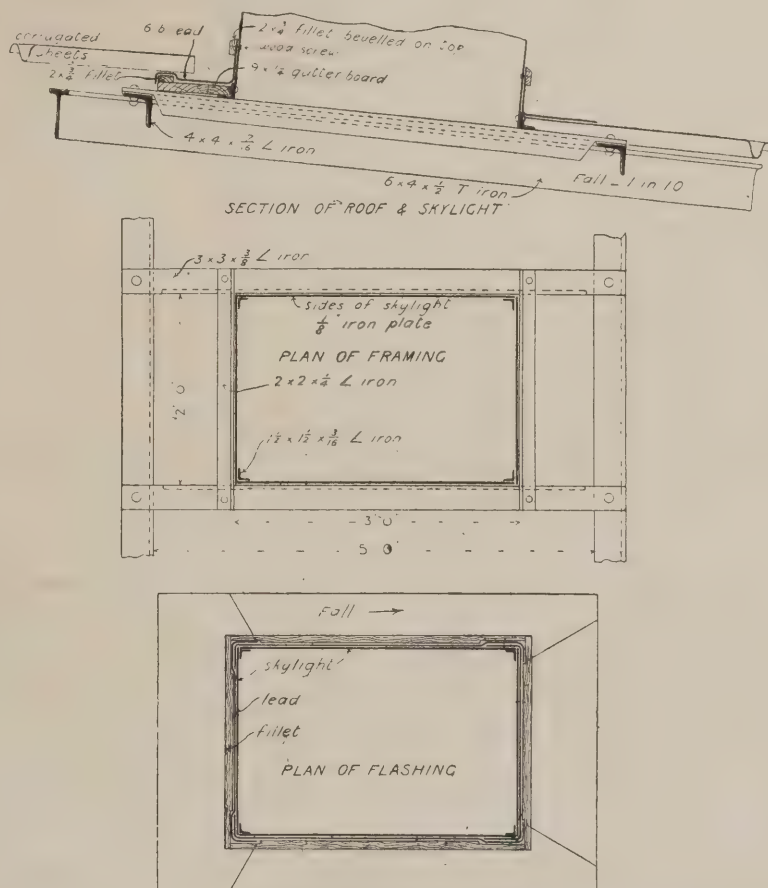
Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Iron Skylight.

RAVENS COURT PARK, W.—ROWTON writes: "Will you please give details for an iron skylight in a corrugated iron roof. The size would be, say, 3ft. long and 2ft. wide. The slope is 1 in 10, no boarding, purlins of angle iron 5ft. apart. I should like a section showing all flashings. The roof would be flat, and the light half-way up."

The accompanying illustrations show section of roof and skylight, plan of framing, and plan



of flashing. The corrugated sheet on upper side of skylight should be wide enough to lap well over the sheets passing down the sides.

HENRY ADAMS.

Sicilian Marble for Baths.

CHARING CROSS, W.C.—BATHER writes: "I shall be glad to have some information as to the use of Sicilian marble for the sides and bottom of a swimming bath. Does it keep clean without much trouble, and does it keep its colour?"

Replying to "Bather's" enquiry, if my memory serves me rightly, Sicilian marble is used for the bottom and sides of some old baths in Whitechapel or Bethnal Green, and no doubt elsewhere. I was not favourably impressed with its appearance. The material is porous and easily stained, and harder to clean than a glazed surface. As it can be obtained in large slabs, few joints are necessary, and these can be made very close. With the aid of black or dark-coloured marble strips and small squares, a fine broad effect may be obtained, but these are its only advantages as far as I know. Undoubtedly glazed tiles form the best surface. They look clean, and are easily kept so.

A. SAXON SNELL.

A. SAXON SNELL.

Clerks of Works Association.

SEAFORTH. — PETER THE GREAT writes : " What is the name and address of a clerk of works association (if any) which finds positions for men of practical experience in the building trade as clerk of works ? "

If our correspondent will apply to the secretary of the Clerks of Works Association of Great Britain, Carpenters' Hall, E.C., he will obtain all the information he requires, as this association requests architects requiring clerks of works to communicate with them. In reply to a further query of our correspondent, it is rather a large order to ask us to give the ground and gallery plans of a Wesleyan church to seat 1,000 persons, together with an organ chamber, choir accommodation, minister's vestry and church parlour, even though the question is only asked "to ensure safety for the gallery." On page 77 of our issue for March 7th last there is an illustrated reply to a query about supporting a church gallery, which will doubtless be of use to our correspondent.

Books on London Building Public and Health Acts.

RICHMOND.—METRO writes: "I should be glad to know whether there is a cheap and trustworthy work on the London Building Act, 1894; also a similar book dealing with the Public Health Act, 1875?"

The following are good books on the subjects mentioned: "London Building Acts, 1894-1898 (B. T. Batsford, 5s. 6d.); "The London Building Act, 1894," by Alexander J. David, B.A., LL.M. (Crosby, Lockwood & Sons, 3s. 6d.); "The London Building Act, 1894, and the Amendment Act, 1898," by W. Russell-Griffiths, LL.B., and Francis W. Pember, M.A. (W. Clowes & Sons Ltd., 12s. 6d.); "Public Health Act, 1875" (B. T. Batsford, 6s. 3d.).

Dam for Small Streams.

ULVERSTON.—J. T. S. writes: "I shall be glad to know the best and cheapest way of forming a dam to a stream, as shown by the enclosed sketches (not reproduced): A wall of stone built in clay or concrete has been suggested, with a bank up each side for fish to climb. Depth of wall to be about 6ft. or 7ft."

In order to make a good job, it would

be necessary to choose a dry season or to temporarily divert the stream. The retaining wall for path having been put in, the centre wall across stream should be commenced, but it should be of clay puddle, not stone. On each side any available material may be put down to form banks, and the sloping surfaces may be protected by stone pitching set by hand. The top of the puddle wall must also be protected by stones of good size, and on the down-stream side the stones or apron must be carried well forward to prevent scour undermining the dam.

HENRY ADAMS.

THE SURVEYORS' INSTITUTION.

PROFESSIONAL EXAMINATIONS, 1900.

Professional Associates.—The following student candidates have passed the examination for the Professional Associateship:—Bartlett-Morle, D. A., London; Bingham, W. R., London; Blyth, H. K., Bristol; *Brierley, H. C., Monmouth; Bruzard, G. J., London; Burman, W., Kiverton Park, near Sheffield; Chesterton, S. J., London; Cope, G. H., Broxton, Chester; Cramphorn, C. H., Chatham; Davidge, W. R., London; Davies, J. G. M., Skelton, near Penrith; Dellschaft, A. H., London; Dudley, R., Neath, Glamorgan; Earle, J. W., Woolton, Lancs.; Ellis, R. L., London; Fletcher, H. V., Penhurst, Tonbridge; Foster, W., London; Fox, W., Bournemouth, Hants; Freuer, W. S., King's Lynn, Norfolk; Goodbody, F. A. S., Bristol; Hall, C. A., London; †Hancock, H. S., jun., St. Austell, Cornwall; Harlow, W. W. R., London; Heal, H. G., Southsea; Hider, S. W., London; Hinchcliffe, J. H., Leeds; Hooper, A. E., Andover, Hants; Houghton, W. C., Woodford Green, Essex; Howes, A. B., London; Johnson, F. J., Erith; Jonas, H. D., Whyteleafe; Jones, A. B., London; Kiskingbury, A. V., London; Knibb, F. C., London; Lanham, L., London; Lisney, H., London; Mackintosh, W. S., Kingston-on-Thames; Perks, H. E., Bedford; Pitt, P. S., Cambridge; Robinson, J. A., Kirkby Lonsdale; Schofield, P., Preston, Lancs.; Stead, E. J., Preston, Lancs.; Stockings, A. P., London; Stone, C. F., Wigton; Strudwick, F. E., Bromley, Kent; Taylor, W. H., Nuttall, Nottingham; Timbrell, A., Tavistock, Devon; Tonson-Rye, J. R., Crookstown, co. Cork; Turner, V., Wakefield, Yorks.; Wachter, T. B., Canterbury; Walton, L. M., Bexley, Kent; Withycombe, J. G., St. Albans; Young, K. J., London.

The following non-student candidates have also passed the examination for the professional associateship:—Arnold, H. H., Norwich; Banks, E. J. S., London; Basley, H. P., Bickley, Kent; Baylis, A. E., Canton, Cardiff; Beasley, T. C. P., Harston, Grantham; Bettger, H. A., London; Blatherwick, C. W. R., Wye, Kent; Bliss, T. C., Ealing, W.; Brimacombe, C. S., London; Browning, E. G., London; Bryan, A., Nuneaton, Warwickshire; Bully, H. W., Exeter; Burr, H., Rushden, Northants; Charles, M. T., Walsall, Staffs.; Clarke, E. S., London; Clegg, R. L., London; Clunn, T. H. G., Bath; Cobb, H. A. W., London; Cochrane, W. J., Hetton-le-Hole, co. Durham; Cook, F. C., Nuneaton; Cooke-Yarborough, O. F., Doncaster; Cooper, G. A., London; Corbett, J. R., Greenheys, Manchester; Crockatt, H., Llandudno; Cullen, F. V., London; Daubney, C. A., London; Dunstall, H. H., London; Evans, R. M., Hanley, Staffs.; Foster, W. H., Litherland, near Liverpool; Fox, E., Bournemouth, Hants; Gale, H., Goring-on-Thames, Oxon; Goodlife, S. J., Cambridge; Grove, R. T., Harpenden, Herts; Hall, A. W., London; Hewitt, F. T. B., Market Harborough; Hilliard, H. N., Chelmsford, Essex; Hindmarsh, R. F., Newcastle-on-Tyne; Hipsley, F. W., Sutton Coldfield; Kaye, H., Sheffield, Yorks.; Kelly, A. R., London; Kemsley, N. B., Woodford Green, Essex; Lawley, G. F., London; Leigh, V. S., London; Living, C., jun., Plaistow, Essex; Maggs, L., London; Martin, J. P.,

Brighton; Mills, A. E., London; Mills, D., Westbourn, Ipswich; Morgan, E. A. D., St. Asaph, North Wales; Newman, W. P., London; Parker, H., Buxton, Derbyshire; Perrins, G. L., Preston, Lancs.; Pinson, G., Solihull, Warwickshire; Plant, W., Leicester; Pole, A. C. R., Basingstoke; Pugh, E. S., Wolverhampton; Rafferty, H. V., High Wycombe, Bucks.; Rafferty, P. C., Birmingham; Roberts, J., Aberystwith; Saunders, E. W., London; Shettle, E. G., London; Thorold, J. E., Grantham, Lincs.; Tiffin, T. E., West Hartlepool; Townly, R. S., Hastings; Upsdale, A. R., London; Walsh, F. L. M., London; Walter, T. J., Bournemouth, Hants; Waters, F., Norwich; West, S. H., Ealing, W.; Whatley, E. J., London; *Wheldon, M. L., York; White, B. W., London; Whitten, G. J., Tenby, South Wales; Williams, R. E. H., Enfield Wash, N.

Irish Candidates.—Bourchier, C. J., Tullamore; Gibbon, E. A., Waterford; Stewart, H. P., Dublin.

Scottish Candidate.—Mather, J., Brodick, Arran.

Fellowship.—The following Professional Associates have passed the Fellowship Examination in Division IV:—Addiscott, H. H., London; Arno, S., London; Baverstock, H. B., Godalming; Birch, F. J. L., Melpash; Bridgewater, C. J. B., London; Burgess, H. H. P., London; Carr, H. F., Waltham Abbey; Chesterton, F. S., London; Chichester, R. H., Cheswardine, Market Drayton; Cole, J. T., Torquay; Cowper, W. S., Sittingbourne; Cutler, G. A., London; Dawson, G. C., Nuneaton; Dunlop, D. O., Manchester; Ellis, A. R., Shalford; Goadby, H., Twickenham; Goodman, A., London; Gripper, J. E., Battle; Hayward, T. W. A., Sudbury; Healing, O. J., London; Hinks, H., Croydon; Hood, T., Halstead; Hope, A. E., London; Jennings, F. P. D., Bournemouth; Johnston, R., London; Jones, D. P., Llandaff; Kirby, E. F. J., Liverpool; Kirk, J. W., London; Latham, A. T., London; Leather, W. B., Leeds, Yorks.; Lomas, A. D., Manchester; Luker, D., London; Matthews, D. S., London; Mumby, E. F., London; Nockolds, A. G., Saffron Walden; Parry, R. F., Bishops Waltham; Pinder, R., London; †Pineger, J. R., London; Ridley, P. E., London; Robbins, W. F., Hastings; Sanday, W. H., Uxbridge; Scrivener, J. C., Caterham Valley; Shufflebotham, J. H., Taunton; Sly, W., Whitehaven, Cumberland; Smith, J. A., Knutsford; Smith, P. W., London; Southorn, C. H., Leamington Spa; Stimson, E. F., London; Terry, F. W., York; †Thomas, C. J. H., London; Thurgood, A. E., Guildford; Tremlett, W. W., Nuneaton; Type, M. O., Moseley, Birmingham; Watson, D. A., Shirburn, near Wallingford; Wells, F. B., York; West, H. J., Leytonstone; Wilkinson, P. N., London.

Irish Candidates.—Goff, J. C., Kingston, co. Dublin; O'Brien, D. E., Limerick; Wood-Martin, H. R., Dublin.

The following candidates have passed the direct Fellowship Examination in Division V:—

Kelly, J. G., Pontefract, Yorks.; Marriott, A. S., Dewsbury, Yorks.

Thirty-six candidates, not included in the above list, who passed the examination in Divisions II. and III. as a whole, failed in their typical subject and are referred back to their studies in the subject. Nine candidates who passed the examination as a whole in Divisions IV. and V. also failed to pass in their typical subject, and are referred back to their studies. Eleven out of forty-two candidates in the various divisions who came up for re-examination in their typical subject have failed again this year. It is open to all these fifty-six candidates to offer themselves again for examination in their typical subject in March, 1901.

* Driver Prize and Penfold Silver Medal, 1900.

† Crawter Prize, 1900. ‡ Penfold Gold Medal, 1900.

The Ancient Monuments Protection Bill, which was recently dealt with in our columns, has passed its second reading in the House of Lords.

Keystones.

Lowestoft Town Hall has been enlarged at a cost of £3,500.

The Theatre Royal, Chatham, was destroyed by fire on Wednesday last. The theatre was a new one (it was only opened last July) and the damage is estimated at £30,000.

Ayr Town Hall.—At a special meeting of the Ayr Town Council on Thursday last it was decided to build a new town hall on the old site at the cost of the rates, in accordance with the plans of Mr. J. K. Hunter, architect, of Ayr.

A new School at Pontlottyn has been built at a cost of £2,800. Messrs. James and Morgan, of Cardiff, were the architects, and Messrs. W. Williams and Sons, of New Tredegar, were the contractors. The school has accommodation for 270 children.

A new Church at Creswell, Mansfield, has been built from designs by Mr. Louis Ambler, of London, the contractors being Messrs. Bowman and Sons, of Stamford. An organ that has cost £275 has been erected by Messrs. Nicholson and Lord, of Walsall.

New Park for Wallsend.—A new park, covering 13½ acres, will be opened at Wallsend on Whit Monday. It is situated near Buddle Board Schools and the North Road, and has been designed by the surveyor, Mr. G. Hollins, under the superintendence of Mr. A. E. Raisbeck.

A new Primitive Methodist Church at Loden, Norwich, has been built from designs by Messrs. Kerridge and Sons, of Wisbech. The contractors were Messrs. Chaston and Grimson, of London, and the stonework was executed by Mr. A. W. Perfit. The total cost was about £1,000.

Mr. Edward J. Hanson, a member of the firm of Dunn, Hanson and Fenwicke, architects, of Newcastle-on-Tyne, was found on Thursday last inside the office lavatory, the door of which had been locked, with two bullet wounds in his throat. He was removed to the infirmary in a critical state.

Sir Arthur Blomfield's Grave.—A tall cross of Celtic character, raised on steps and ornamented on its upper part by delicate strap ornament, has been erected over the grave of the late Sir Arthur W. Blomfield, A.R.A., at Broadway, Worcestershire. It has been executed by Messrs. Harry Hems and Sons, of Exeter, under the superintendence of Messrs. C. J. and A. C. Blomfield, M.A., sons of the deceased.

Pier Pavilion at Bournemouth.—On Thursday last the Bournemouth Town Council discussed the question of building a pavilion at the shore end of the pier to comprise a large building to accommodate 1,700 persons, refreshment rooms, &c. Strong opposition was offered on the grounds that the present Winter Gardens Pavilion should remain the chief place of entertainment, and that the new building would also injure the present pier approach. Ultimately the surveyor was instructed to prepare plans for the approval of the Local Government Board. The scheme is estimated to cost from £20,000 to £25,000.

Discovery of a Staircase at Durham Castle.—Recently, while workmen were engaged repairing the floor of a room in the Castle at Durham, a portion of a finely preserved newel staircase was brought to light. The existence of such a staircase has for a long time been suspected, but nothing has been done, of late years at least, to discover its whereabouts. It is supposed that the staircase now discovered was used as a means of communication between the upper and lower portions of the Castle, and that it was built by Bishop Hugh Pudsey, and used before the present black oak staircase was erected by Bishop Cosin. At present a section of between 13ft. and 14ft. has been unearthed, and it would appear that outlets from the staircase had been obtained to different parts of the Castle.

R.I.B.A.

THE ART OF THE LATE PROFESSOR
COCKERELL, R.A.

A MEETING of the Royal Institute of British Architects was held on Monday evening, Mr. E. A. Gruning, vice-president, occupying the chair. The minutes of the previous meeting having been confirmed, several members, attending for the first time, were formally admitted, amongst them being Misses Ethel Mary Charles and B. A. Charles, the first lady members of the Institute. Mr. J. M. Brydon, vice-president, then read his paper on the art of Professor Cockerell, of which the following is a summary:—

He opened with a brief survey of the architectural influences at work during the early years of the present century. Professor Cockerell, he said, formed a connecting link between the old order and the new. He came when the men and the methods of the Renaissance were gradually being worked out. Under Robert Adam English Classic had become somewhat emaciated, and though Chambers still upheld the principles of the Renaissance as practised in its best days the letter of its tradition was now being neglected, if not altogether lost sight of. The English Renaissance School, from Inigo Jones to Chambers, had never attempted to hide its buildings behind pseudo-Classic fronts, or to palm off Greek and Roman temples for Christian churches. Its use of Classic details was always subservient to the purposes of its buildings, and its buildings to the requirements of the time in which they were built. On the other hand the "Revivalists" seemed to have a principle that modern purposes should be made subservient to foregone architectural styles. This distinction must be borne in mind for a proper appreciation of the efforts made by such men as Cockerell and Barry towards the elucidation of the true principles of design. These two men, conscious of the hopelessness of the path the Revivalists were pursuing, followed each the bent of his own genius, the former reverting to the Italian of the Renaissance, the latter carrying his Greek culture and refinement into the every-day work of his time. Of the notable architects of the time none had a stronger grasp of Greek detail or used it with more sympathetic expression than Playfair, or a deeper knowledge of the principles of Italian art than Barry; Cockerell, at once a great artist and a scholar, drew his inspiration from both sources, combining the adaptability of the Italian with the refinement and grace of the Greek, while through it all ran the impress of his own individuality. Even Cockerell was not altogether proof against the battle of the styles then in full swing, as witness his Gothic work at Harrow Schools and Chapel and at Lampeter College.

Cockerell was born in 1788, and was the son of Samuel Pepys Cockerell, a well-known architect, and surveyor to the East India Company. He was educated partly at Westminster School. His professional training was begun in his father's office, and he afterwards entered Sir Robert Smirk's office as an assistant. When in his twenty-second year he began his foreign studies, in the pursuit of which he twice thoroughly explored the mainland of Greece and its islands, returning again and again to Athens. Then he visited Sicily and Italy, staying at Naples, Florence and Rome. On his way home he spent some time in Paris, returning to England after an absence of seven or eight years, four of which were spent in Greece. He studied incessantly, made notes and sketches and restorations, many explorations of temples and other buildings, and particularly of Greek sculpture, and generally stored his mind with the knowledge he afterwards gave to the world in his famous lectures and books and still more famous works.

At the age of thirty, he commenced his first real work, the Literary and Philosophical

Institution, now the Freemasons' Hall, at Bristol, a design marked by that sense of proportion and purity of detail which became such marked characteristics of his later works. After some additions to Harrow School, and Bowood for Lord Lansdowne, came his first work of primary importance, Hanover Chapel, Regent Street. Here he distinguished himself at once by his originality of plan, design, and refinement and delicacy of detail. Though hampered by difficulties of site the result was an artistic triumph, a veritable revelation in the adaptability of Greek art to modern purposes. It is to the lasting shame of all concerned in the transaction that this work of a great master should have been sacrificed to the craving after ground rents.

His next commission was the National Monument on the Calton Hill, Edinburgh, a work in which he was associated with Playfair, of Edinburgh, and which, as originally conceived, was to be a reproduction of the Parthenon, and on the same magnificent scale. The work, unhappily, was never completed.

As Cockerell's practice increased, he engaged with more or less success in several competitions, amongst others for the Cambridge University Library and Museum. This competition practically failed and had to be done all over again. Ultimately, Cockerell's design was chosen, but was never fully carried out—a matter greatly to be regretted, judging by the north wing, the only portion actually erected. The Westminster Insurance Office, now the office of the "British Medical Journal," in the Strand, erected about this time, was the first of a notable series of buildings for commercial purposes which, perhaps more than any others, show the master's individuality. It has all the characteristics typical of its designer which were developed with such success in the Sun Fire Office in the City, and the Liverpool and London Insurance Buildings at Liverpool, and the Bank of England building in the same city. While seeking his inspiration from Greece rather than from Italy, while clothing all with the mantle of Greek refinement rather than with the luxury of the Renaissance, he never forgot he was designing buildings for modern purposes. He bestowed much study on the masonry of his façades; the size and proportions of the stones were made to play a subtle part in the harmony of the general design. His angle quoins and rusticated courses were cunningly devised to assist the general scale and expression of his elevations. As an object lesson showing how these features may be employed with reticence, yet with power, Mr. Brydon commended to students the careful study of the Dale Street front of the Insurance Buildings at Liverpool, one of the finest pieces of design in modern Classic. The recent alterations at the Sun Fire Office, Threadneedle Street, were to be deplored. The original work might have been left alone to speak for itself, and the additions designed in harmony with it; but, as carried out, the whole of the proportions of the building had been altered.

Another worthy monument of Cockerell's skill and genius, the Taylor and Randolph buildings at Oxford, was won in a competition and carried out during the years 1841-46. Though not a large building, it has a quiet dignity. It is the architect's work at his very best. One feels the grace of its Greek refinement in proportion and in detail, the appropriateness of its sculpture and carving, the judicious contrast of plain surface and richness of effect, with all the wealth of knowledge and skill, and yet that reticence of design which goes to make an architectural work of the highest merit.

Two public buildings of the first importance left unfinished at the death of their architects were completed by Cockerell—viz., the FitzWilliam Museum at Cambridge, commenced by Basevi, and of which Cockerell completed the hall and staircase, and St. George's Hall, Liverpool, the noblest monument of the Classic revival in England, designed by the younger Elmes. Of the latter building, upon which Cockerell laboured for nearly seven years, the magnificent decorations of the great hall, the stateliness of the courts, the Doric beauty of the northern entrance hall,

and the elegance of the circular concert-room on the first floor are all due to his genius.

Mr. Brydon then referred to Cockerell's designs for the Royal Exchange and the Houses of Parliament. As regards the Royal Exchange, the successful competitor, Sir William Tite, considered it one of the most remarkable works of art in connection with architecture he had ever known. Tite and Cockerell carried out the London and Westminster Bank in the City, in collaboration—they were the only competitors for the work, and at Tite's instance they acted as joint architects. The exterior is marked by Cockerell's hand.

Besides being an accomplished and a brilliant architect, Cockerell was a learned archaeologist and much of a sculptor. He drew the figure with remarkable power and expression; he managed to grasp the broad monumental style of the great Greek age.

Numerous honours were conferred upon Cockerell in his own country and abroad. He held the Chair of Architecture at the Royal Academy for seventeen years, was surveyor to St. Paul's Cathedral, was the first to receive the Royal Gold Medal for Architecture, and was the first Architect President of the Institute. He died in 1863, and was buried in St. Paul's Cathedral, the fabric of which had been under his care for forty years.

A discussion followed, in which Dr. A. S. Murray, Messrs. H. H. Statham, W. M. Fawcett, R. Phené Spiers and E. A. Gruning took part; a vote of thanks proposed by Dr. Murray and seconded by Mr. Statham being passed to Mr. Brydon.

DUBLIN PUBLIC HEALTH.

THE mean yearly death-rate in Dublin from all causes during the ten years 1890-99 was 29.5 per 1,000 of the population. The report of the Committee appointed by the Local Government Board for Ireland to enquire into the cause of this high death-rate clearly establishes the existence in Dublin, in an exceptional degree, of several conditions which are wont to be associated with a high rate of mortality. Especially noteworthy among these are the insanitary circumstances in which a considerable proportion of the population of Dublin lives. It has to be borne in mind that the proportional amount of poverty in Dublin is very large, so that these unfavourable conditions associated with the houses of the poor are widely spread throughout the city.

The Committee recommend as the result of their enquiry:—That in tenement houses water should be laid on to each floor, and separate sanitary accommodation should be provided for at least every two families. That no stables should be let as dwellings without a licence having been first obtained from the Corporation. That schemes for housing a large number of the labouring and poorer classes should be taken in hand at once, and if suitable sites cannot be obtained in the city powers should be given to the Corporation to acquire sites outside the city. That all streets, lanes and alleys in the city, whether in charge of the Corporation or not, should be scavenged by them. That all dust bins should be covered and emptied into covered carts, and that the contents of dust bins from tenement houses should be collected daily. That an additional "destructor" be provided and the existing one enlarged. That the regulations as to dairy yards and cow sheds be most rigorously enforced. That an abattoir be provided for the south side of the city, and the number of private slaughter-houses should be gradually reduced. That more wash-houses and swimming and reclining baths be erected in several parts of the city. That in future all persons appointed by the Corporation to act as sanitary inspectors should be specially fitted for the discharge of their duties. That all work now done by the Public Health Department, which properly is of an engineering or architectural nature, should in future be under the control of the borough engineer or the city architect.

EXTRAS AND OMISSIONS IN BUILDING CONTRACTS.*

By E. H. BLAKE.

PARTIES to a building contract are liable to many risks and responsibilities. The building owner or his agent has to consider, among many other things, the following possibilities:—(1) Excess of cost over amount of contract; (2) failure of the builder, with the attendant inconvenience; (3) delay in completion through weather, strikes, &c., often involving considerable pecuniary losses. On the other hand, among the possibilities which the builder has to consider are:—(1) Strikes, with changes in the price and efficiency of labour; (2) alterations in the price of materials; (3) failure of the building owner; (4) accidents and liability under the Workmen's Compensation Act; (5) impracticable plans; (6) inaccurate quantities; (7) penalties for non-completion to time. A reasonable contract is one which reduces the element of risk to either party to the smallest possible amount, and places all such liabilities as those mentioned above on the right shoulders.

Of all the contingencies attendant on building contracts the matter of extras and omissions is one of the most difficult in the final settlement. The knowledge of the building owner or employer in reference to the details of the work is, in almost every case, limited. A very small percentage of clients thoroughly understand the technicalities of plans and specifications. The position of the architect should be, therefore, and generally is, that of adviser and confidant, rather than that of servant to the employer. Contracts occasionally curtail his customary powers. It should be noted, however, that there is legally no authority implied to him in reference to the ordering of extra works.

The necessity for very complete and stringent conditions of contract cannot be too strongly urged. The position of architects under contracts is not always satisfactory. There is frequently a lack of confidence between the architect and builder. No matter how fair-minded the architect may be, he is always liable to be regarded as having more or less bias towards his employer, the building owner. It has been said that when confronted with two alternatives—one, that of submitting to the employer a heavy bill of extras (sometimes to some extent attributable to the architect's negligence), or, on the other hand, that of pleasing his employer at the builder's expense by cutting down the bill of extras—an architect is apt to be found very human. The conditions of contract should provide that none but work done on written orders signed by the architect should be recognised as extra work, and the contractor's priced bill of quantities, or a verified copy of it, should be deposited for use as a schedule in valuing all extras or omissions. Every point on which it is possible that a misunderstanding may arise should be carefully considered and thoroughly threshed out before the signing of the contract. This careful consideration is rapidly becoming a matter for the surveyor rather than for the architect. Such a practice cannot be too strongly recommended. Only in the process of taking off the quantities can all the points of uncertainty be eliminated.

Quantities,

where taken off by the architect, are often prepared in a more or less haphazard way. The practice of quantity surveying is not one to be dabbled in. There is no matter of opinion about the quantity of labour and materials in a certain piece of work. Either there is so much of this or that, or there is not. Therefore, either the work is correct or it is incorrect. Trifling inaccuracies frequently result from insufficient description or omission of detailed labours. The question as to whether the quantity surveyor is guilty of bad faith with the builder and building owner in the case of inaccurate quantities depends very

much on the position and mode of appointment of the quantity surveyor. It would be obviously unjust to say he was liable under such circumstances as those in the well-known case of *Priestly and another v. Stone*, where the quantities were taken out from unfinished drawings and delivered to the architect who afterwards materially altered the drawings, wrote the specification apparently regardless of the bill of quantities, and submitted the drawings, specification and original bill of quantities as a basis of tendering. It was held by the court that there was nothing in the nature of a contract between the quantity surveyor and the builder, and there could therefore be no liability. In the course of the judgment in this case Mr. Justice Stephen recommended the quantities being made part of the contract. But notwithstanding this decision, it is still customary to consider the quantity surveyor morally liable to the builder to some extent for inaccuracies. On the other hand, the question arises—Is the building owner justified in receiving work for which he has not paid? For if the quantities are insufficient in some particular, the contract price will also be insufficient.

A process which cannot be too strongly condemned as unfair to all parties is that of issuing bills of quantities for the purpose of tendering, but repudiating any responsibility for their accuracy, saying that a few days or a week will be allowed the contractor for the purpose of verifying them. Anyone acquainted with quantity surveying knows that this means beginning again. There should be no confusion as to the

Meaning of the Term "Extras."

These can be defined as all works not included in the contract, for which instructions have been given. Omissions may arise when the quantities form part of the contract, or by agreement between the parties when the quantities do not form part of the contract. In the latter case there ought always to be a clear understanding at the time that the value of the omitted work will be claimed by the architect in the final settlement.

Where the quantities do not form part of the contract, works indispensably necessary to complete do not come under the head of extras, even though they be not mentioned in the contract, shown on the drawings, or described in the specification. In support of this I would briefly mention the well-known cases of *Sharpe v. San Paulo Railway, Thorn v. Corporation of London*, and *Bottoms v. Corporation of York*. The second case, *Thorn v. Corporation of London*, arose out of the construction of Blackfriars Bridge. The contract provided for building the piers by the aid of a special form of caisson, which was minutely described. This proposed method of construction was found impracticable, and though the builder was thereby put to considerably greater expense, he was held not to be entitled to extra payment since he had undertaken to erect the bridge complete.

The case of *Bottoms v. Corporation of York* appears perhaps more unfair. The plaintiff contracted to construct some brick sewers, but had not previously acquainted himself with the nature of the subsoil. He found that the design of the engineer to the corporation was quite impracticable, for after construction the sewer was again and again crushed in, only to be reconstructed by the contractor. Payment was refused on the ground of non-completion. The Court of Appeal held that, although the Corporation of York had treated the plaintiff very unfairly in the matter, they were under no obligation to pay until the contract was completed, which, according to the design in the contract, was a matter of impossibility.

Many other instances might be given, but the effect of all is similar. Again and again has it been held by the courts that plans, specifications, &c., are in the nature of information supplied to the builder for the purpose of enabling him to tender, but that there is no implied warranty either of their accuracy or practicability. It is unreasonable to expect the contractor to possess technical knowledge superior to that of the engineer or architect.

These cases indicate that the law requires amending, and that contracts must be meanwhile made to provide against legal defects. This is best done by making the quantities the basis of the contract. The contractor will then be liable to do only the work for which he has tendered a price, and the employer will only be entitled to receive value for which he has agreed to pay. I have already stated that a contract for a complete work includes everything indispensably necessary to the completion of it. I would add that it is immaterial that such works are omitted from the specification or drawings, or that the drawings are impracticable, or that certain things are understated or miscalculated. It is also immaterial that such works are omitted from the quantities, whether they form part of the contract or not.

While dealing with the subject of

Impracticable Plans

it should be noted that when the quantities are not part of the contract authority given to the architect as to the ordering of extras does not give him power to order as extras work indispensably necessary to make such plans practicable. Should an architect order as an extra, or certify for as such, anything indispensably necessary to the contract, unless such certificate is a final and conclusive one, neither the employer nor the architect is liable for payment to the builder, who should know that the matter was within the meaning of the contract, and that he would have been liable for breach of contract if it were omitted.

The position of an architect with regard to extras is practically this. He must, if not authorised to order extras on behalf of the employer, obtain the latter's instructions in reference to any additional work which may be contemplated before sanctioning its commencement. If the contract provides that no extra work is to be undertaken without the architect's written order, such order should be given before the work is commenced, and no certificate for payment should be issued in regard to any extra work executed without such written orders. Further, where the quantities are not part of the contract, he must not incur liability on the part of the employer by ordering as extras, or certifying for payment as extras, work which is indispensably necessary to completion. In reference to the architect's authority to order extras the question of custom arises. The almost universal custom is, I think, to regard the architect as the employer's agent in the fullest sense of the word. The next point with which I would deal is that of

Written Orders for Extras.

The law and practice on this matter is very clear. Though the conditions of contract require all orders for extras and omissions to be in writing signed by the architect, there is yet a way in which the builder can obtain payment for work executed in direct opposition to such a condition, or on the verbal orders of the architect. The contract may contain a clause giving the architect the power to grant a final and conclusive certificate, and, if he includes in such certificate amounts in respect of extra work unauthorised in the manner agreed upon, the employer is bound to pay. Under any other circumstances the employer is not liable in the absence of written and signed orders as required by the conditions of contract. The mere verbal promise on the part of the employer or his agent to pay for any extra work, or to adjust matters by a cutting-down process in other directions, is of no value whatever.

Again, if the contract defines extras and omissions as only such additional or varied work as may be authorised by the architect in writing, any extra work ordered by the employer, either verbally or in writing, must be regarded as in the nature of a separate matter quite outside the contract.

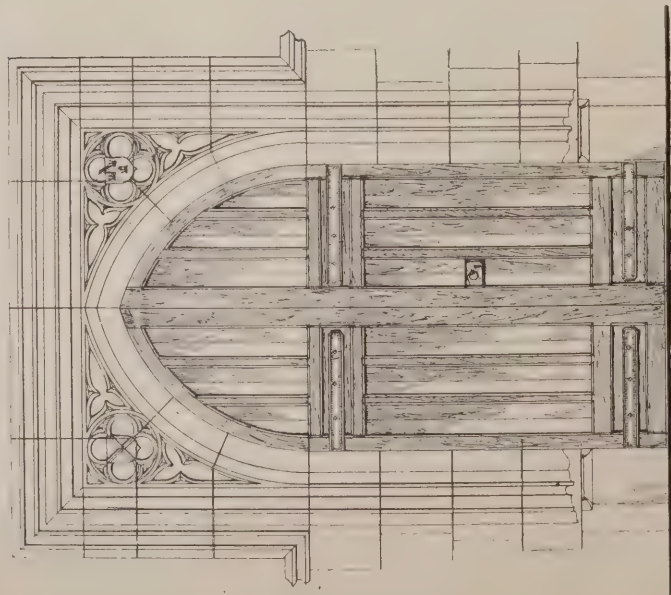
It may be noted incidentally that the measuring surveyor has no authority in respect of performance under the contract.

The granting of a final and conclusive certificate by the architect is a matter requiring great care. Even though the architect may

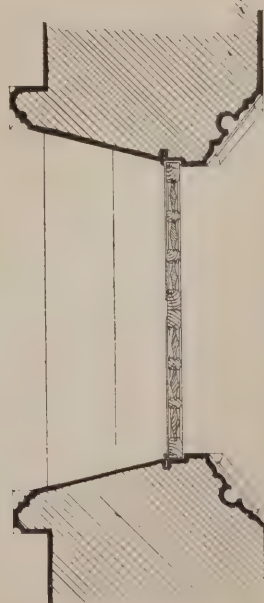
* Summary of a paper read before the Surveyors' Institution on May 21st, 1900.

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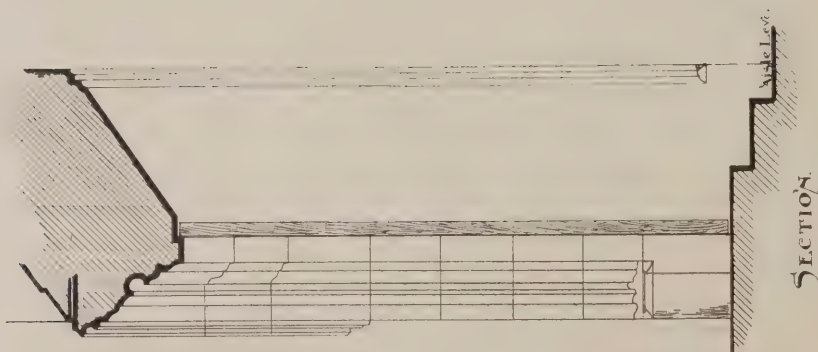
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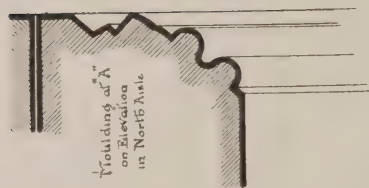
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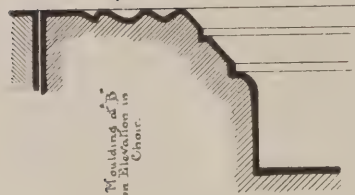
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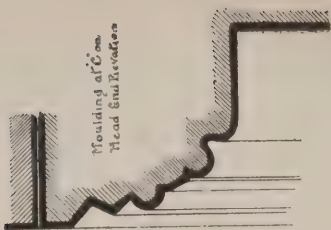
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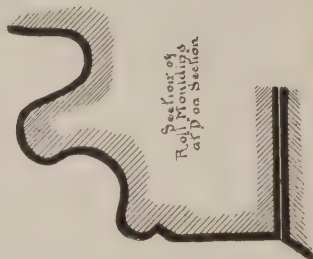
Moulding at A
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in North Aisle



Moulding at B
on Elevation in
Choir



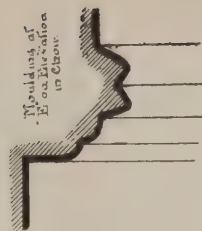
Moulding at C
on Head Elevation



Section of
Roll Moulding
as seen on
Section

MOULDINGS

DETAILS OF MOULDINGS
AND CARVING ON TOMB.



Moulding at D
on Elevation
in Choir



CARVING

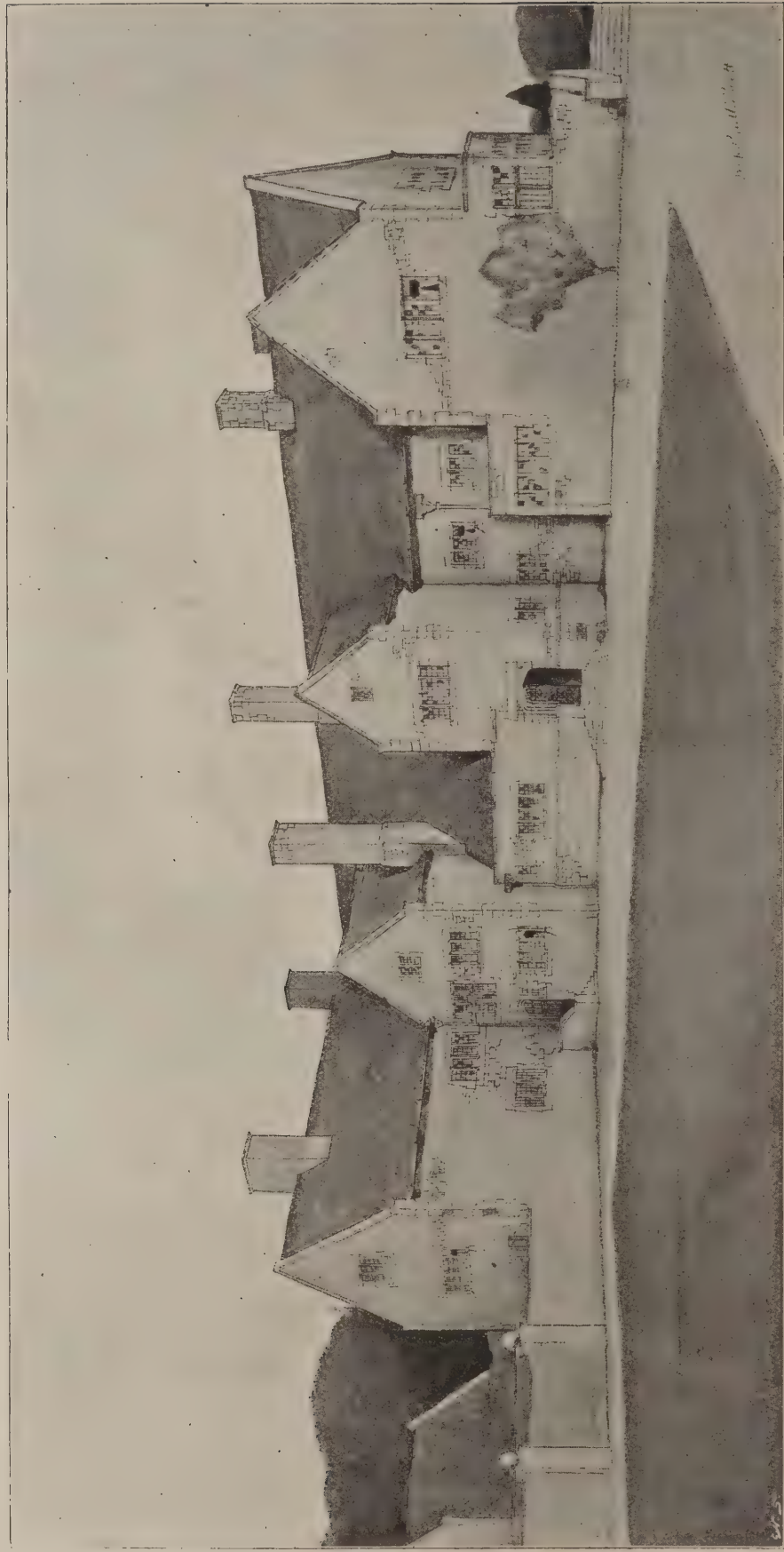


DOORWAY, NORTH AISLE OF CHOIR, ST. ALBAN'S ABBEY.

BISHOP MARSHALL'S TOMB, EXETER CATHEDRAL.

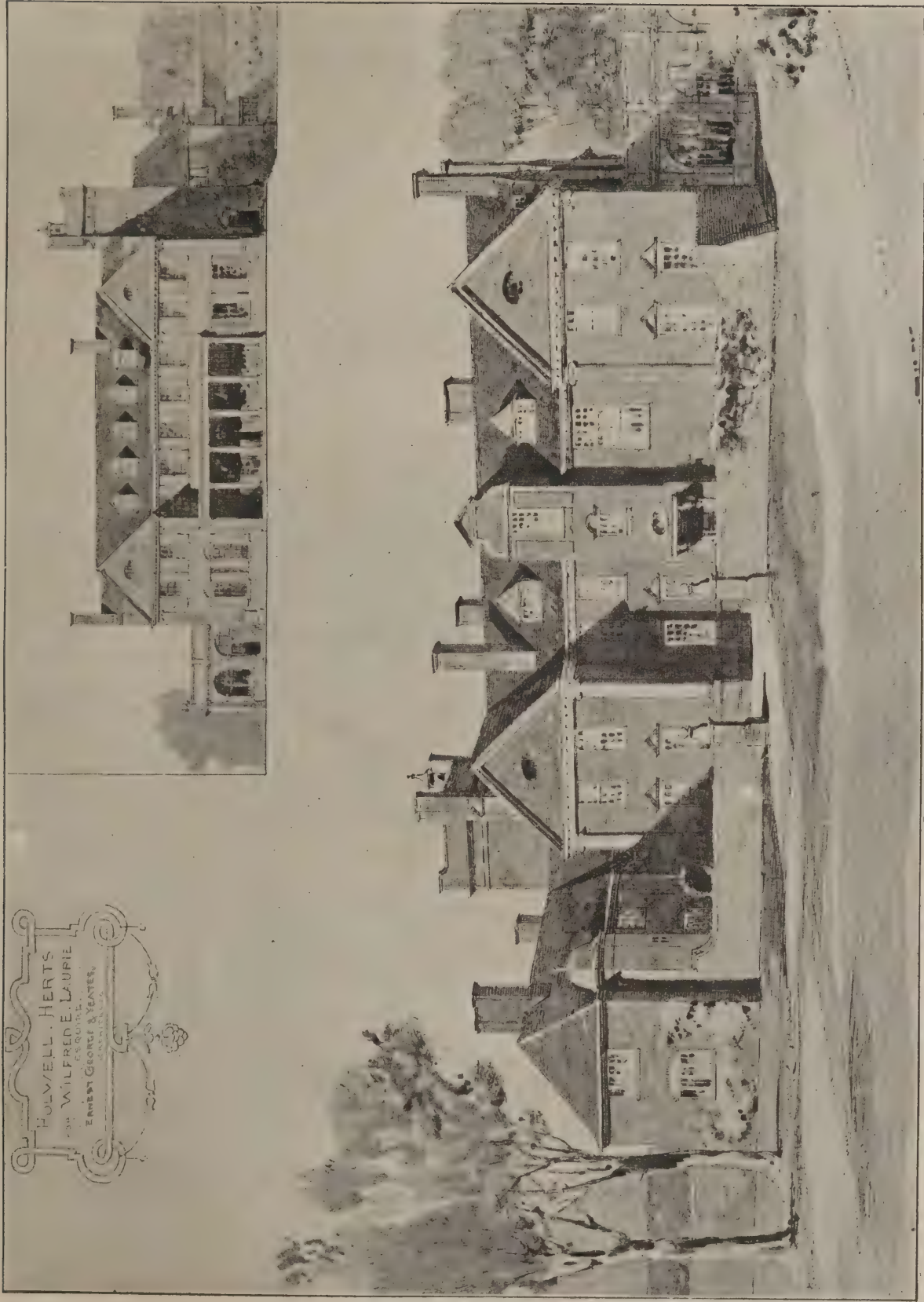
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HOUSE AT WINDERMERE: ENTRANCE FRONT. M. H. BAILLIE SCOTT, ARCHITECT.

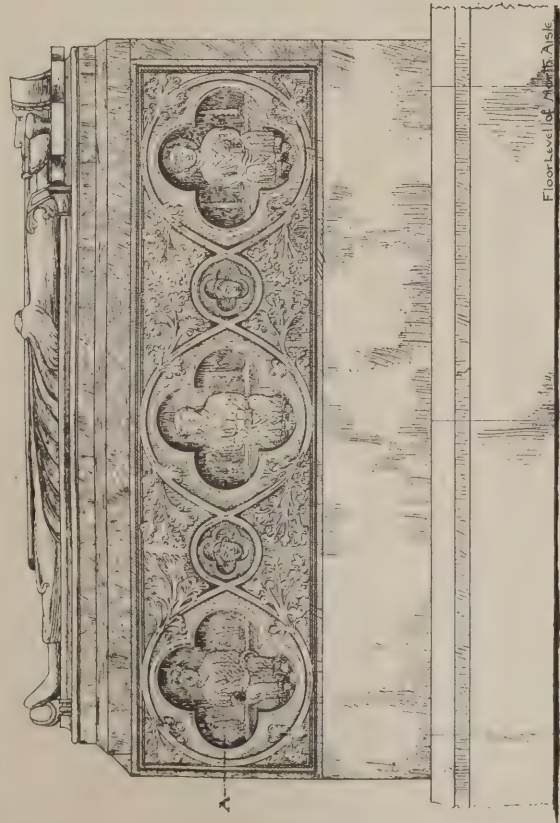
HOLWELL, HERTS.
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-3- ERNEST GEORGE & YEATES,
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HOLWELL, HERTS. ERNEST GEORGE AND YEATES, ARCHITECTS.

ARCHITECTURE AT THE ROYAL ACADEMY, 1900.

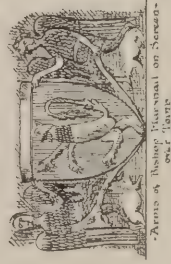
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ELEVATION IN NORTH AISLE OF CHOIR.



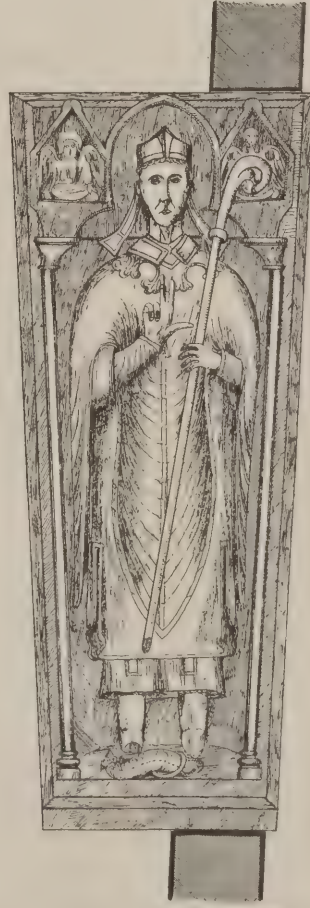
ELEVATION IN CHOIR.



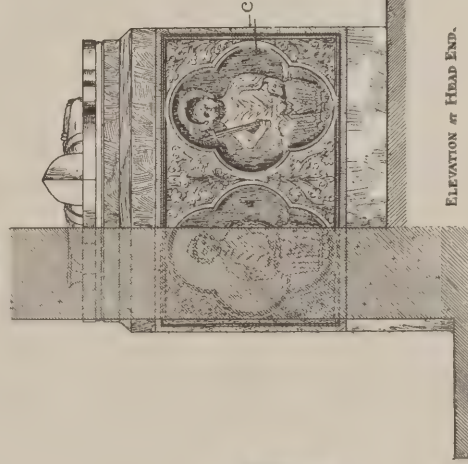
Detail of a kneeling figure on a tomb chest.



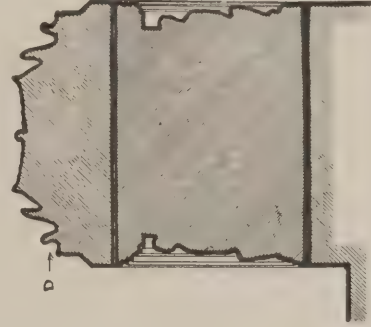
Full Size -
- Mounted on Elevation
in North Aisle -



-PLAN-



ELEVATION AT HEAD END.



SECTION THROUGH CENTER
OF TOMB.

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certify as extra, work that has never been done, or which was indispensably necessary to the completion of the contract, the employer has no remedy and must pay, unless he can prove negligence on the part of the architect or collusion and fraud on the part of the architect and builder.

Time for Extras.

The next point to which I would devote attention is the question of time during which extras may be ordered. To come under the heading of extras to a contract, any additional work must be done under orders issued during the execution of the contract. All work executed under orders issued after the completion of the contract must be regarded as the matter of a fresh transaction altogether, and cannot be dealt with as extras to the former contract.

Another question which has sometimes to be considered in dealing with extras is that of suggestions to the employer by the builder. If any such suggestions are not made with a clear understanding that they will involve extra cost, the builder cannot recover from the employer the cost of carrying them out. Neither can they be treated as extras to the contract except by an express agreement to that effect.

There is sometimes a tendency on the part of contractors to take an unfair advantage of the delay caused by the ordering of extra work. The matter of delay is one which should be left entirely in the architect's hands. He should have full power to extend the time if desirable owing to the addition of work to the amount originally contemplated. In reference to the payment of liquidated damages for failure to complete by a certain day, it was held by the Court of Appeal in *Dodd v. Churton* that if the delay was consequent on orders for additional work, the contractor was exonerated from the payment of damages unless there was an express agreement to the contrary.

The practice of incorporating the quantities in the contract and providing that the work to be done shall be that contained therein is strongly to be recommended.

In conclusion, I would again urge the necessity of fairness to both parties to a contract. It must not be forgotten that the essence of a just contract is exchange in strict equity, of cash for kind. There is still, unfortunately, among some architects and contractors a feeling of natural enmity. There should be no foundation for such a feeling, and there can be no doubt that the thorough investigation of the matters which are intended to form parts of the contract, and the elimination of all uncertainties by the surveyor before the signing of the agreement, has had much to do with the improvement in the relations between architects and contractors.

Bleak House, Broadstairs, is for sale, the price asked being £3,000. So far, no purchaser has come forward, the reasons alleged for this being that the house would require a considerable sum to make it habitable. Failing a private purchaser it is suggested that the house should be acquired as a Dickens Memorial and Museum.

New Baths for St. Pancras.—At a cost of £95,000, the Vestry of St. Pancras are about to erect, in the Prince of Wales Road, new baths and wash-houses, standing upon an area of about 33,000ft. There will be four swimming baths, 130 slipper baths, and a spacious and well-equipped public wash-house. Refreshment rooms and three club rooms will be provided. The men's first-class bath will be arranged as a public entertainment hall in the winter, and will be capable of seating 1,200 persons. The ceiling of this hall will be a new departure in the case of swimming baths. In order to ensure good acoustic qualities, the usual lantern skylight will be omitted and the ceiling will be arched, with the light on each side of it instead of at the top. Externally the facings will be of red bricks with terracotta dressings, and the buildings will be lighted by electricity. The foundation-stone was laid last Thursday.

ART METAL WORK.*

By NELSON DAWSON.

IT seems necessary at the outset to make some apology or explanation concerning the title of the subject we are now to consider—art metal work. The phrase is only partly mine, the word "art" being originally placed in inverted commas, which considerably nullifies what is not agreeable. We do not hear of art woodwork or art stonework. Let us have art certainly, and metal work by all means, but let each keep to its proper place, and, like good neighbours, they will be all the better friends for so doing. There is often in an expression of this kind, unfortunately, a modicum of truth, or a slight indication of a truth, that justifies existence, which makes it so much the more difficult to treat. Added to this is the fact that the objectionable phrase has by custom come to convey a certain idea, which thus becomes difficult to express in any other way, and, willy-nilly, one is almost bound to fall back on it. On this occasion I am not sure that the omission is not, to some extent, fortunate, as in making this explanation I am enabled to give a hint of the direction in which I should like to proceed.

Art work is not unfrequently "useless" as opposed to useful work, and it is more the latter than the former that I propose to speak about. The aim of all good work, call it art or what we will, is in its relation to humanity, its usefulness or uselessness, and life being short, and our capabilities limited, we have to make a choice, as there is hardly time to consider both sides. Quite frankly I confess that such an object as an ostrich egg in silver gilt setting, with a cherub and any amount of German sixteenth-century scrollwork, does not interest me at all, because its influence on men and women is nil—even when placed in a glass case in a museum; therefore I do not desire to waste time in talking about it. But a piece of armour or a drinking mug, a coffer lock, a chalice, or a pastoral staff that is beautifully made is of the greatest importance, because it is a necessary part of humanity in a way, and bears on human progress.

Greek Work.

Since thinking about the matter I have tried to remember if the Ancient Greeks talked about art metal work, or if any author since in writing about the work of their times referred to it in that way; but I do not recall a single instance. Yet, as we know, the Greeks were by no means backward. I have seen modern metal bedsteads with the word Birmingham writ on their brazen foreheads that beyond doubt would be referred to as "art metal work," and I feel no less sure of having seen (possibly only in imagination) an ancient Greek bedstead of bronze of beautiful shape and workmanship to which one would never dream of applying the expression, for it would be sacrilegious; to mention art in connection with it would be to imply that there were those who were not aware of the fact, which would be insufferable. Therefore it may be concluded that the more the word art is used the less art we shall find. "Quod erat demonstrandum."

Yet we may have heart of grace, and be sure it is quite possible that a bedstead may be made even in Birmingham (though this is a hard thing to say), even made of cast iron and brass; and if only the right person with the right mind make it, it shall be good. Birmingham is nothing, the bedstead is nothing, and the metal, rare or common, is nothing, but the mind and hand of the maker is everything.

To begin then, at the very beginning, it occurred to me that I might find something of interest concerning metal work in Dr. Schliemann's interesting account of his "Excavations in Mykene Ancient Troy." The work is of great antiquity, for in one place the doctor on opening a tomb makes a complaint that some gold cups must have been taken out by a despoiler—at a time anterior to B.C. 486.

But the date of the work itself has been guessed at 1500 or 1000 B.C., which seems a fairly remote time at which to commence. It happens that most of the things he discovered are of gold; the bronze and copper articles were either oxidised beyond recognition, or had become spoiled through the action of the funeral fires. With few exceptions these things are of the most beautiful design and workmanship, without any of the accuracy and precision so much looked for in these days. But the point is that these gold cups and ornaments thus buried with their late owner were the things the people lived with—of everyday use. It was the metal work of the moment, designed and made by the artists and goldsmiths for quite practical purposes.

If we praise this gold work of the very remote period, of which naturally not much remains, what shall we have left to say about the next period, when metal work flourished exceedingly and the Greeks in making the objects of everyday use reached a point in excellence of craftsmanship and beauty of design that has never since been attained. Of this period, which, roughly speaking, was about 400 B.C., and in which bronze was the metal that was almost universally used, our own British Museum has a very choice collection of examples. To call such work artistic, as we use the word, is inadequate. The spirit that breathes in it is too high for anything short of religious fervour, and with the exception of the earliest form of Gothic, it may be doubted if even in the history of the Christian Church the human art which thus flourished in the heathen era was ever actuated by such high promptings. If it were, one can only note that the standard reached was so much lower.

Probably too little is known of the Greek people who did this work and their times to form an opinion as to how it was done, or the conditions that surrounded its production. A writer of the time in speaking of the celebrated shield that was made for one of the heroes says that it was of bronze plates beaten on layers of bull's hide—a description that occurs more than once, and points to the fact that the metal-workers were skilled in using the hammer. "Well nailed" is another favourite expression, and if for nail the word rivet is substituted, a likely enough change, the beaten sheet work is put more forcibly before us, as opposed to cast work which would not require riveting. Not that these things matter very much, as we are not seeking to learn the secrets of the work so much as to consider the spirit of it, and, if possible, to become imbued with some small portion ourselves.

That religious enthusiasm would account for all things connected with religious observances is probable enough, but it is remarkable that the same feeling and high standard were carried into the objects of continual domestic use; and even from a commercial point it is difficult to imagine how such objects could have been produced at a cost that enabled the average person to buy them. With the bronzes of figures, busts, &c., the case was different, because they were probably bought by the rich only, as a luxury, and their cost was of less importance. As a matter of interest these latter concern us less, as their sculptural qualities outweigh those of the craftsman.

The series of hand-mirrors form a subject that should be treated alone. (Mr. Dawson here dealt with them at length.)

Another class of beautiful objects of this early Greek period are the bronze cistas or boxes, of which we possess several choice specimens. It is not clear what they were used for, though it would be some domestic purpose probably.

The tall lamp-stands must have been a very noticeable feature in the Greek house. About 4ft. high, they generally consisted of a delicately fluted column with a moulded circular top and base. This column stood on a three-way foot, often consisting of three legs of animals, or shapes approximating them, all modelled and finished in the most beautiful manner. At the top came a three-way arrangement of branching arms, on each of

* Summary of a paper read before the Applied Art Section of the Society of Arts on May 8th, 1900.

which a lamp might be hung, and surmounting the whole was not unfrequently a bronze figure or group about 6in. high.

There is much more that we ought in duty to notice, but we certainly must not omit the very beautiful specimens of Greek armour. Being a fighting nation, armour must have formed a very valuable asset in the property of each man, or of the nation at large. But to think of an army clothed in metal work of such wonderful make as we see in the British Museum is hardly credible.

One other phase of Greek metal work claims attention, and that is the coins, especially of about the fourth to the second century B.C. As metal work they come distinctly under the head of sculpture; the metal-worker having but little hand in them. They were modelled in the first instance, and then either moulds made for casting or dies for stamping. But here, as before, all thought of workmanship or authorship is lost in the all-engrossing appreciation of their extreme beauty.

The Roman Period.

In the period following the one already glanced at it is less easy to find material, though not easy to say why. If we referred to the other as the Greek period, we may with equal reason call this the Roman period of the world's history, although in both cases there were other phrases of art concurrent with them. Finding so much to consider in the Greek period, the following one suffers by contrast possibly, or it may be that it requires more closely looking into than we are now doing. But, at all events, one does not feel able to find much metal work material. There is, however, some really fine Roman silver work—dishes, cups, platters, &c.; these are not so noticeable for their shape as for the way in which the decoration has been added.

In other metal objects the Romans were fond of inlaying fine silver patterns in bronze, and also niello work. But it was in architecture that the Romans were chiefly interested—they were great builders. And architecture, being the mother of all the arts, it is not remarkable that their enthusiasm was absorbed before it reached such a minor art as metal work is supposed to be, except in so much as it was required for the purposes of their building, ornamental or otherwise; and it seems likely that owing to classical architecture requiring so little assistance from metal work there was much less done in this direction in consequence. What was done was principally in bronze, that metal being much more in accord with classical feeling. It is difficult to imagine a pair of strap-iron hinges, like those so freely used in the later Gothic period, on the heavily-panelled doors of one of the Roman temples. One can see there nothing but bronze hinges, or even less than that, a pin of solid bronze at top and bottom of the door working in stone sockets. Thus the metal work would be entirely concealed and of no account whatever. Inside the temples there were, doubtless, bronze tripods and other objects which were required for religious purposes, but these things hardly appear to have received the thought and care that was bestowed on the stone or wood work.

At the end of the time of the Greeks, the Romans, being then a young and vigorous people, overcame them, and carrying off their best artists to Rome trusted to found there a school of art that should continue and rival what had gone before. We see now that the method adopted was fatal to a separate artistic existence. The Romans did, however, become an important development, and in a measure brought to a conclusion the severe and thoughtful work of earlier times. In a smaller way perpendicular work of our own country was to thirteenth century Gothic what Roman Classic was to Greek Classic.

From Classic to Gothic.

The next step was from the classical work to the Gothic, which was a great leap and one that affects metal work very much. We shall not follow it closely here, though it would be interesting enough. The two phases seem to be so widely opposed that it is not easy to see how the Gothic could follow on the heels of the Classic in so short a space of time, a

century or two only elapsing between the ending of the one and the commencement of the other. It has always appeared to me, without going deeply into the question, that it was only owing to the interruption of Byzantine art that there is any relation at all, and that otherwise, there would have been needed a perfect revolution or casting off of all previous ideas in passing from heathen to Christian art. As it was, the Byzantine merging process allowed a smoother transition, much of the old state of things being retained and added to the new.

As a people the Byzantines seemed less concerned with architecture and building than with the decoration and beautifying of buildings, and this, perhaps, accounts for a revival in what is called, for convenience, the minor arts, and amongst them metal work.

From the early Greek Church of Byzantine times to the Reformation in this country the Church was one of the great patrons of our craft, and the museums are full of the fine examples that were the result of this encouragement.

From Byzantium to Italy, omitting Rome, where classical feeling was too strong for any other form to get much footing, from Italy still westwards to France and England the wave of Gothic spread, growing and developing into varying forms until all the then civilised world was affected. From the severe and simple forms of what we find in Italy it grew into the gorgeous work that was done in France in the twelfth and thirteenth centuries, and about the same time in England.

I am not sure how far Gothic architecture in Italy was associated with the enlarged use of forged ironwork, but in France and England the two things came at the same time; notably in the hinges to the church doors, of which those on the great doors of Notre Dame, in Paris, from probably one of the richest examples in the world. So rich are they that they suggest an imitation in this hard material of the wealth of ornament that overlaid the walls of the Christian mosques of Byzantium, and in carved stonework so much covered the later Roman buildings.

Hinges which grew from the plain knuckle to an iron band clamping together the thick slabs of oak which formed the door grew very elaborate as time advanced, and when carpentry had improved, and the iron bands were no longer necessary, they were retained as ornaments.

It seems, from the metal-worker's point of view, that the end of the mediæval period concludes the important phases of metal work that occurred in the world's history, but in our own country there were one or two lesser phases that are of no little interest. One of these was the English silver work of the seventeenth and eighteenth centuries, which, now we are able to look back on it as a whole, we can see was characteristic and individual.

In the middle of the eighteenth century we were, like other nations, under the pseudo-classic influence, and the fashion ranged between the delicate mouldings of the Adams to the coarse acanthus leaves and flutings of the worst time of the Georges. Here, again, is an example of how fashion or phase operates on an art or craft. In the more delicate mouldings used at the Adams' time, casting was the only way to reproduce them—cast solid and then minutely chased. On the other hand, the bold acanthus leaves were better rendered by bumping up in sheets from the back and then finishing from the front; and these two branches of metal work, although one would hardly think it, would require different workmen, the one branch of work being so opposed to the other.

There was besides this silver work in our country during the last two centuries a very interesting and creditable phase of forged iron work which resulted in many objects of domestic use—trivets, fire-dogs and backs, fireirons, &c., and on a larger scale the railings in front of houses and surrounding gardens. It must not be thought that it was in England only that such work was going on; this is referred to as being characteristic and worthy of note. Spain was rich in metal-workers also, and some very fine and costly ironwork was produced there. In France, too,

there was much metal work being done, and in each case it is marked with the character of its time and country. One ought not to omit Germany, where smithing and much other metal work flourished, although, as a rule, German metal work lacks that simplicity that our admirers in other work.

Present-day Metal Work.

Now, as to our own time, what shall we say about it? We have been critical enough to past times and people, and the mote in their eyes, but what about our own metal work and our own eyes? The things with which we surround ourselves in our homes, the grates and fenders, fittings on doors, gas chandeliers, and electric light fittings, our knives, forks, and spoons—will they ever be found in a museum or will they be referred to lovingly before learned societies, as we do now in regard to the ancient works? I should like to be as kind to ourselves as possible, but I feel unable to speak in their favour.

And yet we might have good metal work; there are our iron bedsteads, and a hundred other objects that are open to good treatment, without making them too costly. The list would be a long one if we went through everything that we have around us that the metal worker might improve.

The truth is that no list is needed. The corrective should not be in the shape of by-laws and rules so much as a clean and wholesome desire springing up in the minds of the people at large for something better. There have been some signs of the grey before dawn latterly, and the keener appreciation of old furniture, for instance, is an inkling of the right state of mind. This in time should become an appreciation of good work generally, and I should like to think of metal work in particular. As I say, it would be idle to specify what things might be improved with advantage in metal work, but it is not unreasonable to think that there may be a time to come when the hand and brain of the individual craftsman shall not be of less concern than a good gas engine, and when people will value work with personal thought and care in it.

Engineering Notes.

Messrs. E. H. Shorland and Brother, of Manchester, are supplying their patent Manchester stoves with descending smoke flues to the fever hospital at Bradford.

County School, Bala.—The warming of this building has been placed in the hands of Messrs. John King, Ltd., engineers, of Liverpool, who are now installing their latest improved hot-water heating apparatus.

Acetylene Gas in a Lincolnshire Church.—The vicar of the parish church at Surfleet has been granted a licence by the Spalding Rural District Council for the storage of calcium carbide for making the acetylene gas by which the church is now lighted.

Ayr Electric Tramways.—It has been decided to proceed with the construction of an electric tramway system for Ayr, extending from St. Leonard's Church to Prestwick, a distance of nearly three miles, at a total cost of £57,000.

Electric Lighting Extension at Lincoln.—A Local Government Board enquiry was held on Thursday last into the application of the Lincoln Corporation to borrow £6,000 for electric lighting purposes. This sum is to provide cables, and to lay down cables in the southern part of the city at the extremity of High Street, where there is a probability of the demand for the current increasing.

Widening of Tweed Bridge, Peebles.—The bridge over the Tweed at Peebles is being widened at a cost of about £26,000. Messrs. Dickson and Clyde are the contractors. The bridge was originally built in the fifteenth century, and in 1834 it was widened to about 20ft. By the present operations another 20ft. will be added, while the approaches on each side will be straightened and greatly improved. The engineers are Messrs. M'Taggart, Cowan and Barker, C.E., Glasgow.

Builders' Notes.

Fire Protection at the British Museum.

—The authorities of the British Museum have decided to adopt a system of hydraulic pressure upon all the fire mains of the institution as an additional precaution against fire. By the adoption of this system a pressure of water of enormous force will be obtained by the mere turning of a couple of wheels, and the necessity for the fire engines which are at present on the roof of the museum will be obviated. This system of hydraulic pressure is already in use at Somerset House and the National Gallery, and about a week ago the apparatus at the former institution was submitted to its annual test with the most satisfactory results.

Separation Walls under the L.B.A.—

At Westminster last week Mr. Williams, district surveyor for South Kensington, summoned Mr. William Downs, of Hampton Street, Walworth Road, under the London Building Act of 1894 for erecting a building of more than 1,000 superficial feet area, at 61, Brompton Road, intended partly for trade and partly for residential purposes, with separation walls of less thickness than 8½ in. Mr. Williams said that very serious disasters had occurred on large buildings jointly used for trade and occupation, and the statutory thickness of not less than 8½ in. for separation walls was now insisted on. Mr. James Morley, for the defendant, said a great deal was paid for the freehold and 9 in. walls took up too much space. Fireproof materials had been used throughout in construction, and the builders, &c., from the first, had resisted the contention of the district surveyor. The wall in dispute could not, according to the Act, be deemed a cross-wall, because it was not intended to be carried to the highest storey. After a very long legal argument, evidence was given by a deputy district surveyor that other district surveyors invariably tried to get 9 in. separation walls, but in several cases had given way and accepted 4½ in. walls, rather than press the matter to a judicial decision. Mr. Horace Smith decided in favour of the defendant, but said he would willingly grant the district surveyor a case.

A Curious Compensation Case.—

The recent case of *Clarke v. Nichols* was an appeal from the Judge of the Clerkenwell County Court, who non-suited the plaintiff in an action under the Employers' Liability Act. The action had already been tried in the Brentford County Court, where the Judge, taking a strong view in favour of the plaintiff, told the jury they should find for him. The jury, however, found for the defendant. At the Clerkenwell County Court the jury found for the plaintiff. The facts were these:—The plaintiff was an engineer, whose duty it was to attend to a mortar mill. The tyres of the rollers becoming worn and loose, the plaintiff was directed by the defendant, his employer, who was a builder, to remedy this defect by driving wedges between the tyre and the roller. While he was doing this one morning some lime, which in the ordinary use of the mortar pan had found its way in between the tyre and the roller, was forced out and struck the plaintiff in the eye, injuring his eyesight. The action was brought under section 1, sub-section (1) of the Employers' Liability Act, 1880, the plaintiff alleging that he had been injured through a defect in the plant owing to the negligence of the defendant. The judge left three questions to the jury:—(a) Was there a defect in the plant? (b) Was that defect due to the negligence of the defendant? (c) Was the injury caused through the defect? The jury answered all three questions in the affirmative and gave a verdict for the plaintiff for £45, notwithstanding which the judge non-suited the plaintiff, holding that there was no evidence on which the jury could find that the accident was due to the defect in the plant. The plaintiff appealed, and the Court allowed the appeal. The workman was engaged in remedying a defective machine when he was injured and there was evidence on which the jury might find that the injury happened through the defect.

London County Council.—At last week's meeting of the Council the statement of the Finance Committee submitting the annual estimates was considered. This showed that the principal increases were the main drainage, which required an additional £26,335, and the Technical Education Board, £10,000. The estimated expenditure was £2,765,834. The assessable value of London is now £37,549,521, the City accounting for £4,571,454 of that amount. Mr. Wallace Bruce, chairman of the Committee, said they had this year to provide for a very large expenditure of capital in connection with the new street from Holborn to the Strand, the Strand improvement by the removal of the Holywell Street houses, the tramway extensions and conversion to electric traction, and also the several housing schemes which had been sanctioned by the Council. Owing to the recoupment which they should receive in a few years' time in the shape of ground rents and profits, much of this expenditure would eventually prove remunerative, and the result of the whole would be merely a small annual charge on the rates; but the immediate effect was a very considerable increase in the charge for interest on debt. For total ordinary services the debt of London was equal to a little more than one year's ratable value, and compared favourably with that of Manchester, Birmingham, Leeds, Sheffield, and other smaller towns, while for the extraordinary remunerative services, water, gas, electric lighting, tramways, etc., the capital debt of London was very small indeed, being only 6½ per cent., or say one-fifteenth of one year's ratable value, as compared with four years' ratable value in the case of Manchester, 2½ years' in that of Birmingham, and 1½ years' in the case of Liverpool. The architect had devoted much time to planning the most economical dwellings for the working classes, and they now knew by experience what was the highest price they could afford to pay for land on which they intended to build dwellings so that when they were occupied there would be no charge on the rates. Land in the central districts of London was three times too costly to be used for that purpose; that was to say, those who required this land for offices, warehouses, workshops, or factories were willing to pay three times the price that the Council could afford to pay for housing purposes. In some of the recent purchases by the Council of land on which to re-house persons displaced by the new street from Holborn to the Strand, as required by Act of Parliament, the price paid to a willing seller had been far more than three times the housing value. The Reid's Brewery site in the Clerkenwell Road cost £200,000, and it had been necessary to write it down to £45,000 as its housing value, and the Herbrand Street site, a small piece of vacant land in Bloomsbury, cost about £40,000 and was written down to £7,000.—After discussion, the estimates were passed.—The Improvements Committee reported that the First Commissioner of Works had consented to the erection of the Gladstone memorial on a site to the west of St. Clement Danes Church.

Public Improvements at Sudbury.—On Wednesday last a public inquiry was held by Major-General H. D. Crozier, R.E., into an application of the Sudbury Corporation for borrowing powers for the purposes of public and private street improvement (£7,000), for sewerage works (£3,500), for water-supply works (£2,000), and for purposes of electric lighting (£650).

The Operative Masons of Dunfermline have struck. Some time ago the employers proposed to reduce wages to the extent of a penny per hour and to abolish certain conditions favourable to the workmen, which were stipulated for in previous annual agreements. The men refused to agree to these terms and the employers agreed to modify the reduction of wages to a halfpenny per hour. At a meeting of the men it was decided, by a narrow majority, not to accept this compromise. The wage for the past year has been from 9d. to 9½d. per hour, and now the masters offer from 8½d. to 9d.

Masters and Men.

Tamworth Painters' Dispute.—Mr. G. B. Askwith, barrister, who was appointed by the Board of Trade to arbitrate upon the application of the Tamworth painters for an advance of ½d. per hour has given his decision against the application.

The Workington Joiners' Strike has been settled after eight weeks' duration, the men agreeing to accept ½d. per hour advance on the wage of 7d. instead of the 1d. asked, and a considerably modified code of rules has been drawn up.

The Pudsey Joiners' Strike has been Settled. The masters have given the advance asked for, that is, from 7d. to 8d. per hour, and the men have consented to a modification of those union rules against which the greatest objection was urged.

Building Trade Strike in Stockholm.

—The employers in the building trade in Stockholm have begun a general lock-out of their men. The lock-out, although directly affecting 5,000 workmen only, will, it is stated, throw 20,000 men out of employment.

The Whitehaven Painters, who struck work recently for an advance of wages from 7d. to 7½d. per hour, have returned to work on the understanding that the increase asked for will be given on June 2nd next. This settlement was brought about by the intervention of Mr. J. T. Moffat, architect, representing the masters, and Councillor Thackley, on behalf of the men.

Strike of Bricklayers at Barrow-in-Furness.

—The bricklayers engaged by Messrs. Gradwell and Company in the erection of the new Technical Schools at Barrow-in-Furness have objected to masons setting the terra-cotta front of the building. They claim the work as bricklayers', because terra-cotta is made of clay. Unless the masons are withdrawn the bricklayers have decided to cease work, under instructions of the Bricklayers' Executive Council. The masons, on the other hand, claim the work as theirs, and there is every prospect of the rupture affecting all the building operations in Barrow.

The Bricklayers' Dispute in the Potteries.

—As a result of a conference between the employers and operatives in connection with the strike of bricklayers in North Staffordshire and Newcastle the following terms have been offered by the masters: "The workmen to start work at an advance on present wages of ¼d., that is, 8½d. instead of 8¼d. per hour, the question of a further advance to be submitted to an umpire to be agreed on by both sides, and if any further advance is given by him it should date from the day the men commenced work." The masters had previously offered the ¼d. advance, and they submit that this further concession of allowing the men to commence work at the advance and then to arbitrate as to a further advance can be accepted by the operatives as a fair basis of settlement honourable to both sides.

Trade in April.—The Board of Trade states that employment in the building trades has still further improved, and is good in most branches; the percentage of unemployed union members among carpenters and plumbers at the end of April was 2.2 compared with 2.6 in March, and 1.3 per cent. in April of last year. In the furnishing trades employment has continued to improve in most branches and is now good; the percentage of unemployed union members at the end of April was 1.3, compared with 2.4 in March and 0.8 per cent. in April, 1899. Employment in the engineering and metal trades has remained good; the percentage of unemployed union members in this group of trades at the end of April was 2.4, compared with 2.2 per cent. in March and also in April, 1899. Of fifty-two fresh disputes in April, twenty-one occurred in the building trades, four in the mining and quarrying industries, and six in the metal, engineering and shipbuilding trades.

"BUILDERS' JOURNAL" SHILLING FUND.

ANOTHER GOOD LIST.

WE expressed a hope last week that our readers would send in the small amount then required to reach a total of 3,000 shillings, and so enable us to send a cheque for £150 as the contribution of the BUILDERS' JOURNAL and its readers towards the fund for erecting homes for discharged soldiers. We are very glad to be able to announce that the sum we regarded as the best for which we might hope has not only been reached but considerably exceeded, and our fund now amounts to 3,425 shillings. Whether the announcement of the closing of the list has induced some who have kept back their contributions to delay no longer, or whether the stirring events of the past few days have moved some of our readers to seek a useful outlet for their patriotic feelings, it is certainly a fact that we have received during the past week a larger

list until Monday, June 2nd, when a cheque for the total amount contributed will be sent to the treasurer of the Building Trades' Gift.

Last Week's Matinee.

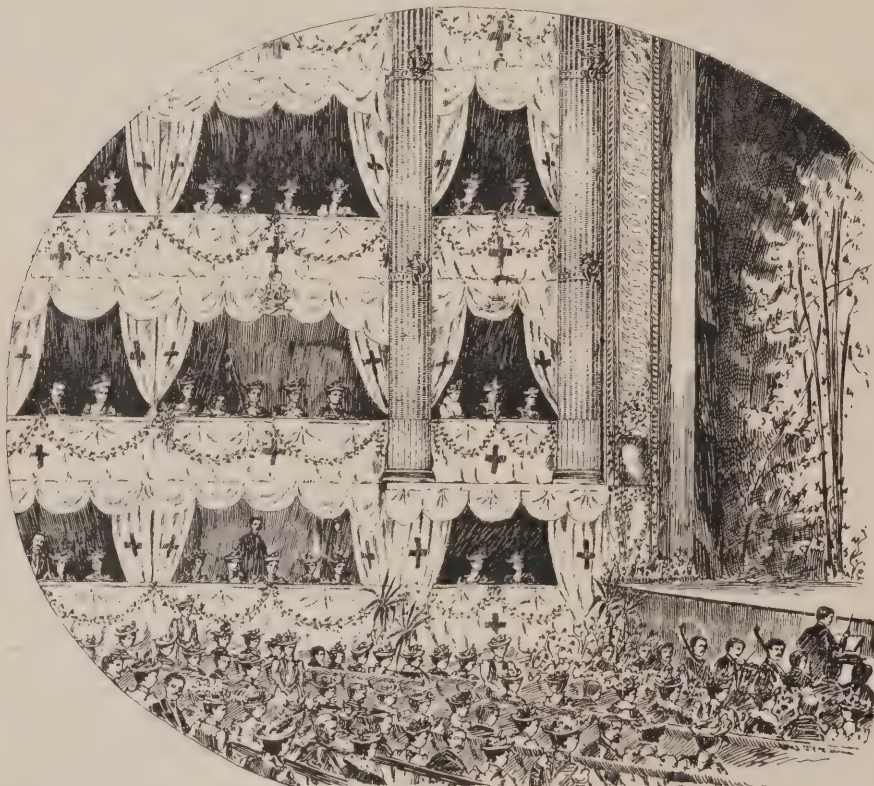
The distinguished audience at Drury Lane Theatre on Tuesday afternoon last week witnessed a performance, or rather a series of performances, in which the pick of the theatrical profession took part. The matinee was given to provide for the up-keep of the proposed Homes of Rest for Disabled Soldiers, with which our fund is so directly concerned; but we regret that the name of Mr. Edwin O. Sachs, the architect of the Homes, who has done so much to forward the work, was not mentioned on the programme of the entertainment nor in the newspaper articles.

The curtain first rose at 12.30 and finally fell shortly before seven; so the performance (which was organised by Mr. Arthur Collins and Madame Cellini) was long enough. The house was draped in white, relieved by the red cross and garlands of flowers. The Princess of Wales, the Duchess of Fife, Princess Victoria of Wales, and Princess Victoria of Schleswig-Holstein occupied the Royal box during the latter hours of the performance. Prices varied from 100 guineas for a box to half-a-guinea for

dressed in khaki, Mr. Huntley Wright and Miss Kate Cutler provided excellent music and humour. After a second taste of the Gaiety attraction—the Messenger Boy himself, Mr. Edmund Payne, appearing with Miss Katie Seymour in their Mummy Dance—the audience had the great treat of renewing acquaintance with Mr. Tree's "Midsummer Night's Dream" (scene 4, Act I.), in which Mrs. Tree, Miss Julia Neilson, and Miss Dorothea Baird took part. Mr. Rutland Barrington, Mr. Courtice Pounds, and Mr. Walter Passmore appeared in "Trial by Jury," Miss Florence St. John taking the part of the plaintiff, and Lady Bancroft and Mr. W. S. Gilbert being upon the stage in the speechless parts of the Associate and his wife. The bridesmaids included Miss Phyllis Broughton and Miss Decima Moore. Conspicuous jurymen were Mr. W. H. Denny and Mr. Harry Lytton, while Mr. J. Comyns Carr, Mr. Haddon Chambers, Mr. Lionel Monckton, and Mr. Sydney Grundy figured as learned counsel; the crowd in court was composed of well-known society ladies. In "A Patched-Up Affair," a play in one act by Miss Florence Warden, Mr. George Alexander, Miss Fay Davis, and Mr. H. B. Warner won much applause. Then there came the wonderful harlequinade, as performed at the Nellie Farren benefit, the performers including Miss Nellie Farren herself (who was affectionately cheered), Miss Katie Seymour, Mr. Edmund Payne (clown), Mr. Arthur Roberts (Police-Sergeant XX.), Mr. Herbert Campbell, Mr. Harry Nicholls, Mr. Tom Thorne, Miss Louie Freear, Mr. Sydney Brough, Miss Kitty Loftus, Miss Marie Lloyd, Mr. Charles Hawtreys, Miss Evelyn Millard, Miss Violet Vanbrugh, Herr Meyer Lutz, and a host of other favourites. Afterwards came a military spectacle, with Mr. James Fernandez as Wellington and Mr. Julian Cross as John Bull, and this was followed by the final tableau from "The Soldiers of the Queen," as produced at the Alhambra. There were many other interesting items in the performance, the gigantic nature of which will be apparent from the list of prominent actors and actresses given. The financial results of the matinee cannot yet be exactly ascertained, but it is estimated that about £3,000 will result from Tuesday afternoon's work. This money will go entirely to create a fund from which the general up-keep and the structural and decorative repair of the Homes shall be assured for all time.

The members of the building and allied trades of Birmingham, having been invited to join in the movement, are giving their support to the scheme by organising a local fund. A meeting, at which this decision was come to, was held at the Grand Hotel, Birmingham, last Monday week, under the chairmanship of Mr. F. G. Whittall (president of the Birmingham Master Builders' Association). Mr. Whittall stated that the Master Builders' Association had met the workmen, who were unanimous in their wish to assist; the labourers' representatives said that their men were willing to give 1s. all round, which would amount to £150; other workers said they would try to give a contribution of 1s. 6d. per member, and altogether from the trade in Birmingham they were likely to obtain £700 or £800. Messrs. J. Matthews (Carpenters and Joiners), J. Ball (Mill Sawyers), H. Duckett (Plasterers), A. Dye (Stonemasons), T. Bradshaw (Builders' Labourers), E. Carter (General Labourers), and G. Speaks (Bricklayers) have been elected to co-operate with the employers to conduct the work of the local executive, and representatives of the other trades have been requested to join them.

The Executive of the Building Trades' Gift wish to express their high appreciation to all concerned in this entertainment, and also to those concerned in the one organised by the Leicester Master Builders' Association, who, by means of a patriotic concert, which was subscribed to by the builders and workmen of Leicester alike, brought together the sum of £170 for the benefit of the payment of labour in connection with the erection of the Homes. The Executive further wish to call attention to the well-



THE MATINEE AT DRURY LANE THEATRE ON MAY 15TH.

addition to the fund than in any previous week since our list was opened.

Towards this most gratifying result the splendid efforts of Mr. Spencer Bush, of Coventry, have in no small degree contributed. This gentleman, who sends a cheque for £20 13s., has evidently made a thorough canvass of the builders and architects of Coventry, who, we are glad to see, have responded most liberally. This shows what one energetic worker can accomplish, and we only regret that we have not as able and enthusiastic a collector for our Shilling Fund in every town in the kingdom.

Extension of Time.

The notable response of the past few days suggests that there may yet be further contributions to the good cause to be extracted from the pockets of our readers and their friends, and we have decided to keep open the

a balcony seat. It was a huge and delighted audience, among whom wandered irresistible saleswomen of flowers from Nice (presented by Lady Pirbright) and of a souvenir programme enriched with drawings by Mr. Phil May, Mr. Caton Woodville, and Mr. Dudley Hardy. "Comrades in Khaki," a sketch in one act by Mr. Charles H. Brookfield, figured first upon the many-featured programme, being followed by Mr. Frederick Upton's short stories, and a new patriotic song, "Our Gallant Boys," by Mr. Charles Magrath, with Sir Walter Parratt conducting the orchestra. In the "letter scene" from "The Rivals," Mr. Cyril Maude played Acres with his usual skill. Mr. Lewis Waller recited Mr. Rudyard Kipling's "The English Flag." Mr. Fred. Wright, jun., as Captain Pott in "The Messenger Boy," together with ten Gaiety ladies, scored a great success with their popular song, "They're all after Pott," and the dance that follows. "A Gentleman in Khaki" proved to be a delightful musical farce, in which Mr. Haydon Coffin,

organised efforts that have been made in Birmingham and district on behalf of the Building Trades' Gift, and to the arrangements which have been taken in hand throughout Yorkshire, and they wish to announce that printed matter to facilitate the work, such as posters and the like, will be gladly issued to those in authority in other provincial districts who may probably wish to follow the excellent example of those centres which have already taken up the matter.

This Week's Contributions.

	Shillings.
Previously acknowledged...	2,893
Per Walter Bird, builder and decorator, Broughton Road, West Ealing, W.; collected at his works:—	
Per Sundry Collections...	7½
W. Bird ...	2½
G. Frost ...	2½
C. Wilson ...	1
F. Coulson ...	1
F. Messer ...	1
W. H. Dawes ...	1
G. Cracknell ...	1
H. Lowen ...	1
"Bob" ...	1
A. Barton ...	1
H. Wakelin ...	1
— Frith ...	1
— Peasey ...	1
— Finch ...	1
F. Bird ...	1
H. Storey ...	1
Per A. H. W., Gravesend:—	
S. H. W. ...	2½
M. and W. ...	2
H. W. ...	1
H. D. ...	1
Khaki ...	1
H. N. Dering ...	1
G. B. L. ...	1
C. Higgins ...	1
A. P. J. ...	1
J. E. D. ...	1
G. F. T. ...	1
L. C. ...	1
John Brown ...	1
J. Swift ...	1
G. E. Clay ...	1
L. Bridgland ...	1
F. E. W. ...	1
A. B. C. ...	1
Per R. Featherstone, care of S. Megarity and Co., builders, Harris Street, Strangeways, Manchester:—	
Miss Saint ...	6
W. Featherstone ...	2½
R. Featherstone ...	1
Miss Mona Featherstone ...	1
A. Windsor ...	1
A. Friend ...	1
W. Tracy ...	1
P. Coyne ...	1
P. Perkins ...	1
C. Featherstone ...	1
J. Ramsay ...	1
— Muggleton ...	1
R. Morton ...	1
G. Bowen ...	1
J. Brown ...	1
Mrs. Shutt ...	1
P. Spencer ...	1
E. Long, clerk of works, Kingston Road, Oxford ...	2
Per Edward Brain, Farrar Road, Bangor, N. Wales:—	
W. Brain ...	2
E. Brain ...	2
F. Mitchell, architect and surveyor, Upper Fountains Street, Leeds ...	10½
Per G. Malam Wilson, M.S.A., Bridgeland Street, Bideford, N. Devon:—	
J. Cock ...	2
W. H. Viggars ...	1
G. Mitchell ...	1
A. E. Arnold ...	1
— Adams ...	1

	Shillings.
E. Goaman (Mayor) ...	1
— Symons ...	1
C. W. Hole (Town Clerk) ...	1
— Chowins ...	1
R. C. Prior ...	1
— Paddon ...	1
G. L. Richards ...	1
A. J. Embery ...	1
W. Pickhard ...	1
J. Lamerton ...	1
E. Trapnell ...	1
W. Martin ...	1
P. Labbert ...	1
G. Malam Wilson ...	1
F. Lee ...	½
Per Spencer Bush, 24, Windsor Street, Coventry; collected from the builders and architects in the town:—	
Harry Tuick ...	21
T. F. Tickner ...	10½
Harrison and Hattrell ...	10½
T. D. Griffith ...	5
G. and J. Steane ...	10
E. K. Purnell ...	5
Hill C. Gray ...	20
Adams H. Fetton ...	5
John Worwood ...	10
W. Everett ...	2½
T. Wincott (Nuneaton) ...	10
W. Reader ...	10
R. E. Ault ...	2½
T. Hancox and Co. ...	10½
James Harper and Son ...	10½
The Executors of Charles Garlick ...	21
W. J. and R. Wormell ...	10½
Charles Haywood, senr. ...	5
W. Wilkins ...	10
J. Lomas ...	5
G. Blakeman ...	5
McCarthy and Co. ...	5
T. W. More ...	2½
T. G. Golby ...	5
C. H. Barber ...	10
J. Gardner ...	5
John H. Cox ...	10
A. E. Aiers ...	10
W. H. Richardson ...	1
T. W. Liggins ...	1
E. Harris ...	5
A. A. Wincott ...	5
Herbert Goode ...	2½
T. P. Jackson ...	2½
J. Elsworth ...	5
J. Bonham ...	2½
George Burton ...	2½
C. Blockley ...	5
P. L. Adams ...	2½
William Taylor ...	5
T. Lines ...	2½
E. W. Holloway ...	1
J. J. Godfrey ...	2½
O. G. Duggins ...	5
W. S. Barker ...	5
W. Grant ...	5
J. Liggins ...	1
J. Smith ...	10
C. Webster ...	2½
W. H. J. Johnson ...	1
O. Polby ...	1
W. O. Jones ...	5
H. Stidworthy ...	1
Stidworthy and Son ...	2½
M. H. T. Atkins ...	2½
H. Clarke ...	10
H. G. Storer ...	5
C. Chamberlain ...	5
T. W. Carter ...	5
W. H. Hogg ...	5
R. Wooton ...	2½
H. Whiteman ...	5
Job Hart ...	1
Fred Haywood ...	1
W. Haywood ...	1
Alfred Case ...	5
George Johnson ...	5
C. Luck ...	5
V. A. Pearson ...	5
H. Goode ...	2½
J. W. Jephcote ...	1
Kelley and Son ...	5
Isaacs and Son ...	5
W. J. Bronsley ...	5—413

Per John William Harrison, Ashley Street, Rock Ferry, Cheshire (fifth contribution):	
A. E. Grice ...	2½
W. H. Grice ...	2½
M. Booth ...	2½
R. Davies ...	2
J. W. Edwards ...	2
J. Hamilton, jun. ...	2
E. Ellis ...	2
J. Hamilton, sen. ...	1
R. Lea ...	1
A. Harrison ...	1
J. W. Sharrock ...	1
C. Bell ...	1
Total ...	20½
Total ...	3,425

The contribution from Mr. John William Harrison, of Rock Ferry, Cheshire, acknowledged last week as the third he has sent, should have been stated as the fourth.

The following additional subscriptions have been received by the Executive of the Gift:—

	£	s.	d.
The Leicester Master Builders' Association, per Mr. W. E. Starkie, being the proceeds of a Patriotic Concert ...	170	0	7
Mr. W. Hill ...	52	10	0
Messrs. John Grover and Son ...	50	0	0
Workmen of Messrs. Colls and Son ...	37	1	3½
The Old Delabole Slate Company, Ltd. ...	20	0	1
Workmen of Mr. George Parker (Peckham) ...	12	2	0
Mr. John Greenwood ...	10	10	0
Messrs. Wenham and Waters, Ltd. (Croydon) ...	10	10	0
The Southport and District United Building Trades Association (Southport), per Mr. W. H. Foster ...	10	4	6
Workmen of Messrs. Hilton, Anderson, Brooks and Co. (Halling, Kent) ...	10	0	0
Messrs. J. and C. Bowyer (Upper Norwood) ...	10	0	0
Workmen of Messrs. J. and C. Bowyer (Upper Norwood) ...	6	9	7
Workmen of Mr. John Greenwood, per Mr. Hayes ...	5	16	1
Colonel Hunsiker, Carnegie Steel Co., Ltd. ...	5	5	0
Workmen and Staff of the B. and S. Folding Gate and Lift Co. ...	4	7	0
Mr. F. T. Foulger and Employees, per Mr. F. W. Best ...	4	1	6
Workmen of Mr. H. L. Holloway (Guinness's Trust, Hammersmith) ...	2	11	6
Workmen of Messrs. John Weibking and Son ...	2	4	1
Mr. George English and Workmen ...	2	2	4
Messrs. J. Laws and Son ...	1	16	6
Workmen of Messrs. H. Somerford and Son (Clapham) ...	1	7	6
Workmen of Messrs. Drew-Bear, Perks and Co. ...	1	6	0
Workmen of Messrs T. Rider and Sons, per Mr. J. Hibble ...	1	1	10
Workmen of Mr. James Stewart (South Tottenham) ...	1	0	6
Workmen of Messrs. John Shelbourne and Co. (Ilford) ...	16	2	
Workmen of Mr. George Parker (Peckham) ...	14	6	
Mr. J. G. Cooling (Gainsborough) ...	10	0	
Mr. A. Balfour and Workmen (Kilburn) ...	10	0	
Workmen of Messrs. John Shelbourne and Co. (Barking) ...	9	0	

The Gladstone Statue in the central lobby of the Houses of Parliament, by Mr. F. W. Pomeroy, was unveiled on Saturday.

The Fixing of Rosettes on Buildings.—The clause in the Liverpool Corporation Bill giving compulsory powers to affix rosettes for the electric tramway service on private property having been dropped, an alternative clause is being considered. It has been suggested that this should provide for the erection of a rosette without the consent of the owner only in cases where an order had been made by the magistrates upon evidence showing a rosette at a particular point to be essential to the service.

Proposed Reconstruction of the Theatre Royal, Birmingham.—It is proposed to pull down this theatre and the adjacent buildings covering the area bounded by New Street, Lower Temple Street, Colonnade Passage, and Stephenson Street, and to construct a new theatre, several shops, and probably an arcade. The total cost of the undertaking is estimated at about £120,000, of which about £25,000 or £30,000 would be spent on the new theatre. The scheme would afford an opportunity of setting back the building line for the purpose of widening the street, an improvement which is much desired in that part of New Street.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"One may express an idea with anything that makes a mark on a surface."—J. F. MILLET.

Bishop Marshall's Tomb.

ON the north side of the choir of Exeter Cathedral stands the altar-tomb of Henry Marshall, Bishop of Exeter, of which we give measured drawings this week by Mr. G. J. F. Hookway. This tomb, which is of Purbeck marble, is partly covered by a Perpendicular screen which surrounds the choir. The tomb is exceedingly well carved, and is a very interesting one, dated about 1206. When comparing the two opposite sides a great difference is noticed in the character and finish of the work, which seems to suggest that the sides were executed by different men at different places. The effigy is well preserved and is almost intact; it is well carved, the crozier being as tall as the figure, and of a very simple form. Henry Marshall, brother of William, Earl of Pembroke, and Marshal of England, was selected for the See of Exeter, which became vacant in 1191. During his episcopacy, which commenced February 10th, 1194, he completed the Transition Norman Cathedral, enlarged the choir by doing away with the apse, and added four bays with aisles and retro-choir. Another very important addition made to the church by him was the lady chapel, not as it is at present internally, but of the same dimensions as now, occupying, probably, the site of Leofric's Cathedral. He also made some additions to the nave, consisting of the north porch, St. Edmund's Chapel, and the great south-east doorway leading into the cloisters. He also built the transeptal choir chapels and introduced the pointed vaulting. These were some of the larger works which he did, but there are still remains in different parts of the cathedral, which show that he was a great builder and added largely to the beautifying of the cathedral. After governing his church for about twelve years and a half, Bishop Marshall died on October 26th, 1206.

Doorway, St. Albans Abbey.

WE give this week also a measured drawing of the doorway in the north choir aisle of St. Albans Cathedral, also by Mr. G. J. F. Hookway. This fine perpendicular doorway was pierced through the wall in the fifteenth century to give an easier access from the eastern chapels to the sacristy, and also for the other buildings on the north side of the church. A few years later the door was blocked up and another inserted immediately to the eastward in order to make a greater convenience for the townspeople attending the services in the transepts and choir. This inserted doorway was partly constructed from a fourteenth-century arch and portions of the holy rood screen. When the abbey was "restored" by Lord Grimthorpe in 1875 the doorway was removed and the window lowered to its original level. The arcading on either side of the doorway dates from about 1260.

The Housing Bill.

THE Government Housing Bill was read a second time last Thursday, Mr. Robson's amendment, asserting the need for wider reforms, being withdrawn. The measure, though good as far as it goes, is a very small one, and we are not sanguine enough to expect that it will mitigate the evil of overcrowding to any great extent. The most hopeful feature, however, about the whole business is the fact that Parliament has at last shown a disposition to tackle the problem in earnest. The discussion showed that there are many members on both sides of the House who fully realise the gravity of the situation, and will not allow the present inadequate Bill to stand as the final expression of their sense of responsibility towards the unhoused and the ill-housed. The suggestions made during the debate were many and varied, and it is not to be supposed that all of them can be carried out; but the

matter for congratulation is that there is evidently a consensus of opinion as to the need for more drastic reforms in the future.

Wanted, an Object Lesson.

ONE of the most interesting proposals was that of Sir Robert Reed, who suggested that the time had come for prohibiting the erection of more workshops in the centre of London. It is undoubtedly the fact that the competition for sites for workshops adds greatly to the difficulty of obtaining suitable sites for housing schemes. But it is not difficult to imagine cases in which serious injustice might be caused by compelling manufacturers to establish their works outside the precincts of the city. At the same time it would undoubtedly be a great gain if factories and workshops could be transplanted into country districts, for obviously the workers would follow, and so relieve the congestion in the cities. This, of course, is a great point in the proposals of the Garden City Association, who seek, by methods which have been fully explained in our columns, to establish model townships by voluntary co-operative action on the part of manufacturers and others. If one such township could be established we should have an invaluable object lesson when next proposals for dealing with the housing question were placed before Parliament. Whether the experiment proved a complete success or not, we should have at hand the materials for a comparison. It would be possible to compare the lot of the workers, as regards wages, housing, &c., with their former condition when they dwelt in the city, and also to show from the evidence of the manufacturers how the migration to the country affected their business.

Ruskin and Baden-Powell.

As is generally known Colonel Baden-Powell is a very clever draughtsman, and possesses the rare faculty of drawing with the left hand as well as the right. Mr. Harold Begbie's recently published life of the hero of Mafeking explains the genesis of this accomplishment. It seems that Ruskin had something to do with it. As a child Baden-Powell was very fond of drawing maps and animals, and somewhat alarmed his mother by persistently holding his pencil or paint-brush in the left hand. "One day Ruskin called when this doubt was in her mind, and to him the question was propounded. Without a moment's hesitation he counselled the mother to let the boy draw in whatsoever manner he listed, and together they went to find the young artist at his work. In the play-room they discovered one brother reading hard at astronomy, and 'Ste' with a penny box of water-colours painting for dear life—with his left hand. 'Now I'll show you how to paint a picture,' said Ruskin, and, with a piece of paper on the top of his hat, and with B.-P.'s penny box of paints at his side, he set to work, taking a little china vase for a model. Both the vase and the picture are now in the drawing-room of Mrs. Baden-Powell's London house. The result of Ruskin's advice was that B.-P. continued to draw with his left hand, and now in making sketches he finds no difficulty in drawing with his left hand, and shading in at the same time with his right."

Home Handicraft.

LORD Grey recently presided over a curious meeting at Newcastle-on-Tyne. It was to consider the advisability of forming a county guild for the encouragement of home handicraft in Northumberland villages. Mr. C. W. Mitchell stated the objects of the guild, one of which was to "stimulate an interest in art among all classes by supplying direction in such handicrafts as will add to the beauty of the home." Lord Grey said he believed the effect of work such as they proposed should be done, would be the establishing of centres in the country and the encouragement of the population to come into the country. The object of the craft schools would be to bring the people somewhat nearer to the state of society pictured by Mr. William Morris, when all the artists should be workmen and all the

workmen should be artists. He did not think anybody could dispute that it was desirable to encourage art and a desire for beautiful things. He thought it could not be disputed that Northumbrians, who excelled in many directions, were yet lamentably deficient in an artistic sense. They were also lamentably unconscious of their terrible shortcomings in this respect. A resolution was adopted declaring that it was desirable to form a handicrafts guild for Northumberland with the objects stated by Mr. Mitchell. It was also decided to appoint a Council, consisting of those who had expressed sympathy with the object of the meeting, to take such steps as may be desirable to promote the purposes of the guild. It will be interesting to note what results are achieved, whether the idea will prove an Arcadian dream or a practical and profitable revival of handicraft in the north. Let us hope the latter, for such a revival is sorely needed.

Underground Tunnelling and Settlements.

AN article on "The Central London Railway and the Subsoil Water," recently published in the "Lancet," raises the question as to what influence the construction of underground railways is likely to exert upon health and property in their vicinity, owing to the probable alteration in the level of the subsoil water, the Central London Railway being taken as an example. Avoiding dogmatic assertions it discusses possibilities. In order to do this it first considers the geological structure of the soil surrounding the tunnel and shafts. The original physical geographical features of the district are glanced at to prove the more or less saturated condition of the soil. A brief description of the line follows. The results of these arranged facts are summarised and tend to show not only the possibility, but the probability of a considerable alteration in the level of the subsoil water having been produced by the construction of the tunnel. The result of this would be the settlement of house property in certain districts and an altered condition of humidity likely to affect disadvantageously the health of the occupants of the houses at the lower levels. It concludes by suggesting that before underground railways are more extensively adopted discussion is desirable that the evils here pointed out may be avoided. A brief account of the geology of the London basin is appended. The editorial remarks give support to the article and point out the possibility that the settlements which have been known to have taken place may also have affected the sewers and the gas and water mains in like manner with the houses, thereby causing risk of pollution of the sub-soil water, or even the water mains, by in-suction.

The New Laboratory at Richmond.

A FEW brief particulars have already been given of the new physical laboratory which is to be erected, under Government control, in the Old Deer Park, Richmond. Some details of the building are now forthcoming. It will consist of two buildings, which will be placed, not adjoining the present observatory in the centre of the park, but on a strip of ground enclosed for the purpose alongside the boundary between the park and Kew Gardens. This site, about fifteen acres in extent, commences immediately at the rear of the archery ground in the Kew Road, and runs westwards towards the Thames. At the end nearest the road and to the Kew Gardens Pagoda—which will itself be utilised for purposes of the laboratory—will be erected a somewhat extensive one-storey building, devoted to the testing of commercial samples. At the far end of the site, and adjoining one corner of the Queen's Cottage grounds, there will be a smaller two-storey building, which will be used for the purpose of carrying out a variety of magnetic and other physical experiments, success in which imperatively demands seclusion and freedom from disturbance, either physical or electrical. A very small number of persons will be employed at either of these buildings; the work will all be carried on with perfect quietness and within doors, and there will be no smoking chimneys or other dis-

figuring appendages. The motive power required in the testing house will be supplied in the form of electricity and by cable from outside the park. There will, in fact, be nothing of a character to disturb the bird life or other attractive features of the adjoining gardens, and in their architectural features the buildings, designs for which will be prepared by the Office of Works, will be as unobtrusive as possible. The portion of the park which it is intended to use is at present in the occupation of the Mid-Surrey Golf Club, but it is not expected that the enclosure will involve any serious interference with the courses.

New London Buildings. It is interesting to note what a number of improvements are being effected in London at the present time, either by the erection of new buildings or the widening of streets, or by both. We have already given particulars of some of the improvements, but it will be well now to look at them as a whole. To begin with, the removal of the block of buildings between Parliament Street and King Street at Westminster, in order to clear a site for the new Local Government Board Offices, designed by Mr. J. M. Brydon, has changed the aspect of a locality probably as well known to visitors as any within the metropolitan radius. On the eastern side of Whitehall the ground upon which will stand the new War Office buildings, designed by Mr. William Young, has been cleared, and here also work in connection with the foundations is in progress. The two new buildings will very materially improve the appearance of the roadway from Trafalgar Square to Westminster. Hard by, in Victoria Street, a notable change is being wrought by the conversion into shops of the ground floors of the lofty buildings, almost all of which have until recently been let as residential flats; so that the long street, after the offices of the agents of the several colonial Governments which cluster near its Westminster end has been passed, is likely to become an important commercial thoroughfare. Steady progress is being made with the erection of the new Roman Catholic cathedral in the adjacent Ashley Gardens, and it is expected to be opened in September next, which is also the time chosen for the opening of the new Metropolitan Tabernacle. Another notable structure recently erected (at a cost of about £200,000) is the second block of the new Admiralty buildings, of which a good view may be obtained from the Horse Guards Parade. The erection of a third new block is contemplated, and the fourth side of the Admiralty quadrangle has been mentioned as its probable site. At South Kensington the erection of some important buildings is proceeding. It was a year last Thursday since the foundation-stone of the museum building that will replace the eyesore of the Brompton Boilers was laid by the Queen. Progress is being made with the groundwork preparatory to the erection of the handsome edifice designed by Mr. Aston Webb and another block of buildings planned by the same architect for the Royal College of Science, which will face the edifice that is now the headquarters jointly of the Imperial Institute and the University of London, has been commenced; while close at hand the builders are at work upon the new home of the Royal School of Art Needlework.

The Strand and the City. In the Strand the setting back of the shops that screen the Hotel Cecil from view affects a comparatively small length of one of London's busiest highways, of which the need for widening has become an urgent necessity. A more extensive improvement of this thoroughfare is being carried out by the removal of the block between the churches of St. Mary and St. Clement. No. 17, Fleet Street, the bogus palace, has been acquired by the London County Council, its purchase and contemplated restoration involving an expenditure of about £27,000. The sorely-needed widening of Fleet Street is being proceeded with at the end nearest to Ludgate Circus, the present instalment of the scheme extending as far as the "Punch" office, which is awaiting demolition. Along the Victoria

Embankment a number of handsome buildings are approaching completion, facing towards the river, and abutting upon the roadways that connect the Embankment and Fleet Street. The demolition of Newgate Gaol and the adjoining Old Bailey courts, rebuilt and enlarged in 1809, is an event of the near future; and upon the site which they occupy a new Sessions House will be erected at an estimated cost of £120,000. At the junction of St. Paul's Churchyard and Cheapside an improvement is being made by setting back a number of shops, with the result of widening an inconveniently narrow thoroughfare. In the neighbourhood of Finsbury Circus some extensive rebuilding schemes are in progress. The foundations of Mr. John Belcher's building for the Eastern Telegraph Company are being laid at the corner of South Place; a huge block of offices and other business premises, to be known as Salisbury House, is being built between the Circus and London Wall, replacing a multitude of meaner buildings; and the demolition of the old Ophthalmic Hospital and its neighbours, the Roman Catholic Church and schools of St. Mary, Moorfields, has been commenced. With all these improvements and new buildings London ought to look very different in the near future.

Rebuilding the Comédie Française.

It is not at all likely that the rebuilding of the Comédie Française will be finished in time for the National Fête of July 14th, as promised by M. Leygues. In the first place, the work to be accomplished is far more extensive than it was thought would be the case. The cursory examination of the ruins immediately after the fire conveyed the impression that the four principal walls of the theatre had suffered but little damage. The official architect, M. Guadet, has found, however, that one of the walls needs practically to be rebuilt, while much has to be done in the way of strengthening the remaining three. Another cause of delay is the fact that it has been considered advisable to make a number of changes in the plan of the old theatre. The corridors and staircases are to be widened, the arrangement of the dressing-rooms is to be modified considerably, and the building is to be lighted and heated on an entirely new system. The reconstructed theatre, too, will have lifts for the use both of the public and of the actors and actresses. In short, M. Guadet is bent on building a model theatre, an ambition most justifiable in itself, but quite irreconcilable with extreme despatch in raising the new building. To crown all, a characteristic official muddle has cropped up to interfere with the progress of the work of rebuilding. In order to carry out the proposed alterations and improvements additional space is necessary. It so happens that a ready means exists of obtaining it. A portion of the premises of the Comédie Française is let to two or three tenants, and the room they occupy would be at once available if they were to move out in return for an indemnity. Negotiations to this end have been begun, but none can say how long a time will elapse before they are brought to a satisfactory, or indeed to any, termination. The discovery has been made that much doubt exists as to which is the precise official department that ought to treat with the tenants, a piece of information which is quite sufficient to make it pretty certain that no undue haste will be exercised. Governments move slowly, and it may be fairly safely assumed that the Comédie Française will not be completed till the present year is nearing its close.

A Scotch Pile Structure.

At the last meeting for the present session of the Society of Antiquaries of Scotland, held last week, Sir Arthur Mitchell, K.C.B., M.D., LL.D., in the chair, Mr. John Bruce, F.S.A.Scot., gave some particulars of the excavation of a pile structure on the north bank of the Clyde at Dumbuck, about a mile to the east of Dumbarton Rock. When first discovered by Mr. Donnelly, a few of the tops of the piles were just visible above the mud. These piles were found to be of oak, twenty-seven in number, arranged in a circle

of 50ft. diameter, and spaced from 6ft. to 9ft. apart. Within the circle was a flooring of horizontal timbers of fir, alder, and birch, laid in three layers crossing each other at right angles. In the centre was a circular cavity, about 6ft. in diameter, filled with stones, and showing remains of walling round it. On the flooring round the central space were five circular paved spaces, the stones of which were packed with clay. About 20yds. to the north-west, a canoe hollowed out of an oak tree was found in a kind of dock, the walls of which were partly of stone supported by piling. A causeway of timber and stone led from the pile structure to the place where the canoe lay. To the west of the pile structure a pavement extends for 20yds., till it intersects a kind of breakwater which extended round the structure outside the piles. The worked objects found in the course of the excavation are chiefly of bone and stone. In the discussion that followed Dr. Joseph Anderson remarked that though this pile-structure presented some unusual features of construction and contents, both of these agreed so far with the generality of Scottish crannogs. But a considerable number of the objects in stone and shale, with incised carvings and pit marks, bore no resemblance to anything heretofore found in pile structures, or, indeed, anywhere else, except in the Fort of Dunbuie, not far distant. Mr. Andrew Lang, in a communication to the secretary, while offering no opinion on the stage of culture and relative antiquity to which the structure and remains at Dumbuck might be assigned, compared the markings on the portable stones found there with the cup and ring markings found on rock surfaces all over the world, and with the markings found on certain portable ritual objects in stone found among the tribes of Central Australia. He inferred that probably the same kind of marks had an analogous significance in this country at one time.

Mr. Rhodes' Architectural Project.

MR. HERBERT BAKER, F.R.I.B.A., of Capetown, has recently been at Athens examining, on the one hand, the quarries of Pentelicus, where colossal blocks of marble are now being excavated for the restoration of the Parthenon, and, on the other hand, studying Greek architecture in order to get ideas for an interesting commission he has on hand. He went, so it is stated, on behalf of Mr. Cecil Rhodes, who is desirous of erecting in Kimberley a marble monument to the memory of the British soldiers who fell while defending the town. This monument is to take the form of a bath with a colonnade round. Mr. Rhodes' architect has now left for Italy, where he will study Italian monuments and visit the quarries of Carrara.

Public and Private Architecture.

THE following remarkable outburst appears in this month's "Liberty Review":—"Architects! Good Heavens! the persons employed under this name by our lords and masters, 'the authorities,' so lack any real artistical sense that they could not design a cowshed whose form and appearance would pleasantly declare its purpose. Many of them would put cupolas on a dog kennel and broken pediments on a horse-trough." What, it will be asked, is all the bother about? Simply this: The "Liberty Review," whose mission it is to belittle all forms of public and municipal enterprise, has observed, like the rest of us, that official architecture is often neither beautiful nor inspiring. It has also been observing—from the outside, of course—two recently erected public-houses which it regards as "a rare combination of utility and art." From the beauty (real or supposed) of two public-houses, and the ugliness of certain government and municipal buildings, our contemporary seems to deduce that the architect who works for the noble and enlightened private patron is artistic and capable, while the architect who works for the wicked and debased public body (Government, Corporation, County Council, it matters not what) is—well, any bad name you can think of. Is the thing clear to you now, gentle reader?

Professional Practice.

Douglas, I.M.—The new municipal buildings were opened recently by the Mayor of Douglas, Alderman Webb, J.P. The site is at the top of Ridgway Street, adjacent to Victoria Street, and in close proximity to all important places and business parts of the town. The new building has been erected from the plans of Mr. Ardron, F.R.I.B.A., of the firm of Messrs. Ardron and Daws n, Westminster. The builders were Messrs. Gradwell and Co., of Barrow-in-Furness. The whole of the exterior has been built of dressed rubble stone from local quarries, with Bath stone facings. The principal entrance to the building is in John Street, and this leads to a spacious corridor with floors of marble mosaic containing the main staircase. On the left-hand side of the main corridor are the municipal offices, consisting of town clerk's office, enquiry office, public and rates office, and accountants' office. On the right are the water office and a well-appointed lavatory for the staff. In the John Street corridor, running to right of main corridor, are situated the borough surveyor's offices, consisting of his private office, enquiry office, drawing office, building inspector's office, and the car and sanitary inspectors' office. The new furniture in the office has been made by Messrs. Spence Brothers, of Douglas. Ascending the main staircase we reach the floor on which the Council Chamber and committee rooms are situated. The Council Chamber has a length of 47ft. and a breadth of 32ft., and the fittings are of oak. Accommodation for the public is provided in a gallery across the Church Street end. The whole of the furniture is upholstered in Morocco leather; it was designed by the architect, and made by Messrs. Goodall, Lamb and Heighway, of Manchester. The mayor's parlour adjoins the Council Chamber. Committee rooms, as well as the waiting rooms, are provided on the same floor, and also a cloakroom and lavatory. The second floor is devoted to the caretaker, the provision being of an ample character. The whole of the basement is excavated, and in front is a large room utilised as a book store in connection with the town clerk's department. Spacious cellars are used by the water department as stores, and provision is also made for the heating apparatus, the building being heated by low-pressure hot-water radiators supplied by Messrs. Spencer and Co., of Oldham. The free library joins the municipal buildings in Ridgway Street, and consists of large lending library, public reading room, and, on the upper floor, the reference room; also the librarian's private room and a lavatory. In the basement there is a book store. The furniture from the old library is to be adapted for the book store. The fire brigade is accommodated in a building adjoining the municipal buildings in John Street, and consists of a large room for the housing of the engine and appliances, tower for drying the hose, and a large assembly room for the use of the men. The whole cost of the buildings, including site, furniture and fittings, will be covered by the sum of £21,000.

Dundee.—Tenders are being invited for the new Dundee Sanatorium for consumptives to be erected near Auchterhouse from the designs of Mr. William Alexander. The buildings comprise a main block having a frontage of 200ft., and accommodating eighteen male and sixteen female patients. There will be four wards, each to accommodate four patients; and in addition to this eighteen single bedrooms will be provided. The doctor's quarters, which adjoin, are commodious. Each room for the patients faces south, with an oriel window giving access to the terrace and gardens. On the first floor will be provided sitting rooms for the doctor, the matron, and for the nurses. On the upper floor the accommodation, consisting chiefly of attics under a steep roof, will be devoted to bedrooms for the matron and staff. There will be ample lavatory and bathroom accommodation on each flat. The

corridors extend from end to end of the building, the interior of which will be fitted up with French windows coming close to the floor to admit as much free air as possible. All the rooms in the main block, with the exception of the sitting rooms used by the officials, will be heated by radiators. Another block adjoins that first mentioned to the north-west, and is connected to it by a covered corridor. Here provision is made for a dining hall capable of accommodating forty persons; and in connection with the large and lofty room are scullery, servants' rooms and other necessary adjuncts. In this block rooms will also be devoted for the nurses' and servants' dining. This part of the premises is kept entirely free from the main block, so as to prevent the odour of cookery permeating the sleeping and living quarters. The third block is for the most part devoted to laundry purposes. It is situated a little to the north-east of the main block. The laundry will be fitted with drying horses, steam mangles, &c., and there is also a boiler house, a kitchen, and a house for storage purposes, which, in the event of the electric light being installed, could be used for containing the secondary batteries. The building is to be of a plain character, but it will be fitted up in accordance with the most modern views of sanitary science. The total estimated cost is about £10,000.

London.—One of the most recent additions to the London restaurants is Messrs. Slater's new branch at 74 and 75, Cheapside. The approach is through a massive polished teak entrance, of a design characteristic of all Messrs. Slater's establishments. The walls of the ground floor restaurant, measuring 118ft. by 26ft., are artistically treated with light oak and blue mosaic, while above is a yellow silk flock decoration and an ornamental fibrous plaster frieze, the whole being shown off by a series of mirrors. Accommodation is provided for 260 diners. At the further end, where there is an extra entrance from Pancras Lane, is a staircase leading to a lavatory in the basement. At the Cheapside end access is gained to the smoking and luncheon restaurant downstairs, where 180 persons can be accommodated. This room is decorated on much the same scheme as the ground floor restaurant, is admirably lighted and ventilated, and is 120ft. in length. On the first floor a ladies' tea and coffee room is provided, with accommodation for forty ladies. The walls are tastefully decorated in white and gold, with Watteau hand-painted panels. Adjoining is a ladies' retiring and dressing room. The provision of this room is somewhat of an innovation in the City, but it is certainly a feature which will be appreciated. Throughout the whole of the restaurant electric light is fitted. The kitchens and larders, instead of being in the basement, as is usually the case, are situated at the top of the building, thus rendering it impossible for the objectionable fumes of cooking to escape into the restaurant. The contractors were Messrs. Spencer, Santo and Co., of Earl Street, Westminster; and the architect is Mr. Walter Graves, F.R.I.B.A., F.S.I., Winchester House, Old Broad Street.

Port Victoria.—The new headquarters of the Royal Corinthian Yacht Club, of which a perspective and plans are given on this page, was opened by the Commodore of the Club on Saturday, May 5th. The site faces the Melway, and the building has cost about £5,000. The architects were Messrs. Henry Ough and Son, of 64, Basinghall Street, E.C., and the contractors Messrs. West Brothers, of Strood, Kent. The foundations being on river mud were very difficult to deal with, and the building had to be floated on cement concrete. It is framed of baulk timber with steel stanchions and girders to carry the floors over the large spans, and filled in with steel lathing and cement plaster, faced with pebbles. There is a landing pier for boats opposite the principal entrance. On the ground floor is a large entrance hall and staircase, a club-room accommodating 200 persons, library, ladies' room, billiard room and lavatories; kitchen, bar, and serving rooms adjoin the club room. The basement is

fitted as a boat-house. On the first floor is sleeping accommodation for thirty members, with bath and lavatories; also steward's quarters, reached by a private staircase from the kitchen. On the second floor a smoking room and look-out is provided, commanding an extensive view of the Thames and Medway estuary. The premises are lighted by acetylene gas.

Surveying and Sanitary Notes.

The Estate of the late Mr. Rogers Field, M.I.C.E., shows a net personality of £65,369. There is a bequest of £5,000 to the Sanitary Institute.

Shipley Sewage Disposal.—An enquiry was held last week at Shipley (Yorks.) relative to an application by the Shipley District Council for powers to borrow £2,000 for the sewage disposal scheme.

The Red House, Stepney.—The Duke of Newcastle on Saturday laid the foundation-stone of the Red House, Commercial Road East, in connection with St. Augustine's Church, Stepney. The building is to cost £9,000.

Proposed new Recreation Ground for Chesterfield.—A Local Government Board enquiry was held last week into an application by the Chesterfield Town Council to borrow £4,000 for the purpose of acquiring a recreation ground for the North Ward.

Messrs. Kaye, Parry and Ross, civil engineers, of Dublin, have opened a London office at 53, Victoria-street, Westminster, and have entered into partnership with Mr. P. F. Mackenzie Richards, A.M.I.C.E., in connection with their English business. Mr. Richards is a well-known expert in sanitary engineering, as he has been for the last eighteen years one of the examining engineers of the London Sanitary Protection Association Ltd.

Institution of Civil Engineers of Ireland.—At a meeting of this Institution held at 35, Dawson Street, Dublin, on Wednesday last, Mr. Edward Glover, the president, announced that the Council had awarded the John Chaloner Smith premium to Mr. W. E. Adeney, D.Sc., for his paper on "The Bacterio-Chemical Study of Sewage and Polluted Waters: Part II. Sewer Sludges."

Sanitary Inspectors.—The result of the last examination for sanitary inspectors under the Public Health (London) Act, 1891, is that the following candidates have passed:—Mr. W. Brown, Miss E. S. Cann, Miss M. K. Ede, Miss E. G. Gamble, Mr. J. Johnson, Mr. John Jones, Miss M. K. Long, Mr. J. I. Lonnnon, Mr. A. W. Loughlin, Miss E. A. McCleverty, Miss B. T. Orme, and Miss M. O. Power.

Proposed Destructor for Dunfermline.—The proposal to erect a destructor for the disposal of refuse at Dunfermline is now under consideration. The engineer estimates that with 20 tons of refuse per day there should be a continual supply of steam at a pressure of 130lbs. per square inch from a boiler having 700 sq. ft. of heating surface. This would give an available supply of 116 horse-power. He thinks that the power might be used for lighting up the streets with the electric light. At present there are 436 lamps in the borough. The cost of a destructor such as is proposed would be £5,350.

The death is announced of Mr. Edward Pritchard, the well-known civil engineer of Birmingham. He was born at Wrexham in 1838, and was appointed borough surveyor of Clitheroe when thirty years of age. He afterwards became borough surveyor of Warwick, where he initiated several municipal schemes, but later he gave up the post and commenced an independent practice in Birmingham and London. His advice was sought by various Corporations, and among other works he devised the present waterworks scheme for Pretoria. He was also much appreciated as a tramway, sewage and mining consulting en-

gineer, and was a member of several learned societies.

Extension of Euston Station: Concessions.—The St. Pancras Vestry withdrew their opposition to the London and North Western Railway Bill now before Parliament, so far as it affects the extension of the Euston terminus, on the company agreeing: (1) To keep open the roadway north of Euston Gardens and to widen it to 60ft.; (2) to widen Melton Street to 50ft.; (3) to widen Seymour Street between Drummond Street and Euston Road to 60ft.; (4) to pay the Vestry £7,000 towards the opening-up of Churchway to Euston Road; and (5) to pay the cost of repairing with wood Barnby Street and Amptill Square from Seymour Street to Hampstead Road. Further, Euston Square Gardens are to remain intact, and the company undertake to erect dwellings to rehouse 1,020 persons of the labouring classes who may be disturbed, prior to their commencing works under the Bill. The Vestry consider these concessions to be very satisfactory.

Forthcoming Health Congress at Aberdeen.—The arrangements for the annual congress of the Royal Institute of Public Health which is to be held at Aberdeen from August 2nd to 7th are rapidly progressing. Acceptances of the invitation of Lord Provost Fleming have, it is understood, been received from a large number of local authorities, school boards, universities, and learned societies. The work is being arranged in five sections, and in three conferences. Mr. John Honeyman, R.S.A., Glasgow, one of the leading architects in Scotland, will preside over the section of architecture and engineering, and the conference of sanitary inspectors will be presided over by Mr. Peter Fyfe, chief sanitary inspector of Glasgow. All the meetings of the congress will take place in Marischal College Buildings, which have been placed at the disposal of the officials of the Congress by the University authorities.

Wood Paving for Brighton.—At last Thursday's meeting of the Brighton Town Council, the minutes of the Works Committee came up for approval. These stated that the surveyor had submitted plans and estimates of the cost of laying wood paving in the carriage-ways of the following streets:—St. James's Street and Upper St. James's Street, from German Place to Bedford Street; Bristol Road and part of St. George's Road, from Bedford Street to College Place; St. George's Road (the other part), from College Place to Eaton Place; Chesham Road and Rock Street, from Eaton Place to the Rock Inn. The Committee recommended that the roads mentioned should be paved with hard wood, with the exception of the portion of St. James's Street from German Place to High Street, for which they suggested soft wood on account of the comparative steepness of its gradient. The whole cost would be £12,058. After considerable discussion the recommendations of the Committee were adopted.

Sewage Purification in Bradford.—On Wednesday last the members of the Sewage Committee of the Bradford Corporation paid a visit to Field Head Mills, Preston Street, Bradford, to witness a demonstration of Smith-Leach's plant for dealing with the suds from the wool-washing machines. Mr. Leach showed the deputation round the new grease works. By the process which the committee saw the suds, after the wool has been washed, are passed into a cistern at the top of the building, and whilst warm suds are passed into a cylinder, which rotates rapidly, and the centrifugal action throws the grease to the outside of the cylinder, where it is separated by skimmers, and then passed off. The whole process is very effective, there being no effluent to pass into the drains. There is a great saving by using the distilled water after being through the cylinder. All the fats are recovered and made into articles of commodity. The plant is capable of dealing with 30,000 gallons per day. It is suggested that if woolcombers would put down one of these plants two more firms could join in the operation and relieve the Sewage Committee of their great difficulty.

New Patents.

These patents are open to opposition until June 25th.

1899.—Iron Roofs.—11,577. E. L. PEASE, Stockton-on-Tees. In a roof made according to this invention the headway or span is kept clear by arranging the ties and struts outside, the roofing itself being composed of panels with inset flanges interlocked in slotted tubular rafters. The invention is adapted to curved and pitched roofs.

Wood-working Machines.—12,919. S. BASTOW and H. McDONALD JESSOP; both of Leeds. This machine has special automatic feed and chain-driving gear, and several devices which cannot here be described, by which wood of any reasonable size can first be taken out of wind, and then planed, moulded, ploughed, and tongued.

Aventurine Tiles, Slabs, &c.—13,049. T. F. WALKER, Birmingham, and E. M. WALSH and S. B. WALSH, New Jersey, U.S.A. Small pieces of aventurine are placed in a mould of approximately the size of the article required, and the mould is then placed in a muffle or other furnace. Special care is needed to exclude all air or oxygen, otherwise the spangles which give the aventurine its beauty will oxidise and the material will be valueless.

Incandescent Gas Mantles.—21,200. J. JACKSON, Coventry. An inverted cone is fitted in the cap of the burner, and contains the crutch holder. By this formation the gas is forced out at the edge of the burner and so comes into better contact with the mantle, improving the light.

Gate Hinges.—25,083. T. H. BRAZELL, London, N.W. The object of this invention is to enable gates to be restored to their original position in the event of their becoming sagged. The hinge arm is extended so as to pass through the end rail, and is threaded to receive nuts, which work against a sleeve and a plate and pull up the gate to the desired extent. The invention is applicable to iron gates as well as to wooden ones.

1900.—Wrought Iron Window Sashes.—2,046. E. GLAUERT, Potsdam, Germany. The sash is built up of T-iron, but only one of the bars is bent and cut out, the other bar crossing it being simply pushed through slots in the former. The invention claims to do away with the mitering and slotting in the hitherto used moulded sash irons.

The following specifications were published on Saturday last, and are open to opposition until July 2nd. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—8,511, SIMPSON, ventilation of buildings. 8,561, WILLCOX (*Greaves*), gates. 8,731, HORNSNAILL, door check for preventing slamming. 9,380, FIRTH, BENTHAM and STOTT, incandescent gas burners. 10,514, JAMES, lock nut. 10,819, KITSON, vapour-burning apparatus. 10,917, FERGUSON, wood-working machine, combining circular saw, band saw, boring mill, and lathe. 11,016, EWING, pipe joints. 11,056, FALLOT and DELAUNAY, acetylene gas generators, and carbide cartridges for use with them. 11,091, EVERY, pulleys and wheels. 11,744, BOULT (*Gray and Wrazer*), moulds for making glass or similar ware. 11,994, PAKES, apparatus for bacteriological treatment of sewage. 12,000, MADDISON, method of fastening window blinds to rollers. 12,182, ADAMS, means for aerating and draining filter beds. 12,299, BREWER and STEVENS, fret sawing machines. 12,332, SPICHLI, blocks for floors and passages. 12,482, WINN, machines for the manufacture of roofing or flooring tiles. 12,640, MONCASTER, standards for wire fencing. 12,690, TAYLER and TAYLER, guards or fences for circular saws. 12,728, HAWGOOD, hinges. 13,042, HORSLEY, process for finishing the surface of aluminium sheets to render them suitable for artistic purposes. 13,066, ANSTRUTHER, drawing boards. 13,105, JANDUS ARC LAMP and ELECTRIC Co. LTD., and

JONES, electric arc lamps. 13,110, PRIEST, hinges. 13,141, OSBORN, MOREWOOD and MOREWOOD, stone drills. 13,184, LYONS, acetylene generators for portable lamps. 13,230, SÖDERLUND and EKVAL, apparatus for supporting pendant globes, applicable to the globes of inclosed arc lamps. 13,310, TALBOT, lanterns for incandescent gas lighting. 13,342, THOMPSON (*Lavaur*), guards or other protective arrangements for mechanical saws. 13,499, LEFRANC, process of grinding colours employed for ceramic purposes. 14,800, HADDAN (*Werkzeugmaschinen fabrik a Schärfl's Nachfolger*), vices. 15,814, MARCOTTE and LEGROS, lifting jacks. 17,583, HOLLIDAY, joints for drain pipes. 18,851, MAZEY, water-heating apparatus. 20,622, SCHRECK, acetylene gas generators. 23,398, SUGG, low-pressure gas-lighting apparatus.

1900.—316, VANDENHEUVEL, apparatus for making bricks. 1,223, PALMER and PALMER, travelling scaffold. 4,200, BERGDOLT, acetylene gas generators. 4,510, SCHULTZE and HARTMANN, flooring and similar surfaces. 4,553, BARNARD, wood-working machinery. 4,605, THOMPSON (*Tigerstedt*), manufacture of bricks and other refractory articles. 5,018, NEWTON (*New Jersey Wire Cloth Co.*), fireproof floors and ceilings. 5,019, NEWTON (*New Jersey Wire Cloth Co.*), fireproof ceilings, walls, &c. 5,446, ASSMANN, chain lifts or apparatus for lifting and lowering loads by means of flexible cords or bands. 5,617, NEWSUM and NEWSUM, construction of boilers applicable for hot-water heating apparatus. 5,704, SEABOURNE, means or apparatus for fastening scaffolding. 5,724, SHEPPARD, construction of metal fabric. 5,725, PARKER, devices for swinging window sashes. 5,732, HARKNESS, lifts or elevators.

Keystones.

A Memorial Brass to the late Archbishop Benson has been placed in Truro Cathedral. It was designed by Mr. F. L. Pearson.

A new Board School at Leytonstone is being built from the designs of Mr. W. Jacques to accommodate 1,500 children. The contractor is Mr. F. J. Coxhead, whose contract amounts to £25,698.

A new Methodist Church at Washwood Heath, Birmingham, has been erected at a cost of about £3,000. Messrs. Ingall and Son, of Birmingham, were the architects, and Mr. Thomas Johnson was the contractor.

New Church at Giffnock, Glasgow.—The new United Presbyterian Church at Giffnock has been opened. Mr. H. E. Clifford, I.A., of Glasgow, was the architect of the building, which has cost about £3,000.

Wolvey Church, Hinkley, has been reopened after restoration. The nave and north and south aisles have been re-roofed, the pews have been reconstructed, an oak pulpit has been provided, and a new parapet has been placed on the nave roof. The cost is about £1,800.

Woodhouse Grove School, Apperley Bridge.—The new wing which has been added to this building by public subscription comprises, on the ground floor, a gymnasium and art studio, on the first floor a reading room and two classrooms, and on the second floor a dormitory, with master's room.

Extension of Charing Cross Station.—On Friday last the Omnibus Bill of the South-Eastern and London, Chatham, and Dover Railway Companies came before a House of Lords committee. One of the principal objects of the measure is the widening and extension of the companies' terminus at Charing Cross at a cost of about £1,000,000.

The new Archway at Highgate will not be altogether finished till about August next. There has been some little difficulty and delay in acquiring land for widening the lower road, and the retaining walls at the foot of the slopes on each side are therefore only just commenced. But the new road above is now complete all but a little paving, and within about three weeks it will be ready for traffic.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
May 25	East Stonehouse, Devon—Additions to Board Schools	School Board	H. J. Snell, 11, The Crescent, Plymouth.
" 25	Salford—Retaining Wall	Improvement Committee	Borough Engineer, Town Hall, Salford.
" 25	Ton, Pentre, Wales—Storerooms, Stables, &c.	Industrial Co-op. Soc. Ltd.	Manager, 2, Church-road, Ton, Pentre.
" 26	Aberdeen—Offices, &c.		Cluny Estates Office, 16, Union-terrace, Aberdeen.
" 26	Carlisle—Farm Buildings	Colonel Aglionby	J. M. Richardson and Son, 5, Lonsdale-street, Carlisle.
" 26	Redruth—Reseating, &c., Church		H. W. Collins, Architect, Walreddon, Redruth.
" 26	Wisbech—Farm Residence, Stables, &c.	E. F. Newling	Kerridge and Sons, Architects, The Club-chambers, Wisbech.
" 26	Portslade, near Brighton—School	Portslade Industrial School Managers	T. Simpson and Sons, 17, Ship-street, Brighton.
" 27	Colne, Lancs.—Engine Shed	Lancs. and Yorks. Rly. Co.	Engineer, Hunt's Bank, Manchester.
" 28	Sheffield—Additions	Tramways Committee	C. F. Wike, Town Hall, Sheffield.
" 28	Glyn-Neath, Wales—Painting Church	Bethel Baptist Church Committee	J. S. Thomas, Hon. Sec., Glyn-Neath.
" 28	Thornley, near Tow Law, Durham—Classroom		Rev. E. Marsh, Old Vicarage, Tow Law.
" 28	Resolven, Wales—Fifty Houses	Cory Bros. and Co., Ltd.	J. L. Smith, Architect, Aberdare.
" 29	Bexley Heath, Kent—Hospital Buildings	Urban District Council	W. T. Howse, Surveyor, Public Offices, Bexley Heath.
" 29	Bridlington—Sunday Schools, Vestries, &c.	Quay Wesleyan Church Trustees	S. Dyer, Architect, Bridlington.
" 29	Radcliffe, Lancs.—Gasholder Tank	Gas Company	T. Newbigging and Son, 5, Norfolk-street, Manchester.
" 29	Stowmarket—Foundations	Rural District Council	Taylor, Sons, and Crimp, 27, Great George-street, S.W.
" 30	Winsford, Cheshire—Drill Hall		J. H. Cooke, Solicitor, Winsford.
" 31	Castle Hedingham, Essex—Alterations		Clerk, Parish Room, St. James's-street, Castle Hedingham.
" 31	London, N.W.—Boiler House	St. John, Hampstead, Vestry	Surveyor, Vestry Hall, Haverstock Hill, N.W.
" 31	Ovenden, Yorks.—Alterations, &c., to Cottage		M. Hall, 29, Northgate, Halifax.
June 1	London, E.—Repairs, &c., to Boys' School	Governors of Stepney and Bow Foundation	G. Elkington, 95, Cannon-street, E.C.
" 2	Cork—Gate Lodge		Rev. R. F. Clarke, Brinny Glebe, Upton, co. Cork.
" 4	East Ham—Municipal Buildings, Public Baths, Library, Technical Institute, Fire Station, &c.	Town Council	Surveyor, Public Offices, Wakefield-street, East Ham.
" 4	London, E.—Public Buildings	East Ham Urban District Council	Surveyor, Public Offices, East Ham, E.
" 4	Plumstead—Town Hall	Vestry	E. Hughes, Vestry Hall, Maxey-road, Plumstead.
" 6	Aylesbury—Arch Works	Bucks County Council	R. J. Thomas, County Surveyor, County Hall, Aylesbury.
" 7	Ealing, W.—Alterations, &c., to Fire Station	Urban District Council	C. Jones, Engineer, Public Buildings, Ealing, W.
" 8	Leeds Alterations and Additions to Inn	J. R. Heaton	F. Mitchell, 9, Upper Fountain-street, Leeds.
" 9	Markethill, Ireland—Renovating Church		J. Brown, 41, Kilmorey-street, Newry.
" 9	Weston-super-Mare—Pavilion	Urban District Council	Surveyor, Town Hall, Weston-super-Mare.
" 11	Castletownbere, co. Cork—Coastguard Station		H. Williams, Secretary, Office of Public Works, Dublin.
" 11	Wanstead, Essex—Painting and Repairs at Schools	School Board	J. T. Brassey, 70 and 71, Bishopsgate-street Within, E.C.
" 12	Londonderry—Belfry, &c.	Rev. J. K. O'Doherty	C. C. Ashlin and E. J. Toye, 7, Dawson-street, Dublin.
" 12	London, N.—Disinfecting Station, Shelters, &c.	Hackney Vestry	Gordon and Gunton, Architects, Finsbury House, E.C.
" 12	Brighton—Alterations	Town Council	F. J. C. May, Town Hall, Brighton.
" 12	London, N.E.—Buildings	Hackney Vestry	Gordon and Gunton, Finsbury House, E.C.
" 15	Cromer, Norfolk—Coastguard Buildings	Admiralty	Director of Works, Admiralty, Northumberland-av., E.C.
" 18	Luton—Engine-house, Boiler-house, &c.	Town Council	Borough Engineer, Town Hall, Luton.
ENGINEERING—			
May 25	Devonport—Electric Cables	Corporation	C. Furness, Electrical Engineer, Technical School, Devonport.
" 25	Pentre, Glamorgan—Gas Plant, &c.	Gas and Water Committee	O. Thomas, Engineer, Gas and Water Offices, Pentre, E.S.O., Glamorgan.
" 25	Walthamstow—Fire Alarms, &c.	Urban District Council	E. Morley, Surveyor, Town Hall, Walthamstow.
" 25	Salisbury—Cylinders	Urban Sanitary Authority	J. C. Bothams, City Surveyor, Salisbury.
" 26	Middlesbrough—Heating	Baths Committee	G. Bainbridge, Town Clerk, Middlesbrough.
" 26	Wemyss Bay, Scotland—Pier Extension	Caledonian Railway Co.	Engineer, Buchanan-street Station, Glasgow.
" 26	Padiham—Engine and Exhauster, &c.	Gas Committee	J. R. Smith, Clerk, Council Offices, Padiham.
" 26	Warrington—Boiler and Superheater	Corporation	J. Deas, Engineer, Bank House, Warrington.
" 26	Crewe—Electric Street-lighting Extensions	Town Council	Hopkinson and Talbot, 26, Victoria-street, S.W.
" 28	London—Steam Cooking Apparatus	Holborn Union Guardians	J. Buley, Suffolk House, Laurence Pountney-hill, E.C.
" 28	Southampton—Boiler, &c.	Corporation	R. R. Lathorne, Town Clerk, Municipal Offices, Southampton.
" 28	Portsmouth—Bridge		A. Hellard, Town Hall, Portsmouth.
" 28	Leeds—Electric Lighting Plant	Lighting Committee	H. Dickinson, 1, Whitehall-road, Leeds.
" 28	Belfast—Crane Repairs	Harbour Commissioners	G. F. L. Giles, Harbour Master, Belfast.
" 28	Ilford—Effluent Outfall	Urban District Council	Taylor, Sons, and Crimp, 27, Great George-st., Westminster.
" 29	Ewesley, Northumberland—Reservoir	Tynemouth Corporation	Borough Surveyor, Tynemouth.
" 29	Brighton—Winding Shaft at Pumping Station		F. J. Tillstone, Town Clerk, Town Hall, Brighton.
" 29	Dublin—Extension, &c., of Piers	Office of Public Works	H. Williams, Secretary, Dublin.
" 30	Grangemouth, Scotland—Water-pipes, Filter Tank, &c.	Police Commissioners	A. and W. Black, Engineers, Falkirk.
" 30	Naas, Ireland—Concrete Reservoir, &c.	Rural District Council	F. Bergin, Engineer, Kildare.
" 30	Warrington—Schief Fan and Steam Engine	Sanitary Works Committee	J. Deas, Engineer, Bank House, Sankey-st., Warrington.
" 31	Brightlingsea, Essex—Cast-iron Socket Main	Gas and Coke Co. Ltd.	E. C. Atki, Secretary, Brightlingsea.
" 31	Strood, Kent—Drainage, &c., Works	Union Guardians	G. E. Bond, Architect, Victoria-buildings, Rochester.
June 1	Newcastle-upon-Tyne—Electric Tramways	Corporation	C. Hopkinson, 26, Victoria-street, London.
" 1	Croydon—Hydraulic Lift and Laundry Machinery	Council	Borough Engineer, Town Hall, Croydon.
" 5	Port-y-waen and Llangynog—Light Railway	Cambrian Railways Co.	A. J. Collin, Engineer, Oswald-road, Oswestry.
" 7	Bridgwater—Electrical Plant	Town Council	W. H. Trenham, 39, Victoria-street, Westminster, S.W.
" 9	Bilbao—Twelve Buoys	Spanish Government	Commercial Department, Foreign Office, S.W.
" 9	Leominster—Valves	Corporation	J. Budd, Town Hall, Leominster.
" 9	Leominster—Tank	Corporation	J. Budd, Town Hall, Leominster.
" 11	Crewe—Electric Wiring	Town Council	F. Cooke, Municipal Offices, Crewe.
" 12	Glasgow—Switchboards	Corporation	W. A. Chamen, 75, Waterloo-street, Glasgow.
" 16	Bacup—Reservoir	Corporation	J. Diggle, 3, Longford-street, Heywood, Lancs.
" 16	Middlesbrough—Crane	Ferry Committee	F. Baker, Municipal-buildings, Middlesbrough.
" 18	Croydon—Engines and Pumps	Council	Borough Engineer, Town Hall, Croydon.
" 26	Wolverhampton—Tramway Track	Tramways Committee	J. W. Bralley, Engineer, Town Hall, Wolverhampton.
July 7	Madrid—Electric Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
" 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
IRON AND STEEL—			
May 29	London, E.C.—Railway Rails, Fishbolts, &c.	Burma Railways Co. Ltd.	Offices, 76, Gresham House, Old Broad-street, E.C.
" 30	London, E.C.—Railing	Shoreditch Vestry	J. R. Dixon, Surveyor, Town Hall, Old-street, E.C.
June 2	Eggleston, Durham—Fencing	Parish Council	Hill and Stoddart, Eggleston.
" 9	Leominster—Water Mains	Corporation	J. Budd, Town Hall, Leominster.
PAINTING AND PLUMBING—			
May 25	Lancaster—Painting Cottages and Shops		Co-operative Society, Church-street, Lancaster.
" 25	London, E.—Painting, &c.	Guardians of St. George's-in-the-East	G. A. Wilson, Vestry Hall, Cable-street, E.C.
" 30	Leeds—Cleaning, Painting, &c., People's Hall	Industrial Co-operative Society Ltd.	J. W. Fawcett, 10, Albion-street, Leeds.
June 5	Arlceton, Cumberland—Painting &c., Schools	School Board	J. R. Thompson, 13, Scotch-street, Whitehaven.
" 5	London, W.—Painting, &c.	Paddington Guardians	E. H. Sim, 8, Craig's-court, Charing Cross, S.W.
ROADS AND CARriage—			
May 25	Walthamstow—Twelve Dust Tip Vans	Urban District Council	E. Morley, Surveyor, Town Hall, Walthamstow.
" 25	Chellaston, near Derby—Road Works	Shardlow Rural District Council	J. W. Newbold, Clerk, Becket-street, Derby.
" 26	Copford, near Colchester—Materials & Team Labour	Rural District Council	J. Ennals, Surveyor's Office, Copford, near Colchester.
" 26	Hayward's Heath, Sussex—Paving, Kerbing, &c.	Urban District Council	E. Waugh, Clerk, Hayward's Heath.
" 26	Ely—Materials	Urban District Council	W. McKelvie, City Surveyor, Ely.
" 26	Diss, Norfolk—Granite	Urban District Council	S. Lait, Surveyor, Mere-street, Diss.
" 28	Cheltenham—Wood Paving	Corporation	Surveyor, Municipal Offices, Cheltenham.
" 28	Woodford, Essex—Tar Paving Repairs	Urban District Council	W. Farrington, Council Offices, Woodford Green.
" 28	Hanwell—Granite, Kerb, and Pitching	Urban District Council	Surveyor, Council Offices, Hanwell.
" 28	East Grinstead—Road Materials, &c.	Urban District Council	R. Wilds, Surveyor, U. D. Council Offices, East Grinstead.
" 28	Resolven, Wales—Roads, Lanes, Sewers, &c.	Cory Bros. and Co., Ltd.	J. L. Smith, Surveyor, Aberdare.
" 28	Uckfield, Sussex—Flints	Urban District Council	C. Dawson, Clerk, Public Hall chambers, Uckfield.
" 29	Birkenhead—Road	Corporation	C. Brownridge, Borough Surveyor, Town Hall, Birkenhead.
" 29	Goole—Granite	Drainage Commissioners	G. England, Clerk, Bank-chambers, Goole.
" 29	Skipton—Street Works	Urban District Council	J. Mallinson, Surveyor, Town Hall, Skipton.
" 29	West Bromwich—Making-up Private Streets, &c.	Corporation	A. D. Greatorex, Borough Surveyor, West Bromwich.
" 29	Braintree, Essex—Granite	Urban District Council	H. H. Nankivell, Vestry Hall, Braintree.
" 30	Burgess Hill, Sussex—Flints	Urban District Council	A. F. Hardwick, Clerk, Burgess Hill.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ROADS AND CARTAGE—Continued.				
May	30	Thame, Oxon.—Granite	Urban District Council	D. W. Slocombe, 27, Park-street, Thame.
"	31	Wimbledon—Three Water Vans	Urban District Council	Surveyor, Council Offices, Broadway, Wimbledon.
"	31	Luton—Paving, Kerbing, &c.	Town Council	Borough Surveyor, Town Hall, Luton.
"	31	Withington, Lancs.—Paving Works	Urban District Council	A. H. Mountain, Surveyor, Town Hall, Withington.
June	5	Branksome, Dorset—Road, &c.	Urban District Council	S. J. Newman, 3, Tennyson-bldg., Ashley-rd., Branksome.
"	6	Littlehampton—Flints	Urban District Council	A. Shelley, Clerk, Town Offices, Littlehampton.
"	6	Kingston-upon-Thames—Paving, &c.	Corporation	Borough Surveyor, Clattern House, Kingston-upon-Thames.
"	7	Leads, Durham—Asphalting	Urban District Council	T. S. Longstaff, Surveyor, Leazes, R.S.O.
"	9	Bolsover, near Chesterfield—Road	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
SANITARY—				
May	25	Wetherby, Yorks.—Sewerage Works	Rural District Council	Martin and Fenwick, 1, Park-place, Leeds.
"	26	Tadcaster—Sewers	Rural District Council	W. Spinks, 23, Park-row, Leeds.
"	28	Disley—Scavenging	Rural District Council	E. Davisport, County-chambers, Market-place, Stockport.
"	28	Uckfield, Sussex—Sewer Extension	Urban District Council	C. Dawson, Clerk, Public Hall-chambers, Uckfield.
"	28	Ilford—Drainage Works	Urban District Council	Taylor, Sons, and Crimp, 27, Gt. George-street, S.W.
"	28	St. Anne's-on-Sea—Sewering	Urban District Council	H. Broadbent and Son, 83, Mosley-street, Manchester.
"	29	Stanley, Durham—Sewers	Urban District Council	J. Routledge, Surveyor, Council Offices, Stanley.
"	30	Lintz Colliery, Durham—Sewer	Tanfield Urban District Council	R. Heslop, Surveyor, Barnopfield, R.S.O.
June	4	King's Lynn—Sewers	Corporation	E. J. Silcock, Engineer, King-street, King's Lynn.
"	5	Whickham, Durham—Sewerage Works	Urban District Council	J. P. Spencer, 13, Grainger-st. West, Newcastle-on-Tyne.
"	9	Bolsover, nr. Chesterfield—Sewers, Tanks, & Beds, &c.	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
May	31	Honiton, Devon—Supplying Town with Water	£21, £5 5s.	Town Clerk, Honiton.
June	1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
"	16	Berkhamstead—Girls' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamstead.
"	30	Biviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."
July	16	Falmouth—Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.

CLASSIFIED INDEX TO ADVERTISERS.

Acetylene Gas— Strode and Co.	PAGE —	Granite— Bower and Florence	PAGE i	Sanitary Appliances— Adams and Co.	PAGE vi
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Asphalte— Pilkington and Co.	iv	Hartley and Sugden	xiv	Leeds Fireclay Co. Ltd.	vi
Val de Travers	—	Jones and Attwood	i	Morrison and Ingrams	x
Baths and Lavatories— Coalbrookdale Co. Ltd.	xiii	Milne, E. P.	xiv	Twyford	viii
Boilers— Hartley and Sugden	xiv	King, J., and Co. Ltd.	—	Young and Marten, Ltd.	ii
Horsfall Destructor Syndicate	—	Horticultural Buildings— Hypolite	xv	Sanitary Ware— Doulton	i
Young and Marten, Ltd.	ii	Hurdles— Bayliss, Jones and Bayliss	xii	Twyford	viii
Bricks— Burmantofts	—	Incandescent Electric Lamps— The General Electric Co. Ltd.	x	Woolward	v
Eastwood and Co. Ltd.	—	Insurance— London Plate Glass Insurance Co. Ltd.	ix	Slates— Buttermere Green Slate and Stone Works	i
Edwards, J. C.	iii	Lift, Elevators, Hoists, &c.— Waygood and Co.	—	Carter, A., and Co.	xii
Leeds Fireclay Co.	vi	Lightning Conductors— Lewis J.	—	Morris, M. E.	i
Stanley Bros., Ltd.	—	Locks, Latches, and Furniture— Colledge and Bridgen	xiv	Shepherd, E.	i
Woollicroft, G., and Son, Ltd.	—	Kaye, J., and Sons	—	Stable Fittings— Young and Marten, Ltd.	ii
Blinds— Bell, R., and Co.	xv	Shurland and Waddington	xiv	Stoves, Ranges, Mantles, &c.— Coalbrookdale Co. Ltd.	xiii
William, G. A., and Son	—	White and Sons	xv	King, J., and Co. Ltd.	—
Builders' Ironmongery— Brawn, T., and Co.	iv	Machinery, &c.— Reynolds, F. W., and Co.	vii	Shorland, E. H., and Bros.	—
Measures Bros.	iii	Majolica— Minton, Hollins and Co.	—	Stone Cutters— Faulds, J. G., and Co.	xv
Castings— Coalbrookdale Co. Ltd.	xiii	Manholes and Covers— Woodward, J.	v	Stair Treads— Ward, B., & Co.	—
Chimney Cows— Milne, E. P.	xiv	Young and Marten, Ltd.	ii	Stable and Harness-room Fittings— Young and Marten, Ltd.	—
Chimney Pieces— Coalbrookdale Co. Ltd.	xiii	Bayliss, Jones, and Bayliss	xii	Structural Ironwork— Bayliss, Jones, and Bayliss	xii
Cradles— Palmer, E.	iii	Marble— Patteson, J. and H.	—	Brawn, T. and Co.	iv
Decoration— Walton, F., and Co. Ltd.	v	Metal Cement (Diener's)— Michaelson and Heine	xiii	Homan and Rodgers	v
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Drain Pipes— Doulton	i	"Opalite"— Griffiths, W.	iv	Chapman, Walwyn T.	xiv
Drawing, Tracing, &c.— London Drawing and Tracing Office	ix	Paints, Stains, Varnish, &c.— Sissens Bros. and Co. Ltd.	ii	Doulton	i
Electric Light Fittings— Brawn, T., and Co.	iv	Szerelmey, N. C., and Co.	viii	Edwards, J. C.	iii
The General Electric Co. Ltd.	x	Paving— Woollicroft, G., and Son, Ltd.	—	Leeds Fireclay Co. Ltd.	vi
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London Non-Flammable Wood Co.	vii	Plumber— Howie, Wm.	—	Woollicroft, G., and Son, Ltd.	—
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Gas Fittings— Brawn T., and Co.	iv	Roofing (various)— Adelberg, M. V.	i	Traps— Couzens	xv
Grates, Railings, &c.— Bayliss, Jones, and Bayliss	xii	Blakeley, E. F., and Co.	—	Woodward	v
Coalbrookdale Co. Ltd.	xiii	Carter, A., and Co.	xii	Typewriter Stands, &c.— Fox, J. M.	xiv
Young and Marten, Ltd.	ii	Homan and Rodgers	v	Ventilating— Blackman Ventilating Co. Ltd.	xv
Griffiths, Wm.	iv	Hope, H., and Sons, Ltd.	xv	Boyle, E., and Son, Ltd.	vii
Mellows and Co.	—	Mellows and Co.	—	Keys	—
Prest, E. J., and Co. Ltd.	—	Pilkington and Co.	iv	King, J., and Co. Ltd.	—
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				Knowles, C., and Co.	v
				Walton, F., and Co. Ltd.	v
				Water Heaters— Doulton	—
				Ewart and Co.	—
				Window Frames and Sashes— White and Sons	xv
				Williams Bros. and Co.	i
				Young and Marten, Ltd.	ii
				Wood Flooring, &c.— Gregory and Co.	xiv
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				Woollicroft, G., and Son, Ltd.	—
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New Companies.

Porter Clark Water-Softening Company, Limited.

This company was registered on May 10th with a capital of £2,000 in £1 shares to adopt an agreement with G. Porter, and to manufacture and deal in water-softening machinery, apparatus and appliances. The first directors (to number three) are G. Porter (managing director), S. A. Gimpson, and A. E. Litchfield.

Frindsbury Brickfields Co., Limited.

This company was registered on May 8th with a capital of £4,000 in £10 shares, to acquire the business of a brick manufacturer, &c., carried on at Rochester by W. West. The first directors (to number not less than three nor more than five) are G. Winch, G. B. Winch and A. West.

Didcot, Limited.

This company was registered on May 9th with a capital of £10,000 in £10 shares to carry on the businesses of builders, contractors, dealers in timber, hardware, and building materials, engineers, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

Standard Brick Company, Limited.

This company was registered on May 9th with a capital of £50,000 in £1 shares to acquire the following businesses: The business of Mouat and White, of Coupen, county Northumberland; Braside Brick and Tile Company, of Braside and Frankland, Durham; Pelaw Brick Company, of Nether Howarth; Heaton Brickworks Company; Shepote Brickworks Company, of Shepote Colliery, Gateshead-on-Tyne; the Teams Brick Company, Limited, of Gateshead-on-Tyne; and also to purchase twenty-three freehold cottages and two schools belonging to F. G. Scott and J. White, situate at Braside; and, generally, to carry on in all or any of their respective branches the businesses of brick and tile makers, pipe manufacturers, &c. The first directors (of whom there shall be not less than three nor more than seven) are J. White, J. W. Frazer, R. Snowdon, J. Jefferson and C. Robson.

CURRENT PRICES.

FORAGE.

	£ s. d.	£ s. d.
Hay, best ... per load	3 10 0	4 0 0
Sainfoin mixture ... per ton	3 15 0	4 5 0
Clover, best ... per ton	4 5 0	5 0 0
Beans ... per qr.	1 5 6	1 6 0
Straw ... per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ... per cwt.	1 8 0	1 0 4
Colza Oil, English ... per ton	1 10 3	—
Copperas ... per ton	2 0 0	—
Lard Oil ... per cwt.	1 18 6	—
Linseed Oil ... per cwt.	1 14 6	—
Petroleum, American ... per gal.	0 0 7	0 0 7½
Do., Russian ... per gal.	0 0 6½	0 0 6½
Pitch ... per barrel	0 8 6	0 9 0
Tallow, Town ... per cwt.	1 5 6	1 9 6
Tar, Stockholm ... per barrel	1 6 0	—
Turpentine ... per cwt.	2 5 0	2 5 3
Lead, white, ground, carbonate per cwt.	1 2 10	—
Do. red ... per cwt.	1 0 44	—
Soda crystals ... per ton	2 17 6	3 0 0
Shellac, orange ... per cwt.	3 7 6	—

METALS.

Copper, sheet, strong ... per ton	87 0 0	—
Iron, Staffs., bar ... do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet ... do.	15 0 0	—
Lead, pig, Spanish ... do.	16 10 3	—
Do. do. English common brands ... do.	17 7 6	—
Do. sheet, English, 1½ pers. ft. and upwards ... do.	20 0 0	21 0 0
Do. pipe ... do.	22 0 0	—
Nails, cut, clasp, 3in. to 6in. ... do.	12 0 0	13 0 0
Do. floor brads ... do.	11 15 0	12 15 0
Steel, Staffs., Girders and ... do.	8 15 0	9 5 0
Do. Mild Bars ... do.	9 12 6	10 0 0
Tin, Foreign ... do.	134 5 0	134 15 0
Do. English ingots ... do.	133 10 0	139 0 0
Zinc, sheets, English ... do.	27 10 0	28 10 0
Do. do. Veille Montaigne ... do.	27 7 6	—
Do. Spelter ... do.	21 12 6	22 10 0

TIMBER.

Sort Woods.

Fir, Dantzic and Memel ... per load.	3 0 0	4 0 0
Pine, Quebec Yellow ... per load.	4 7 6	6 0 0
Do. Pitch ... do.	3 6 0	4 2 0
Laths, log, Dantzic ... per fath.	4 10 0	5 10 0
Do. Petersburg ... per bundle.	0 1 44	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	19 10 0
Do. do. 4th & 3rd. do.	12 15 0	14 10 0
Do. do. unsorted do.	12 5 0	12 10 0
Do. Riga ... do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	14 0 0	16 10 0
Do. do. 2nd. do.	8 15 0	14 1 0
Do. do. Unsorted, do.	14 5 0	—
Do. do. White do.	11 5 0	—
Do. Swedish ... per P. Std.	12 0 0	14 5 0
Do. White Sea ... do.	17 10 0	18 0 0
Do. Quebec Pine, 1st. do.	13 15 0	23 15 0
Do. do. 2nd. do.	18 15 0	—
Do. do. 3rd &c. do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st per P. Std.	10 10 0	11 15 0
Do. do. 3rd & 2nd. do.	9 10 0	12 0 0
Do. New Brunswick do.	7 5 0	8 0 0
Battens, all kinds ... do.	8 0 0	10 15 0
Flooring Boards, 1 in. prepared, 1st ... per square	0 10 6	0 10 9
Do. 2nd. do.	0 9 6	0 10 6
Do. 3rd &c. do.	0 8 0	0 9 9

HARD WOODS.

Ash, Quebec ... per load	3 17 6	4 10 0
Birch, Quebec ... do.	3 12 6	3 17 6
Box, Turkey ... per ton	7 0 0	15 0 0

	£ s. d.	£ s. d.
Cedar, ling, Cuba ... per ft. sup.	0 0 44	—
Do. Honduras ... do.	0 0 3 15/16	—
Do. Tobasco ... do.	0 0 3 7/16	—
Elm, Quebec ... per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ... per ft. sup.	0 0 5½	—
Do. African ... do.	0 0 3½	—
Do. St. Domingo ... do.	0 0 6 7/32	—
Do. Tobasco ... do.	0 0 38	—
Do. Cuba ... do.	0 0 6 31/32	—
Oak, Dantzic and Memel ... per load	3 15 0	5 7 6
Do. Quebec ... do.	4 12 6	5 0 0
Teak, Rangoon, planks ... do.	8 10 0	14 10 0
Waincoat, Riga (Baulk) ... do.	8 15 0	5 15 0
Do. Odessa Crown ... do.	8 15 0	5 15 0
Walnut, American ... per cub. ft.	0 2 9	0 8 5

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BEESTON (Notts).—For works to be done in forming, excavating, levelling, sewerage, ballasting, channelling, and metalling a road 40ft. wide in the township of Beeston. Mr. Fred C. Martin, engineer. Quantities by the engineer:—
H. H. Barry ... £1,780 0 0 A. B. Clarke ... £1,530 0
B. Roberts ... 1,700 3 3 W. Gordon ... 1,430 0
Cox and Son ... 1,652 2 8 S. Richmond, ... 1,394 0
Cope and Raynor ... 1,600 0 Lenton* ... 1,394 0
Bower Bros. ... 1,538 6 3 * Accepted.

BEESTON REGIS (Norfolk).—For erecting a house for Mrs. E. P. Watkin. Mr. Herbert J. Green, architect and surveyor, 31, Castle-meadow, Norwich:—
J. S. Smith ... £2,016 0 R. Daws & Son ... £1,824 0 0
George Riches ... 1,954 6 Herbert Bullen, ... 1,718 11
Bardell Bros. ... 1,845 0 Cromer* ... 1,718 11
* Accepted.

BRENTFORD.—For the erection of workmen's dwellings, Starnage-road, for the Urban District Council. Mr. Nowell Parr, C.E., Clifden House, Boston-road, Brentford:—
D. Pitt ... £6,496 0 0 Hanson ... £5,597 0 0
Godson and Sons ... 6,488 0 0 Belch ... 5,583 14 6
Beaton ... 6,413 0 0 J. Christie ... 5,572 0 0
Parsons and Co. ... 6,344 0 Jones Bros. ... 5,533 4 8
Higgs and Co. ... 6,269 0 S. Dockerell ... 5,528 0 0
W. Wisdom ... 6,090 0 Soole and Sons, ... 5,884 15 11
Martin, Wells, ... 5,980 0 0 Richmond* ... 5,884 15 11
and Co. ... 5,614 19 0 C. R. Yurr ... 5,375 0 0
Harris ... 5,614 19 0 * Accepted provisionally.

BRIGHTON.—For alterations, &c., to waterworks offices, Bond-street, for the Corporation. Mr. F. J. C. May, C.E., Town Hall, Brighton:—
Longley and Co. ... £2,249 V. P. Freeman, Ken- ... 2,164
Barber and Oliver ... 1,721 sington-street, Bright- ... 2,164
ton* ... 2,164
* Accepted.

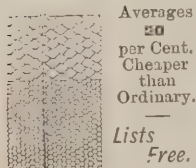
CAMBERLEY.—For the erection of a bank at Camberley, Surrey. Messrs. Hunter, Sadler, and Baker, architects, London and Camberley. Quantities by Mr. C. Oswald Robson, 50, Queen Anne's-gate, Westminster:—
Spear and King ... £2,329 Hughes, Wokingham* £2,100
* Accepted.

CARDIFF.—For the erection of new premises in James-street, Bute Docks, Cardiff, for Messrs. Rose and Co., engineers. Mr. Edgar Down, A.R.I.B.A., architect and surveyor, 31, High-street, Cardiff:—
J. E. Evans ... £4,775 James Allan ... £3,585
Geo. Griffiths ... 3,790 S. Shepton and Son ... 3,415
Melhuish Bros. ... 3,662 E. Turner and Sons ... 3,250
F. Small ... 3,616 David Davies ... 3,250
H. Gibbon ... 3,615 W. T. Morgan* ... 3,175
* Accepted.

FINEDON (Northants).—For additions to shoe factory at Finedon, Northants, for Mr. J. H. Fox. Mr. H. Adnitt, architect, High-street, Rushden, R.S.O.:—
F. Henson ... £468 J. Titmas, Finedon* ... £450
A. J. Ball ... 460 * Accepted.

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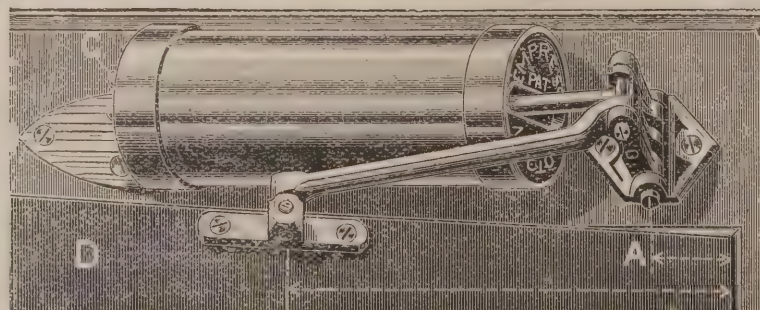
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GRIMSBY.—For extensions to the workhouse, for the Guardians of the Poor. Mr. H. C. Scapling, architect, Court Chambers, Great Grimsby. Quantities by Mr. J. Watson, Hull:—
 Webb and Waterman... .. £8,325 6 8
 Thompson and Sons 7,987 0 0
 H. Marrows 7,793 0 0
 Howins and Goodhand* 7,270 0 0
 (All of Grimsby.) * Accepted.
KNETTISHALL (Suffolk).—For the erection of farm buildings, for Mr. W. N. L. Champion. Mr. H. J. Green, architect, 31, Castle Meadow, Norwich:—
 Youngs and Son £2,740 0 0 R. Hogg, Coney
 Newson and Son 2,573 18 0 Weston* £2,422 6 4
 T. Lebbon 2,330 13 4
 * Accepted.

LONDON, W.C.—For new sanitary annexes, kitchen, and other works, Charing Cross Hospital, London, W.C. Mr. A. Saxon Snell, architect. Quantities by Messrs. Northcroft, Higgs and Hill:—
 Holloway Bros. £4,450
 Howard and Co., Russell-street, W.C.* 3,902
 Patman and Fotheringham 4,556

LONDON.—For first portion of the new electricity supply station, Osborn-street, for the Whitechapel District Board of Works. Mr. M. W. Jameson, engineer. Quantities by Mr. John R. Hunt, 181, Queen Victoria-street, E.C.:—
 Holliday and Green-wood £15,889
 H. L. Holloway £19,500
 Kirk and Randall 18,548
 Harris and Wardrop 18,200
 Perry and Co. 17,589
 (Engineer's estimate, £15,889.) * Accepted.
LONDON, E.—For the erection of a tank house at the Bow Brewery, E. Messrs. Foulsham and Herbert Riches, architects, 13, Cocked-lane, King William-street, London, E.C., and Bromley-by-Bow. Quantities supplied:—
 F. and T. Thorne* £3,864
 G. Parker 4,100
 W. Shurmer 3,803
 C. Cox 3,920
 * Accepted (shorter time).

OXFORD.—For the erection of house and school at corner of Warwick and Bedford-streets, Oxford, for Mr. J. S. Hartland. Mr. Herbert Quinton, architect and surveyor, 2, George-street, Oxford:—
 Wooldridge £1,537
 Loosley 1,635
 Wilkins Bros. 1,433
OXFORD.—For additions and alterations to "Newton Lodge," Summerstown, Oxford, for the Rev. C. E. Williams, D.D. Mr. Herbert Quinton, architect and surveyor, 2, George-street, Oxford. Quantities by the architect:—
 Organ Bros. £1,611 0 0
 S. Hutchins £1,453 0 0
 J. Wooldridge 1,498 0 0
 Wildand Money* 1,391 16 10
 Wilkins Bros. 1,495 0 0
 Kinglee & Sons 1,374 0 0
 * Accepted.

PORTSMOUTH.—For the erection of offices, &c., St. Michael's-road, for the Union Guardians. Messrs. Rake and Cogswell, architects, Prudential-buildings, Portsmouth:—
 Martin, Wells, & Co. £3,354
 M. Colthrup £2,850
 C. H. Roberto 2,900
 Clark and Sons 2,828
 Light and Son 2,898
 E. and A. Spriggs, Portsmouth* 2,750
 J. Crockerell 2,865
 * Accepted.

RAUNDS (Northants).—Engineering works for factory for Mr. R. Cogging. Messrs. Mosley and Scrivener, architects, Fish-street, Northampton:—
 Lea and Warren £405 3 6
 Robinson and Co. £315 10 9
 B. Turnell 389 10 0
 E. Whitfield, Kettering* 287 3 9
 J. T. Lowke 386 2 6
 Mather and Son 329 13 6
 * Accepted.

RAUNDS (Northants).—For electric lighting for factory for Mr. R. Cogging. Messrs. Mosley and Scrivener, architects, Fish-street, Northampton:—
 F. G. Brown £370 11 0
 Whitmy Smith £307 5 0
 W. Mansell 346 10 0
 V. Duckenfield 280 17 0
 Lea and Warren 344 10 6
 Electric Wiring Co., Northampton* 237 8 4
 Adkins and Co. 341 10 0
 * Accepted.
 Whitfield and Blackburn 311 17 0

RUSHDEN (Northants).—For the erection of house in Oswald-street, Rushden, Northants, for Mr. W. Knight. Mr. H. Adnitt, architect, High-street, Rushden, R.S.O.:—
 Dickens Bros. £473 10
 Whittington and H. Sparrow 470 0
 Tomlin £429 0
 C. E. Bayes 445 0
 T. and C. Berrett, Co., Northampton* 442 0
 T. Wilmott* 424 0
 [Rest of Rushden.] * Accepted.

RUSHDEN (Northants).—For the erection of house in Queen-street, Rushden, Northants, for Mr. F. Denton. Mr. H. Adnitt, architect, High-street, Rushden, R.S.O.:—
 C. E. Bayes £212 0 0
 Whittington and T. Wilmott 309 0 0
 Tomlin £295 0
 H. Sparrow 299 19 9
 T. Swindall 239 0
 T. and C. Berrett, Dickens Bros.* 248 0
 Irchester 299 0 0
 [Rest of Rushden.] * Accepted.

RUSHDEN (Northants).—Accepted for the erection of new bakery house, stables, &c., in Newton-road, Rushden, for Mr. E. Byte. Mr. H. Adnitt, architect, High-street, Rushden, R.S.O.:—
 W. Packwood, Rushden £744
 [No competition.]

TOTTENHAM, N.—Accepted for the erection of sixteen villas on Mount Pleasant, Tottenham, for Mr. T. Waple. Mr. A. C. Green, architect, 40, Bruce Castle-road, Tottenham:—
 William Hawley, Tottenham £5,250

TOTTENHAM, N.—For the erection of a villa residence on Mount Pleasant, Tottenham, for Mr. W. W. Allen-borrow. Mr. A. C. Green, architect, 40, Bruce Castle-road, Tottenham:—
 J. Groves £788 0
 W. Harley £550 0
 W. Ward 628 10
 J. Stewart* 468 0
 J. Norris 625 0
 * Accepted.

WORKINGTON.—For the erection of a new town hall, for the Corporation. Messrs. Oliver and Dodgshun, architects, Lowther-street, Carlisle:—
 Masonry.—L. Ferguson, Workington Joiner.—Milburn and Son, Keewick £2,850
 Plastering.—Lawson, Workington
 Plumbing.—Burns and Co., Whitehaven £11,800
 Slating.—Whitfield, Workington
 Painting.—Muirhead and Son, Dumfries

COMING EVENTS.

Wednesday, May 23.

SOCIETY OF ARCHITECTS.—Annual Dinner at the Banqueting Hall, St. James's Restaurant, Regent Street, W. 6 p.m.

Thursday, May 24.

SOCIETY OF ARCHITECTS.—Discussion on "The New Street from Holborn to the Strand, and its Architectural Possibilities," opened by Mr. W. Woodward, A.R.I.B.A. 8 p.m.

WORSHIPFUL COMPANY OF CARPENTERS, CARPENTERS' HALL (Lectures on Carpentry and Joinery.—V.)—Mr. James Bartlett, M.S.A., on "The Setting-out and Construction of Staircases," 7.30 p.m.

HOME ARTS AND INDUSTRIES ASSOCIATION.—Annual Exhibition at the Royal Albert Hall opens.

Friday, May 25.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. L. L. Macassey on "The Legal Position of the Architect," 7 p.m.

ROYAL INSTITUTION.—Mr. Francis Fox, J.P., M.I.C.E., on "The Great Alpine Tunnels," 9 p.m.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design,"—XIX. 11.30 a.m.

Saturday, May 26.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-ON-TYNE.—Council Meeting. 1.30 p.m.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Northern District Meeting at Carlisle.

INSTITUTE OF SANITARY ENGINEERS.—Annual Summer Outing to Paris. Assemble at Victoria Station at 8.15 p.m.

Monday, May 28.

SURVEYORS' INSTITUTION.—Annual General Meeting. 3 p.m.

GLASGOW INSTITUTE OF ARCHITECTS.—Council Meeting. 2 p.m.

Tuesday, May 29.

ROYAL INSTITUTION.—Mr. R. Warwick Bond, M.A., on "Ruskin, Man and Prophet,"—I. 3 p.m.

SOCIETY OF ARTS (Applied Art Section).—Meeting. 8 p.m.

Thursday, May 31.

ARCHITECTURAL ASSOCIATION.—Annual Dinner at the Criterion Restaurant, Piccadilly-circus. 7 p.m.

GLASGOW INSTITUTE OF ARCHITECTS.—General Meeting. 2 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting. 8.30 p.m.

SOCIETY FOR THE ENCOURAGEMENT OF THE FINE ARTS.—Mr. J. S. Phené, LL.D., F.S.A., M.R.I., on "The Rise and Progress of the Art of Sculpture in Greece," 8 p.m.

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The Vestry invite TENDERS for the ERECTION of a BOILER-HOUSE, &c., at the Hampstead Public Baths, 175, Finchley-road, N.W.

Plan and specification can be inspected, and form of Tender obtained on application to C. H. LOWE, M.I.C.E., the Surveyor, at the Vestry Hall, Hampstead.

The person or firm whose Tender is accepted will be required to enter into a written contract, and to provide two sureties for the due performance of the same. The expenses of contract and bond to be paid by the contractor.

Sealed Tenders to be delivered at my Office by FOUR p.m. on THURSDAY, MAY 31st, 1900.

The Vestry do not bind themselves to accept the lowest or any Tender.

By order,

ARTHUR P. JOHNSON,
Vestry Clerk.

Vestry Hall,
Haverstock Hill, N.W.,
May, 1900.

TO BUILDERS and CONTRACTORS.

TENDERS for the ERECTION of new COAST-GUARD BUILDINGS at Lannacombe, near Prawle (Kingsbridge), in the County of Devon, consisting of quarters for three men, Watchroom and Boathouse, will be received at this office before NOON on FRIDAY, JUNE 8th, 1900.

Copies of the drawings and specification will be supplied on application at this Office, or can be seen at the Coastguard Station at Prawle.

Director of Works Department,
Admiralty.

No. 21, Northumberland-avenue, London, W.C.,
May, 1900.

EALING URBAN DISTRICT COUNCIL.

The above Council is prepared to receive TENDERS for the ALTERATION to FIRE STATION and ADDITION of STABLING to same.

Full particulars and quantities may be obtained, and plans and specification may be seen at the office of Mr. C. JONES, M.Inst.C.E., the Engineer and Surveyor to the Council, Public Buildings, Ealing, W.

Tenders upon the printed forms, and indorsed in the envelopes supplied, to be delivered by NOON on JUNE 7th.

The Council do not bind itself to accept the lowest or any Tender.

By order,

W. RUSTON,
Clerk.

Public Buildings,
Ealing, W.

COUNTY BOROUGH of CROYDON.
TO SEWER CONTRACTORS.

Notice is hereby given that the Council are prepared to receive TENDERS for the CONSTRUCTION of about 850 yards of 27in. PIPE SEWER, and about TWO ACRES of BACTERIA BEDS for treating sewage upon the Beddington Irrigation Farm, near Croydon.

Full particulars may be obtained on application at the Borough Engineer's Office, Town Hall, Croydon.

Tenders to be sent to me by ELEVEN o'clock in the forenoon on MONDAY, JUNE 18th, 1900, endorsed "Bacteria Beds, Beddington Farm."

The Council will not be bound to accept the lowest or any Tender.

By order,

E. MAWDESLEY,

Town Hall, Croydon,
May, 1900.

Town Clerk.

COUNTY BOROUGH of CROYDON.
TO ENGINE and PUMP MAKERS.

Notice is hereby given that the Council are prepared to receive TENDERS for the SUPPLY of ENGINES and PUMPS in duplicate to lift 100,000 gallons per hour, to be erected upon the Beddington Irrigation Farm near Croydon.

Full particulars may be obtained on application at the Borough Engineer's Office, Town Hall, Croydon.

Tenders to be sent to me by ELEVEN o'clock in the forenoon on MONDAY, JUNE 18th, 1900, endorsed, "Bacteria Beds, &c., Beddington Farm."

The Council will not be bound to accept the lowest or any Tender.

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Town Hall, Croydon,
May, 1900.

Town Clerk.

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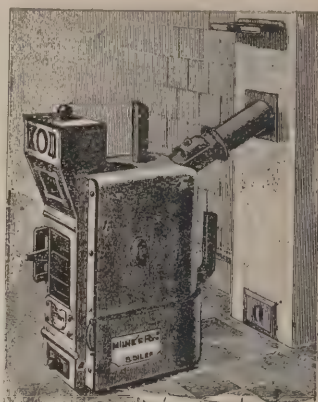
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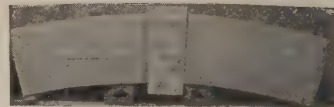
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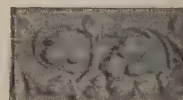
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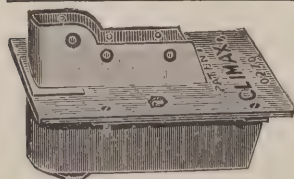
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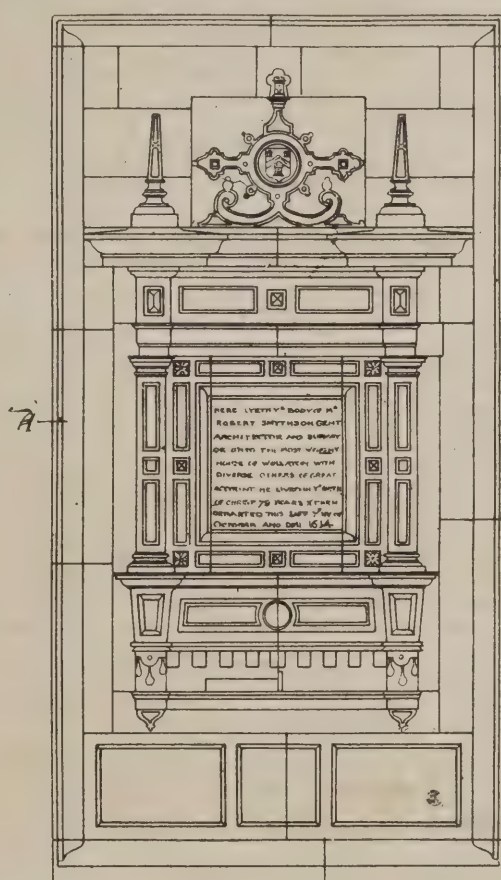
Nature and Architecture.

ALTHOUGH at first sight there may appear to be but little connection between

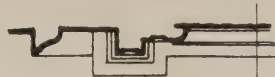
natural history and architecture, yet the closer organic life is investigated the greater are found to be the treasures of art it reveals, it being impossible to follow carefully any branch of natural history without gaining inspirations of artistic and constructional value. Let the student take up the study of entomology and glance at the life history of the family of the Neuroptera, or "nerve-wings," so called from the beautiful framework upon which the wing-covering is spread, a framework which might well serve as a study for the filling-in of the windows of our noblest cathedrals. The earlier life of these insects (of which the gnat and stone-fly are familiar examples) is passed below the surface of ponds, where the soft and juicy body of the immature fly forms a most tempting morsel to the hungry trout or perch. It is therefore necessary that some protection should be provided, and in the construction of such protection the little architects give us some of the best examples of the adaptation of local materials to the work required with which the writer is acquainted; such materials appearing in many instances most unsuitable for the work sought to be accomplished. Thus, one little fellow, with sticks about one-eighth of an inch in length, artistically constructs a case which the backwoods settler might have taken as a model for his log hut, with its timbers crossed upon each other at its angles. Another gains his object by cementing grains of sand together into a concrete tube; or, should his material be too large for concrete he builds a rubble house, at the contemplation of which the builders of the Irish peels might well hide their diminished heads. A fifth, whose abode is in the warping drains of Thorne, where neither stick nor stone is to be found, presses a beautiful little spiral shell into his service, and, without consulting the unfortunate tenant in possession, builds his home of a material which man has used (after its petrification) in the construction of Peterborough Cathedral—a careful examination of whose stones will reveal that they are made up almost entirely of minute shells. The bee is an almost threadbare illustration, yet few are aware of the mathematical precision with which it constructs the cells of the honeycomb, in order to obtain the maximum of strength with the minimum of material, the primary aim of all good architectural construction. Réaumur having made careful measurements of the angles of these cells, found them to be $109^{\circ} 28'$, and $70^{\circ} 32'$. He then requested M. Koenig, a skillful mathematician (without informing him for what purpose he required the information), to determine by calculation what ought to be the angle of a six-sided cell, with a concave pyramidal base formed of three similar and equal rhomboidal plates, so that the least possible matter should enter into its construction. M. Koenig found, by the infinitesimal calculus, that they should be $109^{\circ} 26'$ and $70^{\circ} 34'$, or about one-sixth of a degree more or less than that employed

by the bees, and this difference in the measurements was afterwards found to be due to an error in the human calculation. No architect would deny the value of a knowledge of geology in determining the site for, or materials of, a building, yet how few of the actual workers in stone know anything of the life history of the rock upon which they are working—a knowledge, the joy of which is so delightfully told in Hugh Millar's autobiography, "My Schools and Schoolmasters." The microscope reveals an inexhaustible fund of designs for "all trades," designs undreamt of by those who have not studied them. It also reveals mechanical appliances, from which the greatest engineers could obtain, and in some instances have obtained, invaluable inspiration. Few of our boasted

thought of Tertullian is now better understood than when first uttered: "Man is made in the likeness of God; God, in forming the first man, took for pattern the future man, Christ." The human frame is, moreover, the highest embodiment of the architect and the engineer; its lightness, economy of material, and surpassing strength are unapproached by anything that man has put together." A careful examination of the section of a nautilus will enable the architectural student to appreciate the following extract from Mr. Arthur Stratton's thoughtful paper*: "Wren's staircases within the towers are very cleverly arranged, and almost seem to suggest a study of conchology. They never appear as external excrescences. The line of the front of



Elevation.



Half Plan at Level. *Note—Material generally, Lincolnshire Stone.
Inscription panel—Slate*

SMYTHSON'S MONUMENT, WOLLATON CHURCH, NOTTS. MEASURED AND DRAWN BY
PHILIP H. ELLIS. (See p. 299.)

inventions but have been foreshadowed by Nature; yet most of us are like the conceited artist who would not admire a fine sunset, as "it had been copied from one of Turner's." With the aid of the spectroscope one may get studies of colour, and, without it, of forms which should be eagerly grasped, not only by the designer in textile fabrics, but by workers in wood, stone, or iron.

The study of human physiology has been well shown by Dr. Alfred J. H. Cristie to be one which might be well and profitably followed by the engineering and architectural student. He asks: "What of the lightness and strength of the human frame, of the protection which the bony framework affords to delicate structures, and of the capacity for repairing injury? 'Fearfully and wonderfully made' is inscribed on every part; and the beautiful

the steps always runs to the face of the newel and not to its centre, giving the best tread." No one has made greater use of the "Pook who runs may read" than John Ruskin, and perhaps no better words could be found in which to close this appeal to my fellow craftsmen to study the works of God within and around them, than his poetical description of a piece of the Master-Builder's Architecture:—"A fragment of building amongst the Alps simply illustrative of the chief features . . . necessary to the perfection of the wall veil . . . a wall truly of some majesty, at once the most precipitous and the strongest mass in the whole chain of the Alps, the Mount Cervin. . . . It is a vast ridged promontory . . . lifting itself like a rearing horse, with its face to the east.

* BUILDERS' JOURNAL, Nov. 25th, 1896, page 246.

All the way along the flank of it, for half a day's journey on the Zmutt Glacier, the grim black terraces of its foundations range almost without a break, and the clouds, when their day's work is done and they are weary, lay themselves down on those foundation steps and rest till dawn, each with his leagues of grey mantle stretched along the gristly ledge, and the cornice of the mighty wall gleaming in the moonlight, three thousand feet above."

T. W.

Is it Done Better in France?

SOME years ago the "Daily Telegraph" was continually holding up the example of Paris to us Londoners, with the object of proving that, among other things they manage better in France in general and Paris in particular; the streets and the architecture lining them were in every way superior to anything we could show. The young lions of the "D. T." roared bravely in those days, but now that their manes have grown grey they have garnered wisdom, and we hear in those columns little advocacy of things Parisian. Others are left to take up the tale, and they do it with a will. But is it, after all, convincing? To one who has never been in France before, the first glimpse of things French is startlingly novel, and to most people novelties are admirable. Change is essentially the spice of life, up to a certain time, after which it becomes gall and bitterness; hence, we may shrewdly suspect, the charm to Englishmen of things Continental; hence also, *per contra*, the picturesqueness which the foreigner not infrequently finds in our surroundings, so despised by some of ourselves. The "Telegraph" called for things characteristic of Paris, such as boulevards and kiosks, to be introduced here. We have not got those boulevards, but the kiosks (of the approved Lutetian pattern) have been for some time past with us, and they have not added to either the gaiety or the beauty of London, although they may have usurped (and do usurp) a goodly proportion of the pavements which were already too crowded. A kiosk as seen by newly-travelled Britishers in Paris was a novelty, and consequently interesting; as imported they are little less than sordid nuisances. Are these things really done better in France? As a matter of fact, they are not; nor is French street architecture really worthy to be copied here, for much of it is of a thin and academic Renaissance character, and without the individualism which, sometimes for good and occasionally for evil, marks our own efforts. In Paris, for instance, one finds streets upon streets of houses with good pretensions to architecture, but with as little life or character as the copy-book "copper-plate" handwriting examples of our school days. Between that street architecture and much of our own there is the difference, in fact, of those elegantly-written maxims of our youthful times and the virile signatures of our after years. This is no brief for Gower Street or Vauxhall Bridge Road, which we would gladly exchange for those Parisian streets of the most formal type that ever derived from an architectural primer. Bloomsbury Street and that weary road leading from Pimlico to South Lambeth have never pretended to architectural dignity, and arose in times when four walls, a roof, a door, and an adequate number of windows satisfied the most exacting taste. They would be impossible now, just as (let us sincerely hope) another Cromwell Road would be. It is rather to the newer parts of Kensington, and much of the rebuilt areas of Chelsea and of Mayfair, that we may point, and refuse to exchange for the creations in brick and stone so much admired by some sojourners across the silver streak.

C. G. H.

On Reflection.

The Wicked Engineer.

UNDER the auspices of a committee of influential architects in London and the Provinces, an architectural congress is to be held at the R.I.B.A. during the week commencing June 18th. Sundry visits are to be made, papers read, and resolutions moved, and such a congress might well become an annual fixture, for the cause of Architecture cannot be harmed, and may be benefitted by a little free discussion. Glancing down the provisional programme we find three resolutions set down for Friday, June 22nd. Why there should be three is not quite clear, for they are all to the same effect:—That the borough engineer and surveyor should not be permitted to design "buildings of a municipal character," and that his duties "should not include work of an architectural character." Now if the English language means anything, this indicates that the borough engineer should not be permitted to design a dog-kennel if the same was intended for his authority. We do not for a moment suggest that the borough surveyor should have a monopoly in the design of public buildings. Let an open competition under a competent assessor be held for the purpose of unearthing young and genuine talent, let the borough surveyor enter also if he chooses, and let the best man win. To say, however, that Corporations should not add an extra boiler-room on to their electric lighting works without calling in architects, who are notoriously ignorant in such matters, is a perfect absurdity. To hold, too, that because a man is an engineer, he is, therefore, utterly devoid of taste and fated to erect more horrible buildings than an architect is equally silly. No more deplorable municipal buildings have been erected in recent years than those designed by architects. One has only to recall the Plumstead Competition drawings or look round the Architectural Room at the R.A. to be assured of this. If some engineers who are also members of the R.I.B.A. will get up on Friday, June 22nd, there should be some plain speaking that would be salutary for those architects who desire protection for their bad work.

Restoration. WHEN a restoration scheme is mooted to repair one of our venerable buildings, architects of the "extreme" school are always quick to repudiate any connection with the movement, and when the work has been completed they are careful to say that the building has been entirely spoilt, its original designer grossly insulted, and that the architect and his employers are vandals of the grossest type. This kind of criticism appears with unflinching regularity after every restoration, and even where the work has been undertaken by one of their own number, the song of the "extreme" school changes not. Restoration is ever a thankless work. It is the hardest task in the world for the artist to accomplish, for he is ever dogged by the desire to put the stamp of his own individuality into the work, which would immediately destroy its character. Our interest in our old buildings is merely a life interest. We have neither the right to alter nor to dispose of them. They are the models from which we learnt our art, and our pleasure and duty is to preserve them for the study of our children and our children's children. But this is not the opinion of your extremist. He has seen the original stone, the original carvings; as long as they last his time what does it matter about future generations? Let time blur away the mouldings until they cannot be copied, let the statues crumble into shapeless

stones. Let the original architect's design, his beautiful tracery patterns, his exquisite mouldings disappear. What does it matter? The extremist has no love for the design; the stone—the base material, the vehicle of the artist's thoughts—is of more importance to him than the work of art itself. It is the worship of the pigments and the canvas, not the admiration of the brush work and the picture. He detests restoration, and consequently his restoration work is never good nor lasting, his workmanship never honest. Patching and puttying are his unsatisfactory methods of work. The old school "restored" every trace of the original design away; the new school would let Time destroy the entire fabric. Between these two extremes we want a new school who will have the wisdom to replace a beautiful carving before the pattern is lost, and who will keep our ancient buildings in a proper state of repair. Such a school will not putty, nor graft new stone, full of strong quarry-juice, on to the old, to the endamage of both, but their workmanship will be sound and honest. And while they are careful never to remove stone that may be left, they will remember that the preservation of the original design is of more importance than the preservation of the original material.

Will London Subside?

THE number of underground electric railroads in London, completed or about to be constructed, is causing "The Lancet" some alarm, and that estimable journal fears a general subsidence of the metropolis and the disappearance of London into its primeval swamps. It would be hard indeed if the proverbial New Zealander could gaze only upon the chimney-tops of our great city when he arrives, but we do not think such a sad catastrophe is likely to happen. Statistics all go to prove that London stands a great deal higher than it used, but whether this is due most to natural or artificial agencies we should not like to say. The reclamation of large areas of marsh land in the East End is praiseworthy, though the immediate letting of such ground for building purposes is most unwise. Probably most people know that the greater part of London is upheld by water, or, in other words, that the city rests on a bed of gravel percolated by water, and the divergence or withdrawal of that water means collapse. This is very well known to the underground railroad engineers, and their use of compressed air to keep such water out of the workings is evidence of the fact. So far the only subsidence that has occurred has been that of Mansion House Buildings during the construction of the Waterloo and City Railway, due, we believe, to pumping operations on the one side, and to lack of depth in the foundations on the other; but the element of danger was due to the dearth of news in the evening papers. If these railways were constructed on the lines of the Metropolitan and District Railway, we should be inclined to join our contemporary in pointing out future dangers. Under the circumstances we think danger, present or future, need not be apprehended, and while our contemporary enlarges on possible ill-health following subsidence, we would point out the advantages of journeying in breathable air and the lessening of the street traffic, beside the quickness of the passage to the healthier suburban or country atmosphere. If criticism can draw an official eye to the ways and routes of these railroads it will have effected some good, because they are being constructed without any system and in a somewhat haphazard manner. If the multiplication of these lines is lunacy, as "The Lancet" would appear to think, we may as well have some method in our madness.

ELIZABETHAN ARCHITECTURE.

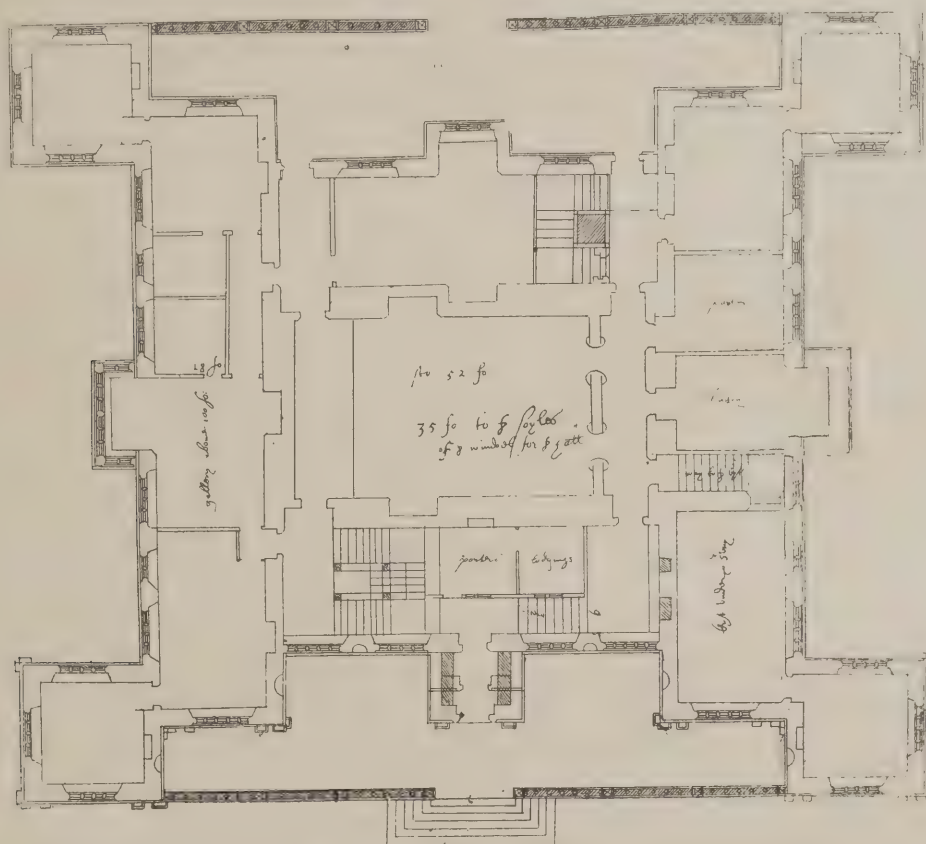
By PHILIP H. ELLIS.

"ELIZABETHAN" is the term applied to the earlier English version of the great Renaissance movement, originating in Italy in the fifteenth century through a multitude of causes, all of which may be summed up in the one supreme cause, "a remarkable stimulus of intellectual life." All the reform, genius and enterprise of this remarkable era follow as a natural result. The form this revival took in literary and popular estimation arose from the eulogistic admiration for the civilisation, literary and artistic, of classic times, expressed by such influential men and mighty geniuses as Dante, Petrarch and Cola-di-Rienzi, whose enthusiasm was constantly

countries lying nearer the source of the movement, and we may probably date its introduction here from the advent of Torregiano in 1512, who was sent for from Italy to design and prepare the monument of Henry the Seventh; and it is in such features as these, and the carving, mantelpieces, &c., that we first see Italian influence at work, there being several existing examples of structures in which the general design and workmanship are of pure Gothic character, whilst the carving of strings, bosses, finials, &c., show an entirely new treatment, indicating an ignorance of the old native traditions, and the handiwork of foreign craftsmen. Not until the days of Inigo Jones did English Renaissance architecture lose its peculiar "mixed" character, neither Gothic nor Classic, but partaking of the nature of both, full of picturesque charm and delightful inconsist-

manipulation, were constantly revealing to him new possibilities and yet wider scope for the play of a genius fancy free.

The craft guilds of mediæval days had fostered this spirit, and it was an evil day for the arts in general when the Renaissance in its topsy-turvydom diverted these great and potent centres of artistic life from their true and original purpose. They not only insisted upon a certain standard of excellence in their members, condemning all dishonest and slovenly work and urging the use of proper tools and good material, but they greatly promoted their social welfare also by encouraging a spirit of fraternity and healthy rivalry. So long as the guilds existed in their original state there was no necessity for "the architect" as we know him. The various groups of craftsmen had a continuous national tradition of their own, all were animated with

*Garden house**(Richard house)*

WOLLATON HALL, NOTTINGHAM: PLAN. FROM THE JOHN THORPE COLLECTION.

receiving fresh impetus from the almost daily discovery of ancient manuscripts, poetic and historic, of rare worth, profound treatises on arts and sciences lost for ages, and miracles of the sculptor's art, infusing into minds wearied of the then existent and unsettled state of society and eagerly searching for a solution of the problem of how to effect a satisfactory reformation, new motives, nobler ambitions, and inspirations boundless in their range.

In the noble remains of the great Art Epoch of Rome the architects found their inspiration ready to hand and evolved from it a type of design at once expressive of the ambition and power of a great people and suitable to the wants of a rapidly advancing state of civilisation. Of the wisdom of choice, and the soundness of judgment, of the early Revivalists in Italy, we have ample proof in the widespread popularity and great influence their work rapidly achieved over all the great nations of Europe.

The isolation of England and the infrequency of international communication in those days prevented the penetration of the new order of things into this country till rather later than was the case with those

encies. We constantly see in buildings of this type pointed doorways surrounded by a framework of Classic columns and entablature, and many-mullioned windows of mediæval days bordered with architraves of quite another character, giving evidence of a lingering affection for the old traditional types and a disinclination to adopt more of the new forms than it appeared to them might advantageously be grafted on to the old. This juxtaposition of the two opposite types of design produced compositions frequently crude in outline and clumsy in detail compared with the later phases of the Renaissance, from the hands of Inigo Jones and his followers, but what architecture gained by the scholarly treatment and pure Palladianism introduced by this master it lost in human interest. When the architects ceased to be craftsmen, and the craftsmen designers, the charm and poetry of our art vanished. Its place was taken by a correct but heartless formalism, and the joy of the worker was no more "hewn into the very walls themselves," nor the mingled emotions of his mind impressed by deft fingers with unconventional ease on materials which, as a natural result of the thought entailed in their

one motive, and one great spirit of "endeavour" pervaded them all. Thus, and under such conditions only, was rendered possible that individuality of parts with unity of mass and oneness of impulse which characterised the arts of Mediæval Europe, and without which no art worthy of the materials of its expression, and the labour involved therein, can ever hope to exist. The influence of the guilds with their traditional methods continued in gradually diminishing degree down even to Wren's day, as evidenced by the following passage from a letter written by him when forwarding plans and instructions for the library of Trinity College, Cambridge:—"I suppose you have good masons; however, I would willingly take a further pains to give all the mouldings in great," indicating that if the craftsmen were of "good" report they were still considered capable of preparing their own details without any fear of the painful discord which almost invariably results if we of the nineteenth century delegate to them even the smallest portion of a design. The fact is they have lost interest in their work, and who can wonder?

Returning to the advent of Torregiano,

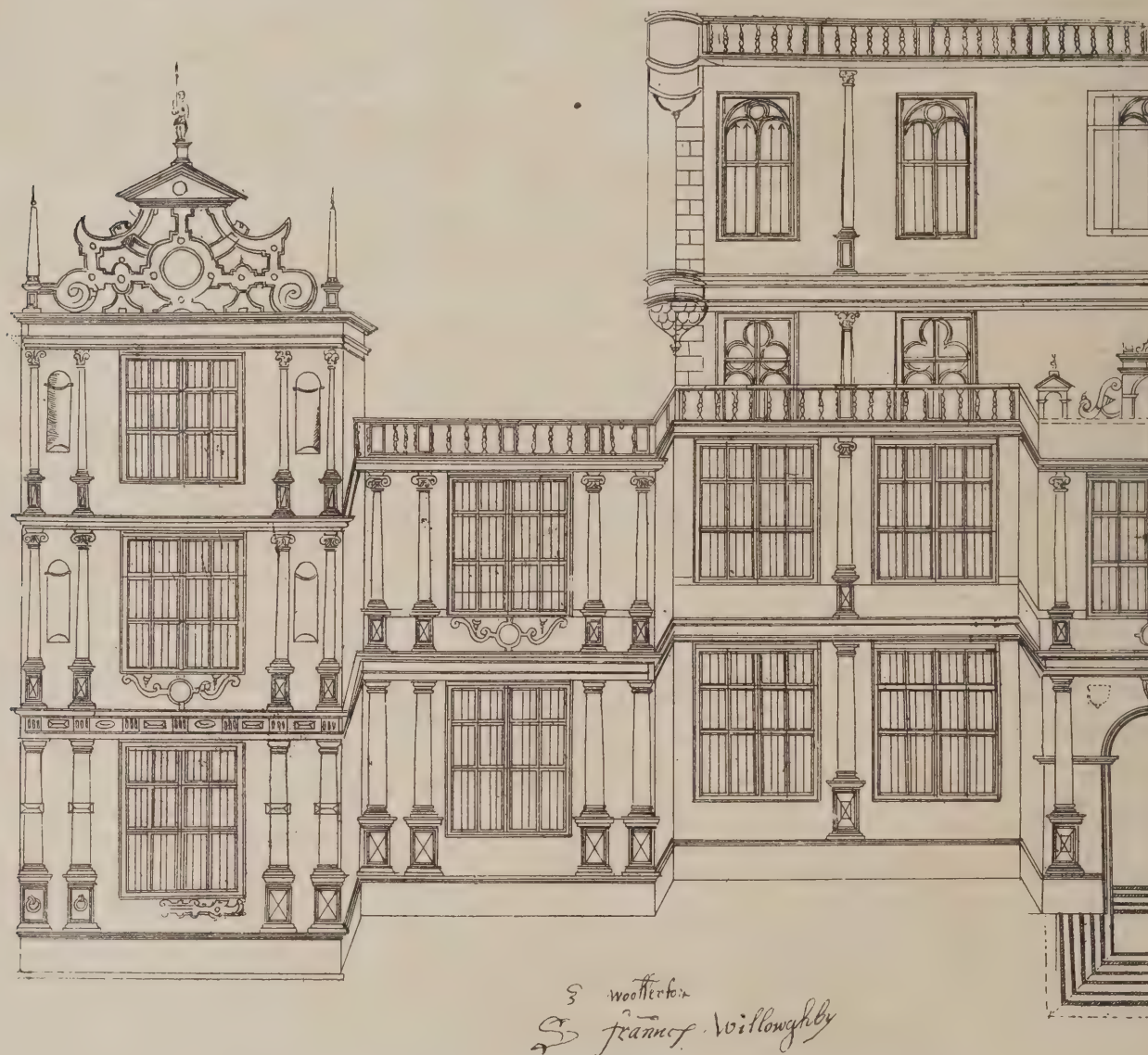
immediately succeeding that event there was a very large influx of foreigners—Italian, French, German, and natives of the Low Countries—practising all manner of crafts, who came over partly to escape the religious persecutions and political strife with which the greater part of Europe was then infected, and partly because they saw in the increasing wealth and prosperity of our nation a means of advancing their own position in life.

In mediæval days the Church had been the great builder; now her lands and her coffers were in the hands of the laity, and the building of churches gave place to the building of palaces. The aisles and walls of the former were made receptacles for cumbrous monuments of vari-coloured marbles, frequently lavishly gilt, but, as a rule, in anything but the best of taste, though distinctly

both by land and sea, of which buffet and cabinet gave evidence in their proud display of treasure or relic gotten in hard sea-fight with some Spanish galleon, and objects of rare design and workmanship secured through the bargaining of merchant venturers to distant lands—pioneers of the great commercial and maritime power of our nation.

Wealthy patrons of the arts when not employing foreign craftsmen of repute, such as Haveus of Cleves, employed by Dr. Caius at Cambridge, or Henryck, at the Royal Exchange, were occasionally at the expense of sending their own English protégés to study abroad, as, for example, John Shute, who was sent to Italy in 1550 at the expense of the then Duke of Northumberland, "ther to cofer," as he tells us, "wt the doiges of ye skilful maisters in architectur, and also to view such

quoted as the designer; but there appears to be no documentary proof of his claim. In a grant from the king dated June 30th, 1544, this John is awarded the sum of 2s. per day for his services in architecture and music and is therein described as "devizor of his Majesty's buildings" (Hakewell). Perhaps the most popular of the architects of this era in England, judging by the number and importance of the buildings generally attributed to him, was "John Thorpe," an Englishman, though, owing to the non-occurrence of his name in the works of contemporary historians, or even, so far as has been ascertained, in the building accounts of the several works themselves, he is considered by many rather a mythological personage, the only evidence in support of his claim being the remarkable collection of apparently original studies



WOLLATON HALL: HALF ELEVATION. FROM THE JOHN THORPE COLLECTION.

characteristic of an age in which man, his wealth, position and achievements, were the chief consideration. A few features in the way of fittings were also added to the existing churches, but, generally speaking, they are of comparatively minor importance. The vast number of religious houses scattered throughout England, where not ruthlessly destroyed, or, after being denuded of the more valuable materials of construction, left to crumble into dust, were either adapted as residences by the less ambitious, or used as quarries for building in a more commanding situation the palatial dwellings of the more aspiring of the recipients of the king's favour in the distribution of monastic lands after the Reformation. It was an age of self-aggrandisement, a pompous, picturesque old time full of romance and daring exploit

añt monumentes hereof as are yet extant." (Gutch's Ren.) On his return Shute published a book on architecture, in which he styles himself "Paynter and Archytecte."

This work was too crude and insignificant to exert much influence, but the great and monumental work of Alberti, published in Italy in the previous century, and newly translated into English, was, in all probability, widely known and appreciated by the dilettanti of the day, and had a very considerable share in the formation of their architectural taste. In some cases models appear to have been prepared in Italy for large and important buildings, as in the case of Longleat, in Wiltshire, the model for which is stated to have cost the extravagant sum of £500, and may possibly have been brought over here by one "John of Padua," who is generally

designs, and surveys, numbering in all about 280 sheets, now preserved in the Soane Museum. These drawings of an Elizabethan architect form a most valuable and interesting record of contemporary methods of design and draughtsmanship.

Among the "studies" several sheets are devoted to the Five Orders, the employment of one or more of which in every conceivable position forms such a sure index to buildings of this date. A plan of Henry the Seventh's Chapel is included among the surveys of existing buildings, and it may be noted throughout that Thorpe's chief attention seems to have been given to the plans, they being, as a rule, carefully and fully drawn, whilst the external design is only indicated by half an elevation or perspective, the latter being drawn in an extremely quaint and

original way. Sections do not appear to have been thought necessary, and but few details occur.

Among the more important of the designs may be mentioned: — Buckhurst House, Sussex, 1565; Kirby, Northants (accompanied by the note "Whereof I layd ye first stone, A.D. 1570); Burghley, by Stamford, 1578; Burghley-on-the-Hill; Wollaton, near Nottingham, 1580-1588; Longford Castle, Wilts., 1591; Audley End, Essex; and a house with plan based on the initial letters of Thorpe's own name bearing the following inscription:—

Thes 2 letters, I and T,
B.ing joyned together, as you see,
Is ment for a dwelling howse for mee,
John Thorpe.

We have no record of Thorpe having visited Italy, but from some plans in the collection, namely, those for the "Queene Mother's Howse, fabor St. Jarmins, alla Paree, altered per Jo Thorpe," and "Monsier Jammet, his howse" (dated 1600) it seems probable that he visited France. In an article published in the "Building News" some years ago it is stated that in Wollaton Church there is a short inscription to Thorpe's memory in which he is recorded as "Surveyor and builder," but a diligent search and enquiry there fails to confirm this statement. There is, however, on the south wall of the south aisle of that building a handsome memorial tablet of considerable interest to our profession (see page 297) bearing the following inscription:—

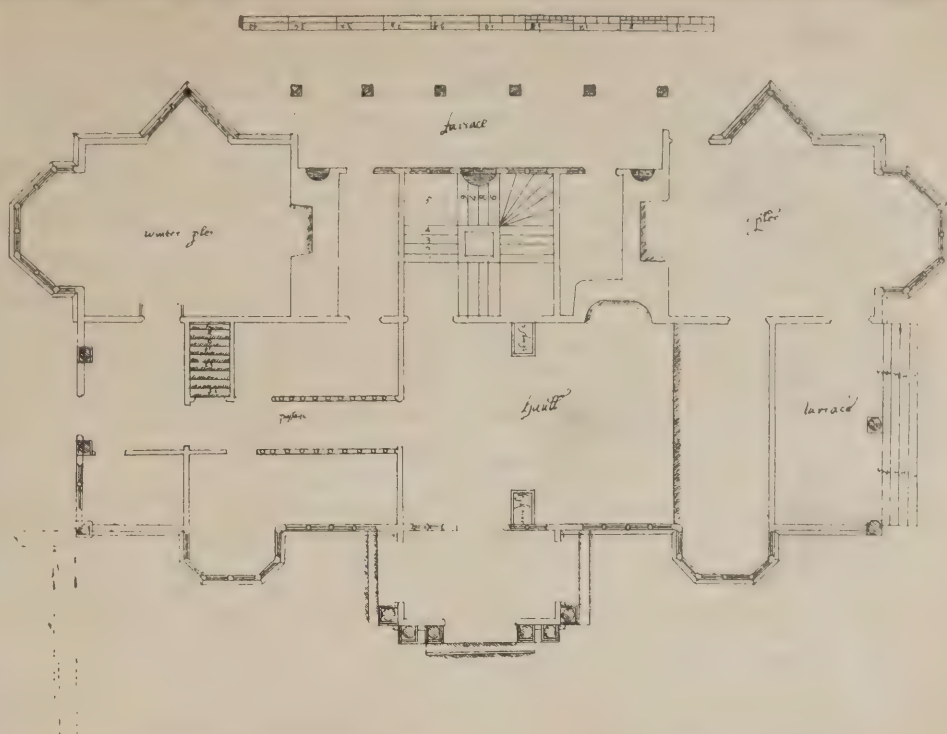
"HERE LYETH YE BODY OF MR
ROBERT SMYTHSON GENT
ARCHITECTOR AND SURVAY
OR UNTO THE MOST WORTHY
HOUSE OF WOLLATON WITH
DIVERSE OTHERS OF GREAT
ACCOUNT HE LIVED IN YE FAYTH
OF CHRIST 79 YEARS AND THEN
DEPARTED THIS LIFE YE XV OF
OCTOBER ANO DMI 1614."

This inscription has afforded material for much controversy as to who was the actual designer of that grand building Wollaton, but, in the absence of documentary evidence, no definite conclusion has yet been arrived at. Smythson was evidently a member of the mason's company (note the arms, granted by Edward the Fourth in 1472, on the top of the

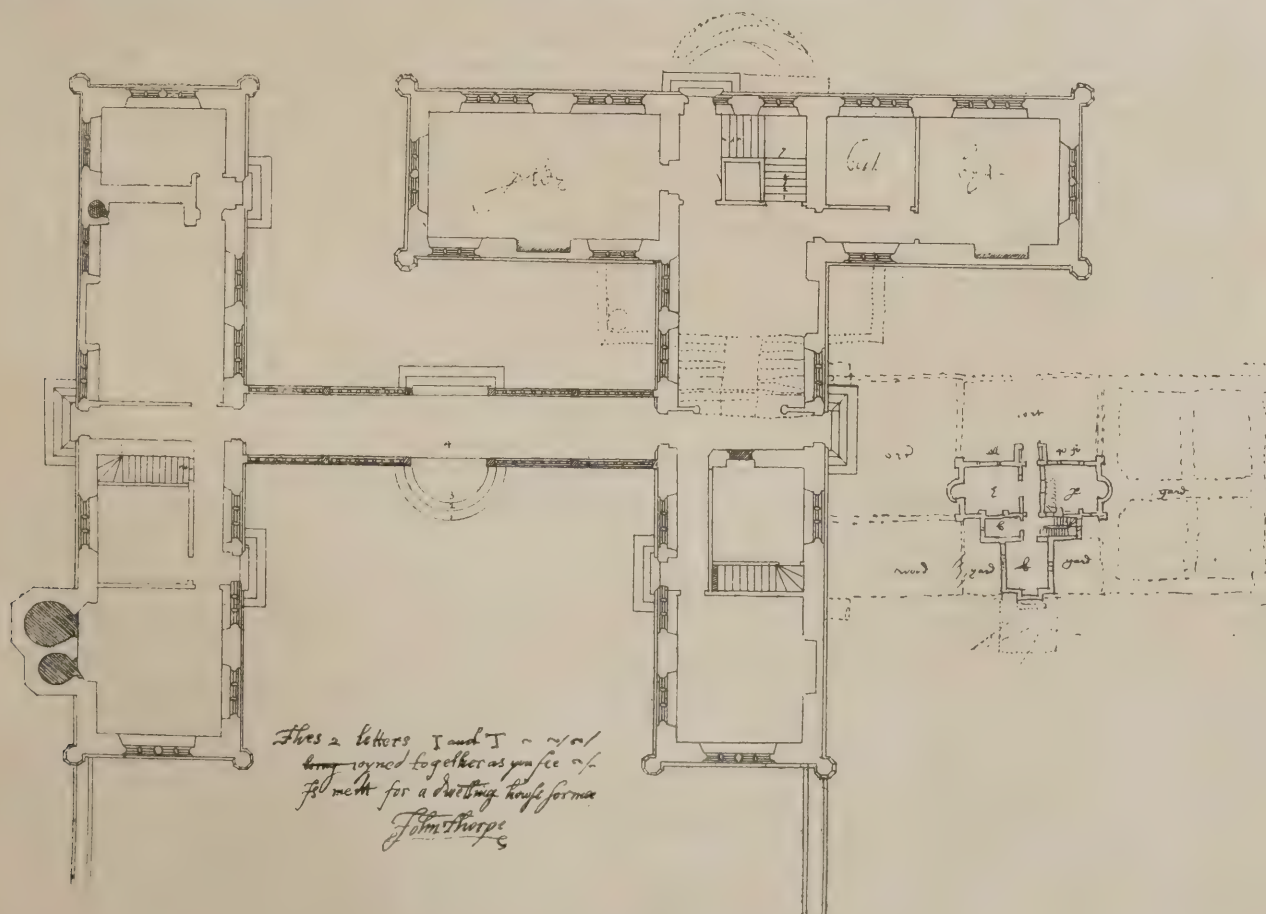
monument), and he appears to have been employed at Longleat in that capacity, from some papers in connection with which we learn that on or about the 11th of March, 1568, "Robert Smythson" succeeded John More as "head freemason." Knowing as we do that the master masons of his day not infrequently styled themselves "Architectur," "Archytecte," or "Architector," it does not follow that he was "architect" of Wollaton in the present-day acceptation of the term; indeed, it seems more probable that he occupied the position of "clerk overseer of the works," or "comptroller of the works," answering to the modern "clerk of the works," under John Thorpe, who prepared the general

small scale plans only. Thus, most of the design in the matter of detail and construction would fall to Smythson, so that, if this should be a correct view of the case, both are entitled to a fair measure of credit.

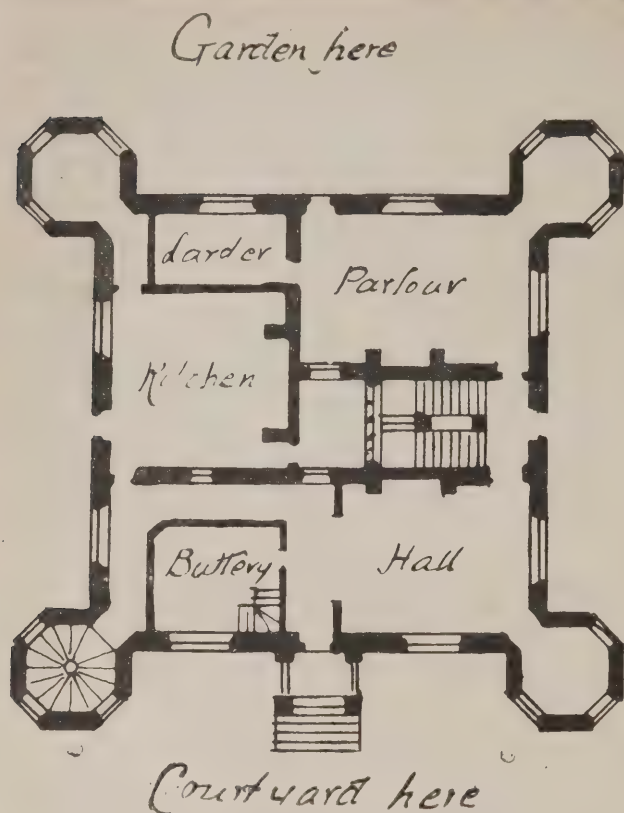
In conclusion, the buildings of the Elizabethan era offer to the architect of the present day a worthy and profitable subject for study and emulation. Not, perhaps, the more grandiose and stately of them, built more for external effect and to strike wonder into the beholder than for comfort and convenience, but the smaller edifices, the manor houses and homesteads scattered so plentifully throughout our land. Buildings marked by exteriors severe in their simplicity, relieved perhaps



PLAN OF A HALF-TIMBER HOUSE. FROM THE JOHN THORPE COLLECTION.



JOHN THORPE, HIS HOUSE



PLAN OF A HOUSE. BY JOHN THORPE.

only by a carved escutcheon over the porch, piquant and bold, but worth more in effect than dozens of yards of carved or moulded string and similar modes of "enriching" buildings. And the interiors of these simple, solid-looking houses how full of charm and how suggestive of homely comfort they are, with their low-panelled rooms and cosy ingles, their broad inviting window seats, and roomy bay windows, the wide and massively framed stair, the delicately modelled plasterwork on frieze and ceiling, and, as essential to the full and complete architectural effect of any building, the characteristic furniture. These, and a hundred other things, all unite in producing a whole, which, in appropriate suggestiveness for modern domestic design, has but few rivals.

SOCIETY OF ARCHITECTS.

ANNUAL DINNER.

THE annual dinner of the Society of Architects was held last Wednesday at the St. James's Restaurant. The chair was occupied by the President, Mr. T. W. L. Emden, L.C.C., and the company included Sir Wyke Bayliss, Prof. Silvanus Thompson, Mr. W. E. Riley (superintending architect to the L.C.C.), Mr. J. S. Fletcher (Deputy-chairman L.C.C.), Mr. C. Wall (President of the Master Builders' Association), and Mr. Goddard Clarke (chairman of the Building Act Committee L.C.C.), as well as a good number of members of the society.

After the toast of "The Queen" had been duly honoured, the President proposed "The Houses of Parliament," for which Mr. Atherley-Jones, Q.C., M.P., responded. Mr. Atherley-Jones expressed a very high regard for the House of Commons as the place where you have the most complete, courageous, and truthful expression of public opinion; but he did not think the Society of Architects had much reason to be grateful to that House. Owing to the accident of the ballot, and to the increasing demands made by Government upon the time of the House, the Society's Bill for the Registration of Architects had not yet been discussed. He knew the Bill was likely to meet with a very considerable amount of opposition. One member had that day expressed his determination to use all his influence to prevent the

passing of the measure. This gentleman's opposition was in the main founded upon the idea that it was not a reasonable thing to apply the rules of a profession to so great an art as architecture. He said: "Would you apply to a sculptor the rule that he must serve an apprenticeship before producing a piece of statuary?" In reply to this Mr. Atherley-Jones suggested that a statue had no internal sanitary arrangements, and pointed out that although it was perfectly true that architecture was a great and noble art, they saw nothing in the principle of this Bill or in its main provisions which would cause the smallest mischief to architecture as an art. As regards the best procedure to adopt, he thought that after the second reading had been secured, the Bill should be submitted to a select committee who should take the evidence of all persons interested in maintaining the dignity, prosperity, and efficiency of the profession; they would by this means be able to rub off any roughnesses or objectionable features that might exist in the Bill. He believed this Bill had a great and good object in view; to serve not the narrow and selfish interests

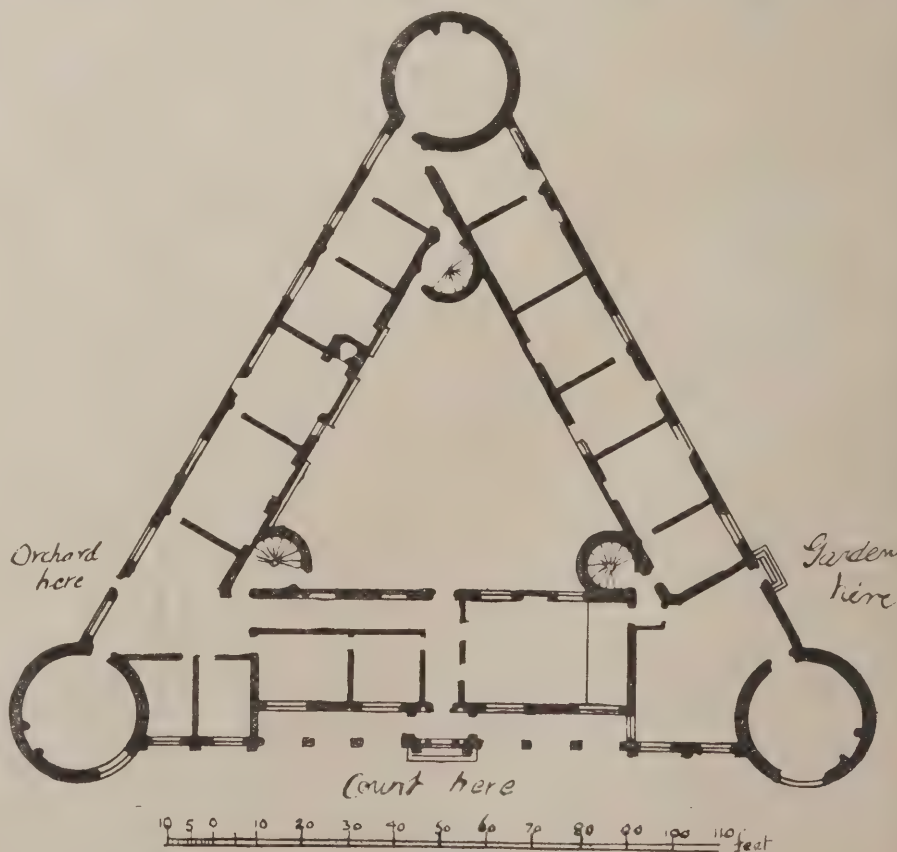
of the profession, but the interests of the public at large.

The toast of "The Clergy" was proposed by Mr. J. R. Manning, and responded to by the Rev. Dean L. G. Vere, who expressed a hope that the Society would do much to revive ecclesiastical architecture, and recommended the younger members to read Pugin's "Contrasts."

Mr. Silvanus Trevaill, F.R.I.B.A., in a racy speech, proposed "The London Authorities." After some appreciative remarks about the Corporation and the London County Council, he expressed the opinion that the latter body

had been unduly hampered by Government. He was a Britisher of the Britishers, but not a prejudiced one, and he could not help noticing that in other parts of the world there were better streets than in London. "We have not a decent street in London," he exclaimed, "as compared with the Ringstrasse, in Vienna, the Unter den Linden, in Berlin; or the Place Concorde, in Paris." Stimulated, apparently, by a few murmurs of dissent which this remark provoked, Mr. Trevaill went on to pour scorn upon the narrow streets and the squalid and rubbishy houses which we see everywhere in London. He attributed this state of affairs chiefly to our system of land tenure. In Austria, Germany, France and Switzerland builders got an absolute freehold; here they had to be content often with an eighty years lease. Architects should remedy this state of affairs. The average Member of Parliament, the gentleman who loafed about in the smoking room, did not understand these matters. Mr. Atherley Jones, who spoke like a brick—to use an architectural expression—was one of the most open and broad-minded of men, and he would have been struck with the contrast between the streets of London and those of foreign capitals. Notwithstanding its enormous area, London was a huge city of mediocrity as regards its architecture and streets; there was no general concentration of effort. With the broadening out of municipal institutions in London there ought to be greater possibilities for bringing this metropolis of the Anglo-Saxon race at least into line with the continental capitals.

Mr. J. S. Fletcher, Deputy-chairman of the L.C.C., in responding to this toast, spoke of the confusion created in the minds of foreigners by the various authorities existing and the new ones about to be created in London. He regretted that the corporation had not shown itself willing to be placed at the head of a united London. There was no more hard working body in the world than the London County Council, and, although it was not in favour with the Government of the day, this was only the normal condition of a progressive municipality. There was quite as much friction between the Government and the L.C.C. when Lord Rosebery was premier, and in Paris there was almost constant friction between the municipality and the Government; a great municipality was always in advance of



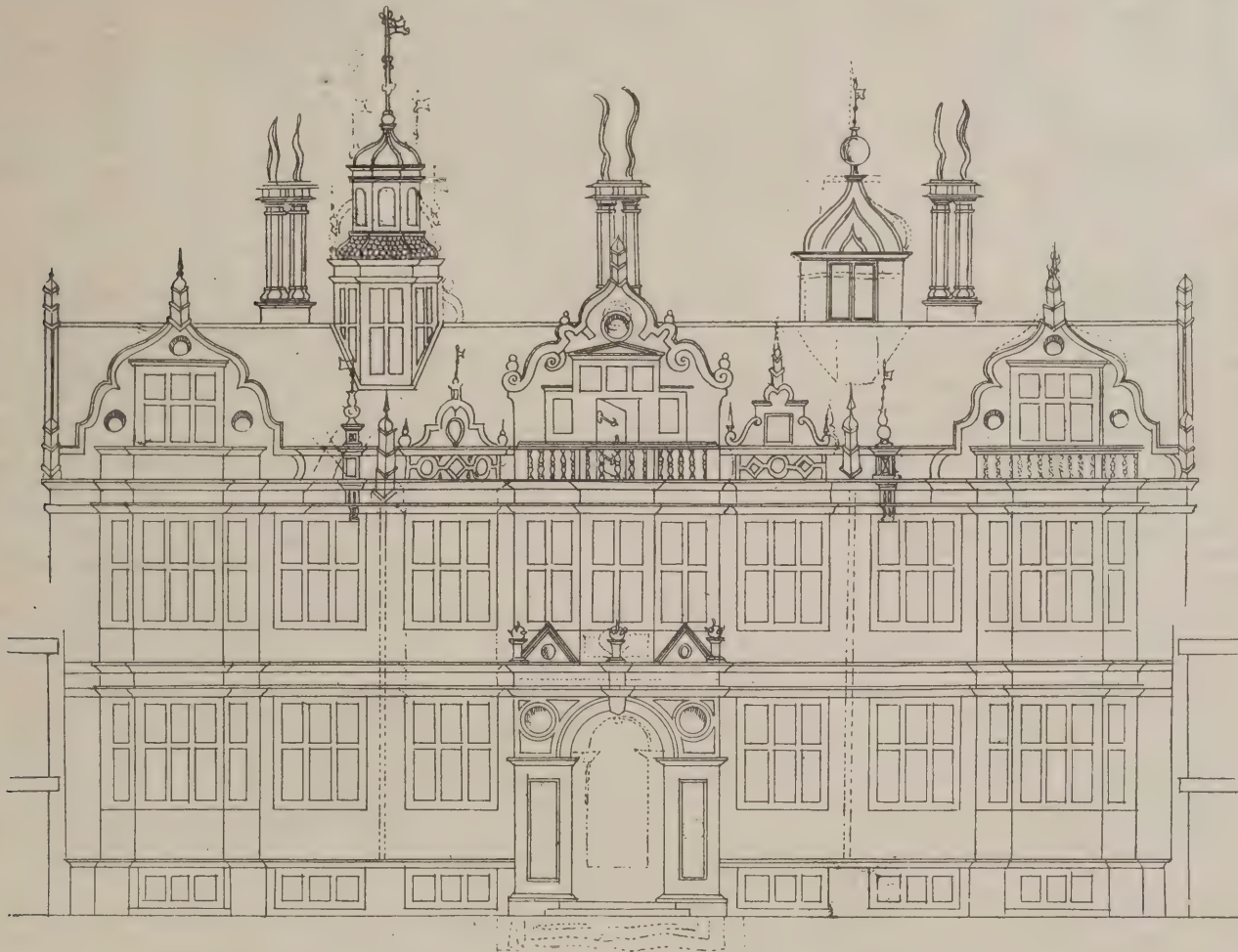
LONGFORD CASTLE. AS DESIGNED BY JOHN THORPE.

the Government. He trusted the L.C.C. would always be as hard working and as free from corruption as now. They were undertaking many great works at the present time. They would endeavour to make the new street between Holborn and the Strand equal to any street in any capital in the world, and they were shortly to put in hand the erection of a guildhall, which they were determined should be worthy in design and structure of the greatest municipality in the world.

The toast of the evening, "The Society of Architects and Architecture," was entrusted to Sir Wyke Bayliss and his address in submitting this may fairly be called the speech of the evening. If marred here and there by a touch of rhetorical exaggeration, the speech on the whole reached a very high level of thought and expression. It was in the spirit of a lover singing the praises of his mistress

northern reflections of them, Sir Wyke Bayliss went on to speak of London at the present day with its ugly streets and its possibilities for the future. Very effectively he told the story of Michael Angelo producing from a great shapeless block of marble, with which other sculptors could do nothing, his famous statue of David, now in the palace at Florence. Explaining the parable he said that London was that misshapen mass which no one had yet perfectly dealt with, but which it was for the architects of to-day to transform into something beautiful. The speaker also commended to the architects present Michael Angelo's treatment of his critics. When one who could never see any work without finding fault suggested that the nose of the statue was too large, Michael Angelo went up the scaffold carrying with him a handful of dust; he rubbed the nose of the figure, trickling down the

foreign cities the architect was practically a government servant. He was not only bound to pass an examination before he could practise, but he had to pass a more difficult examination than was even dreamt of in this country. They in the Society of Architects, who were in one sense the young men of the profession, believed that if the elder societies felt themselves too old or too wearied to enter into the strife and deal with this great question, they should themselves put their shoulders to the wheel and see if they could not bring about what others neglected to do. They would not take anything from the beauty of the building because they insisted that the architect who designed it should understand construction, know how to deal with it sanitarily, and how to secure proper ventilation. This was a homely question, but a very important one. No one could design satisfactorily



ELEVATION OF A HOUSE. BY JOHN THORPE.

that Sir Wyke addressed himself to the praise of Architecture, and he asked forgiveness if his address should sound a little like an epithalamium. There was scarcely a cathedral on the Continent that he had not so often drawn but that he could paint it from memory, and, if necessary, rebuild it if it were destroyed. "What shall I say of architecture?" he asked. "What is it that makes it worthy of our love and reverence?" Answering the question, Sir Wyke spoke of the close relation of architecture to our daily lives; for health in our homes and safety in our places of public assembly we were dependent on the architect. "Then all the loveliness of cathedral spire and church tower and broad facade, all these things come to us from the architect. You want things built strongly, make your pillars great, massive, that they shall bear weight, I drink then to the Doric. But you want more than strength, you want grace, you build your pillar with a scroll for its capital, I drink to the Ionic. But you want more even than that, you want the richness of carving and decoration, I drink then to the Corinthian." Leaving these styles and the

dust as if he had been lessening the size. Probably some of the dust went into the critic's eyes; he declared the figure was now perfectly satisfactory, though it had not been altered at all. "I say to the Society of Architects," concluded Sir Wyke, "that it is your business to deal with critics in that way. You are the judges of what is right in architecture, and the common people are not. The popular taste is always wrong in architecture, and the expert is always right. It is because I believe that that I am delighted to propose this toast and couple it with the name of your distinguished president."

The President, in his reply, touched as other speakers had done, on the question of London architecture, but expressed the opinion that bad as its architecture might be, London had a picturesqueness and beauty of its own which he trusted would never be wiped away by any new work. Unlike many foreign cities one could say of London that it was a "home" to its citizens, and the architect's business was first to build "homes," and afterwards to build houses. Passing to the question of Registration, Mr. Emden pointed out that in many

even a statue unless he understood anatomy, and what would it take from the sculptor's art if had to pass an examination? But they did not seek to limit the art of the man who designed statuary or painted pictures. But buildings had to be lived in, and it was necessary, therefore, that they should be designed with knowledge. A man might buy a bad picture or statue without doing anyone any harm. But if we had a city of houses which were insanitary or badly constructed, all who inhabited them would suffer. They would be pleased to work for this reform with any other body; they did not want to be exclusive. The matter was one which was for the benefit of the public as well as of the profession; the society had been working honestly and thoroughly, and he trusted that in the end they would be successful.

Lieut.-Colonel F. S. Leslie, R.E., in a humorous speech proposed the health of "The Visitors," to which Professor Silvanus Thompson responded, pointing out in the course of his speech that other bodies, such as the civil engineers, the chartered patent agents, and the plumbers, were moving in the

same direction in regard to the registration of their members.

The proceedings were enlivened with some capital music provided by Miss Esther Franklin and the Chandos Glee Singers.

GENERAL ARCHITECTURAL CONGRESS, 1900.

AN Architectural Congress will be held in London during the week beginning June 18th under the patronage and management of the undermentioned Committee. All architects and persons interested in architecture are cordially invited to attend the Congress and to take part in the discussions on the papers read. A card of admission to meetings will be sent to any non-member of the Royal Institute on application to the Secretary, R.I.B.A. A provisional programme of the proceedings of the Congress is given below. The meetings will be held in the meeting room of the Institute. Admission to each visit will be by separate ticket and all visiting tickets must be specially applied for. All communications should be addressed to the Secretary, R.I.B.A., 9, Conduit Street, W.

General Committee.

The following gentlemen will constitute the General Committee, of which the president will be Mr. William Emerson, President R.I.B.A.:—Rt. Hon. the Earl of Meath; Rt. Hon. Lord Windsor; Rt. Hon. Lord Stratheona and Mount Royal, G.C.M.G.; Rt. Hon. A. Akers-Douglas, M.P.; Sir William B. Richmond, K.C.B., R.A.; Sir John Taylor, K.C.B.; Sir Laurence Alma-Tadema, R.A.; Mr. C. Purdon Clarke, C.I.E.; Mr. Alfred Waterhouse, R.A.; Professor Aitchison, R.A.; Mr. G. F. Bodley, A.R.A.; Mr. G. J. Frampton, A.R.A.; Mr. Aston Webb, A.R.A.; Mr. John Belcher, A.R.A.; Mr. Walter Crane; Mr. Selwyn Image, Master of the Art Workers' Guild; Mr. Rowand Anderson, Edinburgh; Mr. H. J. Austin, Lancaster; Mr. Reginald Blomfield; Mr. Basil Champneys; Mr. John Douglas, Chester; Mr. W. H. Lynn, R.H.A., Belfast; Mr. Mervyn Macartney; Mr. Ernest Newton; Mr. E. S. Prior; Mr. Halsey Ricardo; Professor F. M. Simpson, Liverpool; Mr. W. M. Fawcett, Vice-President R.I.B.A.; Mr. E. A. Gruning, Vice-President R.I.B.A.; Mr. J. M. Brydson, Vice-President R.I.B.A.; Mr. Alex. Graham, Hon. Sec. R.I.B.A.; Mr. John Slater, Member of Council R.I.B.A.; Mr. H. H. Statham, Member of Council R.I.B.A.; Mr. Paul Waterhouse, Member of Council R.I.B.A.; Mr. J. J. Burnet, A.R.S.A., Member of Council R.I.B.A.; Mr. Leonard Stokes, Member of Council R.I.B.A.; Mr. J. S. Gibson, Member of Council R.I.B.A.; Mr. H. V. Lanchester, Member of Council R.I.B.A.; Mr. Thomas Drew, R.H.A., President Royal Institute of Architects of Ireland; Mr. J. Smith, President of Sheffield Society of Architects and Surveyors; Mr. A. E. Sawday, President Leicester and Leicestershire Society of Architects; Mr. E. I. Bennett, President Manchester Society of Architects; Mr. David Barclay, President Glasgow Institute of Architects; Mr. William Glover, President Northern Architectural Association; Mr. W. L. Bernard, President Bristol Society of Architects; Mr. Robert Evans, President Nottingham Architectural Society; Mr. E. A. Ould, President Liverpool Architectural Society; Mr. W. H. Bidlake, President Birmingham Architectural Association; Mr. W. Carby Hall, President Leeds and Yorkshire Architectural Society; Mr. Charles King, President Devon and Exeter Architectural Society; Mr. T. M. Cappon, President Dundee Institute of Architecture; Mr. W. Bell, President York Architectural Society; Mr. J. Coates Carter, President Cardiff, S. Wales and Monmouthshire Architects' Society; Mr. J. Souttar, President Aberdeen Society of Architects; Mr. Henry F. Kerr, President Edinburgh Architectural Association; Mr. J. Douglass Mathews, F.R.I.B.A.; Mr. Thomas W. Cutler, F.R.I.B.A.

Provisional Programme.

Monday, June 18th.—8 p.m. Reception by the President R.I.B.A. in the meeting room of the Institute, 9, Conduit Street, W. 8.30 p.m.

(first meeting). Presentation of the Royal Gold Medal. Owing to the unavoidable absence of the recipient, the Commendatore Rodolfo Lanciani, Professor of Roman Topography in the University of Rome, the medal will be received on his behalf by one of the secretaries of the Italian Embassy.

Tuesday, June 19th.—3 p.m. (second meeting). Paper: "The Official Control of Public Buildings," by the President R.I.B.A. 8.30 p.m. *Conversazione* at the Guildhall.

Wednesday, June 20th.—11 a.m. (third meeting). Papers: "The Collaboration of the Architect, the Painter and the Sculptor," by Mr. E. W. Mountford, Sir William Richmond, K.C.B., R.A., and Mr. Roscoe Mullins. 3 p.m. Visit to the new Westminster Cathedral. 8 p.m. (fourth meeting). Papers: "The Ideal City: Streets and Bridges: Public Monuments: Public Gardens and Open Spaces," by Mr. Halsey Ricardo, the Right Hon. the Earl of Meath, and others.

Thursday, June 21st.—12.30 p.m. Visit to be arranged. 3 p.m. Visits to Stafford House and other large houses. 8 p.m. (fifth meeting). Paper: "The Education of the Public in Architecture," by Mr. Reginald Blomfield.

Friday, June 22nd.—11 a.m. (sixth meeting). Business meeting—paper: "Uniform By-laws," by Mr. Lacy W. Ridge. Mr. Charles Hadfield (Sheffield) and Mr. A. E. Sawday (Leicester) will move the following resolutions:—

- (1) *That in the interest's of architecture it is inexpedient that buildings of a municipal character be designed and erected by engineers or surveyors having no architectural training.*
- (2) *That as a matter of sound finance and in the interests of ratepayers it is desirable that the duties of the borough engineer and surveyor should not include work of an architectural character.*
- (3) *That it is detrimental to the interests of the architectural profession that buildings of a municipal character should be designed and erected by the borough engineer and surveyor.*

3 p.m. Visits to Messrs. James Powell and Sons' glass works at Whitefriars, E.C., and Messrs. Holloway Brothers' works at Westminster. 7.30 p.m. R.I.B.A. annual dinner, Whitehall Rooms, Hôtel Métropole.

Saturday, June 23rd.—Visit to Greenwich.

NEW STATION AT NOTTINGHAM.

A WORK THAT HAS COST £1,000,000.

THE new station at Nottingham, the joint property of the Great Central and Great Northern Railway Companies, which was opened on Thursday last, was dealt with in a general way on page 278 of last week's issue. We now give some details of the great structure fronting Melbourne Street. The undertaking entailed the acquisition of an immense amount of property (luckily for the most part of a character which could well be spared), and has led to a complete transformation in the means of access to the eastern portion of the city, whilst it inevitably brought in its train the removal of many ancient landmarks. Briefly, all the buildings from a point at the west end of Woodborough Road as far as Lower Parliament Street have been cleared away. From Woodborough Road to Thurland Street, which may be roughly taken as the northern and southern limits of the alterations, the distance is 700 yds., and the average width is 83 yds.; and when it is remembered that the whole of this space has had to be excavated to a depth of 58 ft. at the Woodborough Road end and 27 ft. at the Parliament Street end, some idea may be gathered of the engineering difficulties that had to be surmounted. From this site 580,000 cub. yds. of material have been removed. The actual extent of the building frontage to Melbourne Street is 250 ft., and it rises to a considerable height. The tower, which is still incomplete, will be carried up to more than 100 ft. Designed in the Renaissance style, the buildings are constructed partly of Darley Dale

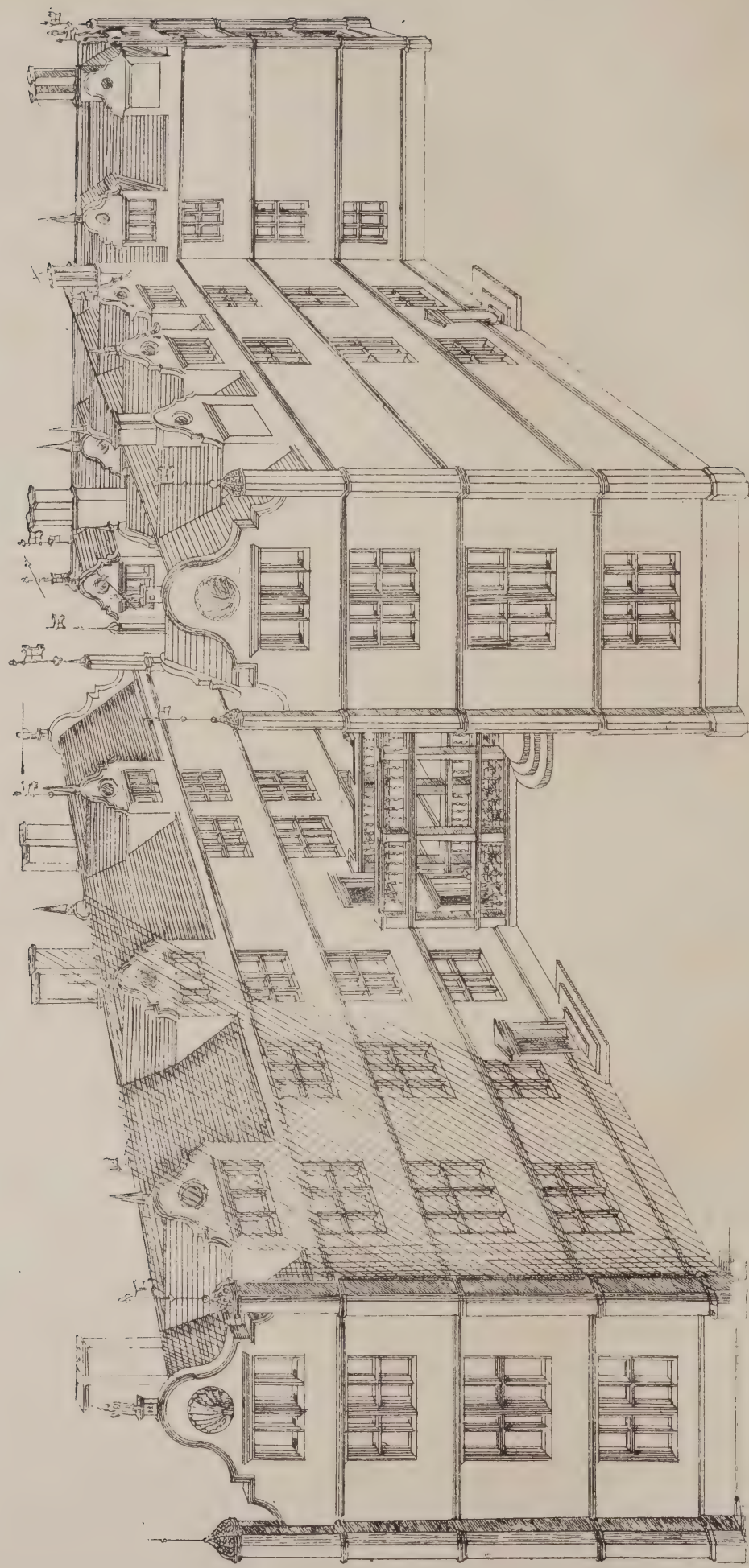
stone and partly of Nottingham pressed bricks. The lower portion, to a height of 23 ft., is faced with stone, and the first floor, to the under side of the main frieze, with pressed bricks and stone dressings, whilst the frieze itself and the dormers and gables are of stone.

At each end of the elevation are two massive wings, with pilasters on the ground floor and triple cylindrical columns on the first floor, whilst the booking hall is lighted by four large semicircular-headed windows, with stone mullions and jambs. The scheme is completed by rusticated columns running up to and breaking round the main cornice, and terminating with an ornamental pinnacle. The public footbridge from Melbourne Street to Glasshouse Street runs over the station at the north end of the station yard. The other public bridge, now known as Central Road, which has been open for a long time, is a massive structure, 279 ft. long and 40 ft. wide. It crosses the complete set of lines, its height above which is about 30 ft. Between the site of Cairns Street and Parliament Street, and from Bywell Street to Parliament Street, there are lofty retaining walls of blue brick, the first being 53 ft. high. The booking hall, which is entered from Melbourne Street, is 104 ft. in length and 66 ft. in breadth, with a height of 35 ft. Running round it, at a height of nearly 20 ft., is a handsome balcony giving access to a number of administrative offices on the first floor. It is panelled with pitch pine to a height of 11 ft., with plasterwork above. A cloakroom 50 ft. by 40 ft. adjoins the booking hall, with a basement of the same size, and this is connected with the luggage subway by an hydraulic hoist. When the spacious hotel which is to adjoin the subway has been erected, it will be connected with the booking hall by a covered way. At the north end of the main block provision has been made for dealing with the parcels traffic of both companies. Here are situated two offices 38 ft. square, with basements of similar dimensions, and a covered van-yard 75 ft. by 28 ft. Over the parcels office other rooms for the Companies' staffs are being fitted up. The largest basement is that under the booking hall, measuring 125 ft. by 66 ft. The main luggage subway is 14 ft. wide and 13 ft. 6 in. high, the walls being of glazed brick. Arrangements have been made for the drainage and roof water from the station to be dealt with in underground passages connected with the main subway by means of circular culverts 3 ft. in diameter, and through these also will be conveyed the gas and water pipes and electric cables. The roof of the station, which is entirely of glass, supported on steel principals, is divided into three spans, rising to a height of 42 ft. 6 in. above the level of the platforms. With a length of 420 ft., the central span has a width of 84 ft. 3 in., and each of the side spans 63 ft. 4 in. In addition to this, however, awnings extend for a further distance of 224 ft. north and south, over the bay platforms. All the walls in the station itself are faced with glazed bricks, with dressings of glazed vitrified terra-cotta, and the buildings upon the platforms are 40 ft. in height. In the dining and refreshment rooms the walls are lined with faience tiles, the floors are of ceramic mosaic, and the fittings of walnut. Granolithic flags are used in the paving of the platforms, and the whole of the station roof is accessible by means of ladders and gangways to facilitate cleansing operations.

Roughly speaking, the total cost has been a little over a million of money, but of this enormous sum the amount paid in compensation to the various owners whose property was affected came to more than one-half.

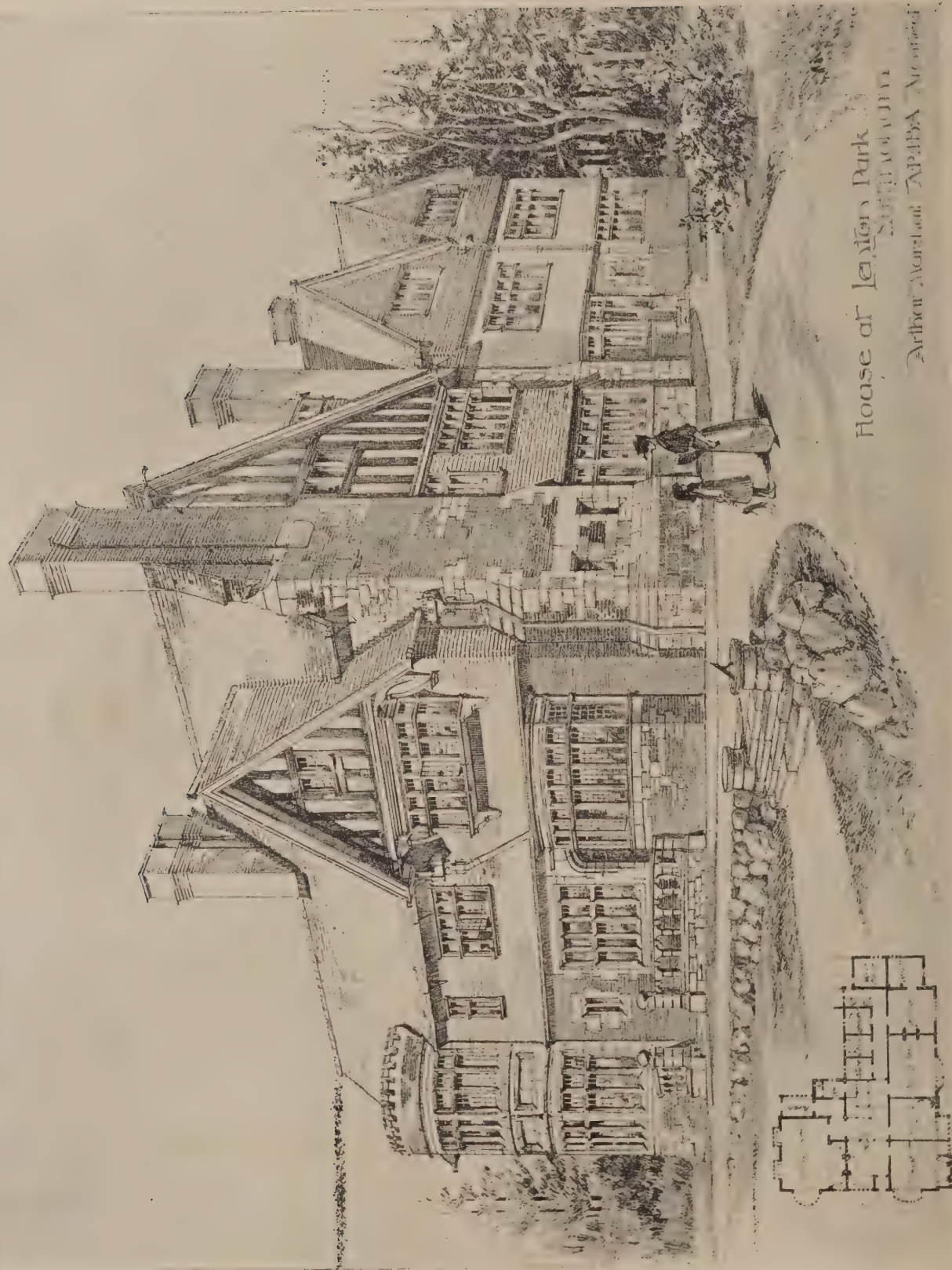
The whole of the works of the station buildings have been carried out by Mr. Henry Lovatt, of Wolverhampton, under the sole direction of Mr. Edward Parry, M.Inst.C.E., whose able assistants have been Mr. F. W. Bidder, Mr. A. E. Lambert and Mr. A. A. Barker, these gentlemen having been largely responsible for the engineering and architectural arrangements. The excavations for the site, the large bridges over Parliament Street and York Street, with the retaining wall, permanent way, &c., have been made by Messrs. Logan and Hemingway.

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House at Lenton Park,
Nottingham.
Arthur Marshall, A.R.B.A., Architect.

HOUSE AT LENTON PARK, NOTTINGHAM. ARTHUR MARSHALL, A.R.B.A., ARCHITECT.

DESIGN FOR
PUBLIC LIBRARY
PORT ELIZABETH

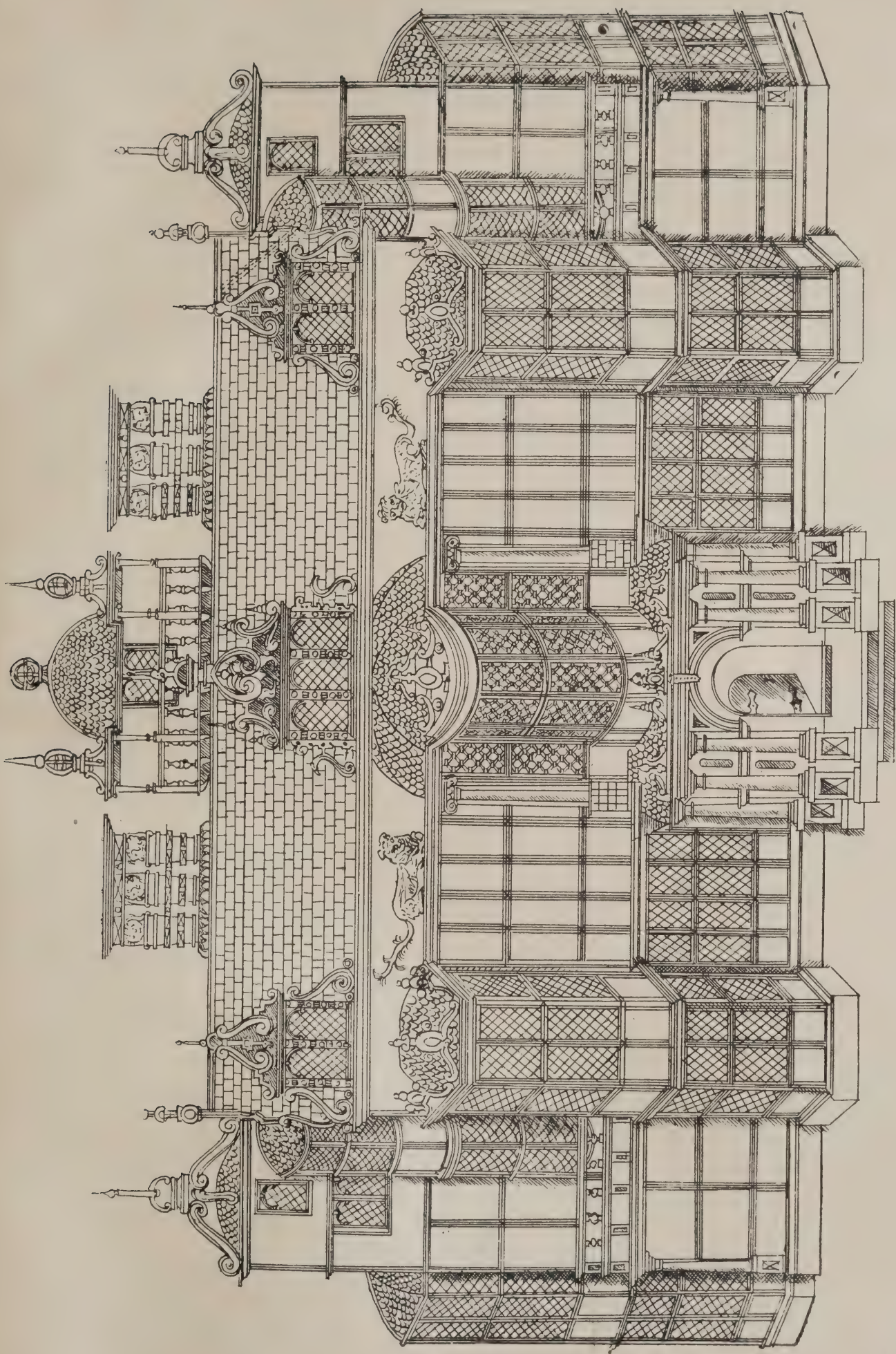
FRANK SELBY, ARCHT.



VIEW OF PROPOSED
FRONT

DESIGN FOR A PUBLIC LIBRARY AT PORT ELIZABETH. FRANK SELBY, ARCHITECT.

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ELEVATION OF A HALF-TIMBER HOUSE. FROM THE JOHN THORPE COLLECTION. (See p. 299.)

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Bricks and Mortar.

APHORISM FOR THE WEEK.

"If you get simple beauty and nought else,
You get about the best thing God invents."

—BROWNING.

Our Inset Sheets. The elevations of houses by John Thorpe are dealt with in the article on "Elizabethan Architecture," which commences on page 299. The design for a library at Port Elizabeth, South Africa, is by Mr. Frank Selby. This design was a competitive one, and the building was to cost £40,000. The materials proposed to be used for the elevations were cut granite for the ground floor, with red and buff terra-cotta above, and green slates on the roof. The house at Lenton Park, Nottingham, was completed towards the end of last year for Mr. W. G. Player. It is built of Ruabon bricks and Corse Hill stone. The interior has much elaborate woodwork. The work has been well carried out by Messrs. T. Fish and Son, of Nottingham, from plans and under the supervision of Mr. Arthur Marshall, A.R.I.B.A., of Nottingham.

A Worthy Petition. THE Society for the Protection of Ancient Buildings has presented the following memorial to the London County Council:—"We, the undersigned, desire to express our hope that the London County Council will use its influence for the preservation of the ancient houses on the west side of Lincoln's Inn Fields, some of which are reputed to be the work of Inigo Jones.—(Signed) G. Aitchison, R.A., L. Alma-Tadema, R.A., Balcarras, John Belcher, A.R.A., Walter Besant, G. F. Bodley, A.R.A., John T. Brunner, James Bryce, Carlisle, Martin Conway, Walter Crane, Frederick Duleep-Singh, Ernest Flower, E. Onslow Ford, R.A., W. Holman Hunt, T. G. Jackson, R.A., Godfrey Lushington, A. Lyttelton, Q.C., W. Q. Orchardson, R.A., Philip Norman, J. A. Rentoul, Q.C., H. C. Richards, Q.C., W. B. Richmond, R.A., Herbert Robertson, J. C. Robinson, John S. Sargent, R.A., J. Benjamin Stone, A. Waterhouse, R.A., Aston Webb, A.R.A."

Home Arts and Industries. THE sixteenth annual exhibition of the Home Arts and Industries Association was held last Thursday, Friday, Saturday and Monday at the Royal Albert Hall, the stalls extending right round the gallery. On Thursday Princess Christian, accompanied by Earl Brownlow, the president of the Association, visited the exhibition. The constant and direct interest and aid given by Royalty to the Association has been of great service in the extension of its field of operations. The Association has now nearly 500 classes in various towns and villages throughout England, Scotland, Wales and Ireland, as against the forty begun with. The principles worked on are, in great part, Ruskin's, who gave his help and sympathy to the Association from the outset, and show by their success that they are right ones. The methods employed are to organise classes in which attendance is entirely—voluntary—and teaching almost entirely—voluntary, and to distribute to these classes selected designs and models and leaflets of information. To further the work of these classes a central office and studios are maintained in London, a yearly report published describing experiments in class-holding, and a yearly exhibition and sale held, where the work done in the various classes may be compared and criticised and where certificates of merit are awarded. The object of the association is educational and not commercial.

This Year's Exhibition. THE stalls at this year's exhibition represented over 100 classes and comprised specimens of wood-carving, inlaying, repoussé metal work, hammered iron, embossed and cut leather work, book-binding, pottery, baskets, handspun linen and woollen fabrics, lace, embroidery, smocking, plain needlework, knitting, rugs,

toys, &c. Space does not allow us to deal with the exhibits in much detail. The exhibits were, on the whole, of high merit with regard to the designs and of good craftsmanship. There was a large number of wood-carvings, chiefly notable being some from pleasing designs by Mr. Joseph Phillips. The repoussé copper work showed how effectively this work can be applied to decorative and domestic uses; Mr. Harold Stabler showed some repoussé screens, Mr. Walter Witter a neat fire screen, and Mr. J. Williams sent an excellent repoussé mantelpiece, for which a silver cross was awarded. Mr. Harold Rathbone's class, Birkenhead, exhibited examples in Della Robbia ware, two very pleasing panels being exhibited by Miss E. M. Rope. This ware is coming into great use on account of its great suitability for outside use by reason of its freedom from dirt and smoke colouring, but still its highly glazed surface is very objectionable, and if at all brilliantly coloured looks tawdry for decoration. Mrs. G. F. Watts' Celtic decorations carried out in terra-cotta were remarkably good and suitable to the material. Mrs. Watts' terra-cotta and the leatherwork designed by Miss Baker were, perhaps, the best things at the exhibition, the coloured leather work being most admirable. One of the gold crosses, which are the highest distinction at the disposal of the judges, was won by an exhibit of drawn thread and cut work by Annie Christie of the Langdale class. A curtain, woven and dyed by Charles Hugh, of the Llandaff class, after a design by Miss Mabel Hill, secured another of the gold crosses; and a third was given to Mrs. Waterhouse for the copper and brass repoussé work made by her class at Yattendon.

Dundee's Baths. IT is expected that the new baths and wash-houses to be erected in Constable Street and Caldrum Street, Dundee, will be ready by next spring. The Constable Street block is to be built of freestone with red brick facings. It will be two storeys in height, and the first floor will be laid out in washing stalls, of which there are to be forty-five. The experience gained in the Guthrie Street Baths—from the first an unqualified success—will be used to good advantage in Constable Street and at the other establishment in the north of the city, for everything conducive to comfort and the quick and convenient despatch of work will be introduced. The stalls will be large and well lighted, and, of course, supplied with a plenitude of tubs, wringers, &c. Offices, stores, stove-rooms, and entrance vestibule complete the accommodation on the ground floor, although a large boiler house is also provided for. On the second floor will be placed a waiting-room of extensive size and neat design. This apartment may be utilised as a reading or recreation room, although nothing definite in this direction has been decided upon. Such an innovation, however, would undoubtedly prove popular. The entrance to the baths (eighteen for men and twelve for women) is to be had from this floor. A new feature will be spray baths at a cheap rate, together with a suite of Turkish baths. The Caldrum Street building will resemble the other in many details, both outwardly and inwardly. In frontage it will be narrower, and it is proposed to put down only thirty-three stalls to begin with. Should occasion demand it, however, a policy of enlargement will not be impossible. There will be fifteen baths for males and twelve for females, with sufficient spray baths and Turkish rooms. At both new centres Turkish baths will be made a feature, as it is felt by members of the Town Council and others that this is a form of curative luxury which is not so thoroughly appreciated by the masses as it might and ought to be.

St. Saviour's, Southwark. A BEAUTIFUL drawing of the interior of this church by Mr. Hedley Fitton was published in the "Daily Chronicle" for May 23rd last, and the following extracts are taken from the accompanying letterpress:—"Beautiful as it is externally, the Church of St. Saviour, Southwark, the cathedral church of the new diocese

over the river, is internally one of the noblest ecclesiastical buildings in London. Probably its most distinguishing feature is the Lady Chapel at the east end, a fortunate survival of the numerous alterations made in the church early in the seventeenth century. Nine groined arches, dividing the roof of the chapel, are supported by two rows of six octangular pillars, with small circular columns at the four points; and the large window at the east end is divided by slender pillars into three lancet-shaped windows. Architecturally, also, the Lady Chapel is interesting as an illustration of the development of the pointed style. First there is the lancet-shaped window with the tooth ornament—called by French antiquaries "Violette," because of its likeness to that flower when half expanded—then the triple lancet, held together by an enclosing arch, next two three-light mullioned windows, and lastly, the blank flamboyant windows behind the screen, belonging to the decorated period of Edward III. At the north-east corner of the chapel is a wooden enclosure, containing a table, desk, and high seat. Here the Bishop of Winchester transacted business until the beginning of the present century, and the chapel itself was the scene of the trial and condemnation of many of the martyrs of Mary's reign, seven of whom are commemorated by lancet windows in the north-east and south-east. Dividing the Lady Chapel from the choir is a richly-decorated screen, which was restored by public subscription in 1832. The choir is a perfect example of Early English work, and the screen is magnificent, not only in its arrangement, but in its general design." In our issue for November 8th last we published an article dealing with the work of the late Sir Arthur Blomfield at St. Saviour's, which should be of interest at this time.

Melbourne to Blame. WE are now becoming accustomed to the periodical outbursts against the system which allows the veterans who have fought the nation's battles to exist on a miserable pittance, and finally die amidst poverty. A similar complaint could be made against Melbourne for having allowed the man who made the first survey of its site to close a long life in poverty and privation. It was only a few weeks before his death that the meagre pension of 30s. a week was granted, but, as usual, neglect in life has been followed by posthumous praise. Born in London in 1808, Mr. Robert Russel was articled to a firm of architects and surveyors, and was employed upon the repairing of Buckingham Palace years before the Queen ascended the throne. In 1832 he emigrated to Sydney, and three years later was despatched by the Government to report upon the little settlement which had been formed at the head of Port Phillip Bay, the germ of the Melbourne of to-day.

Strand-on-the-Green. TO those who knew the old Kew Bridge, the present spectacle at that part of the river will be a little surprising, for only the piers and the lower portion of the arches now remain. The stones are being collected on the Surrey shore, and fears are being entertained by those who love the picturesque for that quaintest of riverside villages, Strand-on-the-Green, almost the last survival near London of the curious old waterside settlements of which Wandsworth, before it was so largely rebuilt, was one of the best examples. To those who saw how soon the rebuilding of Putney Bridge some years ago caused the almost entire reconstruction and modernising of historic Putney, it seems that the red-tiled roofs and curiously-peaked maltings of Strand-on-the-Green have little chance of surviving, for already the ominous black boards of the auctioneers and the land agent are appearing along the river frontage, while several gaps in the rows of miniature old-world cottages, so characteristic of the place, have already been made. The place was a favourite haunt of Zoffany, the portrait painter, in the last century, and until recent years harboured a Bohemian artistic colony, whose members were wont to declare that the "atmosphere" of it surpassed Venice!

PROPOSED NEW NATIONAL MUSEUM.

A LECTURE was recently delivered at the Society of Arts by Professor Flinders Petrie on "A National Repository for Science and Art." The preservation of material for study, he said, had become an urgent question. Many of the sciences rested on proofs and bases which were partly or entirely vanishing. We had nothing yet but stray examples of the prehistoric ages of other countries. In Egypt alone the prehistoric pottery extended to 900 varieties; and when he made an offer to the British Museum he was asked to send as few as possible. To get ten square yards more in English museums was a problem. The bulk of the Greek and Latin inscriptions that we possessed was stored in cellars of the British Museum in the worst of lights. When the earliest Greek tools were offered to the British Museum they were declined as being too ugly, and they were lost beyond recall. The subject of casts was a national scandal. As to the last 1,500 years, the prospect was far worse. Of our own architecture there was no collection, except a small one belonging to the Royal Institute of British Architects. There was no home for any remains of the innumerable buildings that were wiped away by modern changes. Every year the tribes of our Empire were dwindling, becoming extinct, or merging with their rulers. Our civilization had wiped out races at a greater rate in this century than in any other of the world's history. Yet there was no place where the remains of these peoples and of their civilizations could be preserved. At the beginning of the century the British Museum was begun in an airy suburb. At the end it was in the midst of square miles of houses, with land of high value around it. It was hopeless to suppose that such a site could be fit for the expansion of historical material. To say that nothing should be preserved that was not worth many pounds for each square foot was to destroy all hopes of progress. Yet we virtually did so by saying, "The price of preservation is £5 or £10 per square foot; perish all that is not worth so much." Two very different classes of buildings and of conservation were, in the lecturer's opinion, required. For valuable objects of which no possible deterioration must be permitted, and which must be safeguarded from risks of theft, such buildings as our present museums were admirable; but for rougher objects and things of small individual value a much less costly and elaborate system was needed. A fine site in a city, a noble building and costly glass cases were quite inappropriate to the greater part of the material which was to be kept and studied. The system to which the necessities pointed was that of long galleries, far apart, against which much larger annexes could be attached at any point. This might be called the gridiron pattern, and the building, of course, would need to be placed outside of London rents. He suggested that a square mile of ground should be obtained somewhere within an hour's train from London at a comparatively cheap rate. It would, in a generation or so, be to Greater London what South Kensington was to the Lesser London of fifty years ago. The village that would grow up round it might very appropriately be called, after the founder of the British Museum, the village of Sloane. The Sloane Galleries would soon outgrow any confusion with the little collection of Sir John Soane in Lincoln's Inn Fields. The lecturer worked out in considerable detail the form of the galleries, the cost, the arrangements for the staff, and the fittings, and said that at first the Sloane would be the clearing ground for freeing the existing museums from everything of small value and attractiveness. All that was absolutely required could be provided on the present system of expenditure if the British Museum were to be weeded during eight years of its more cumbrous and less valuable contents sufficiently to take in its new acquisitions.

LONDON'S GREAT NEW STREET.

ITS ARCHITECTURAL POSSIBILITIES.

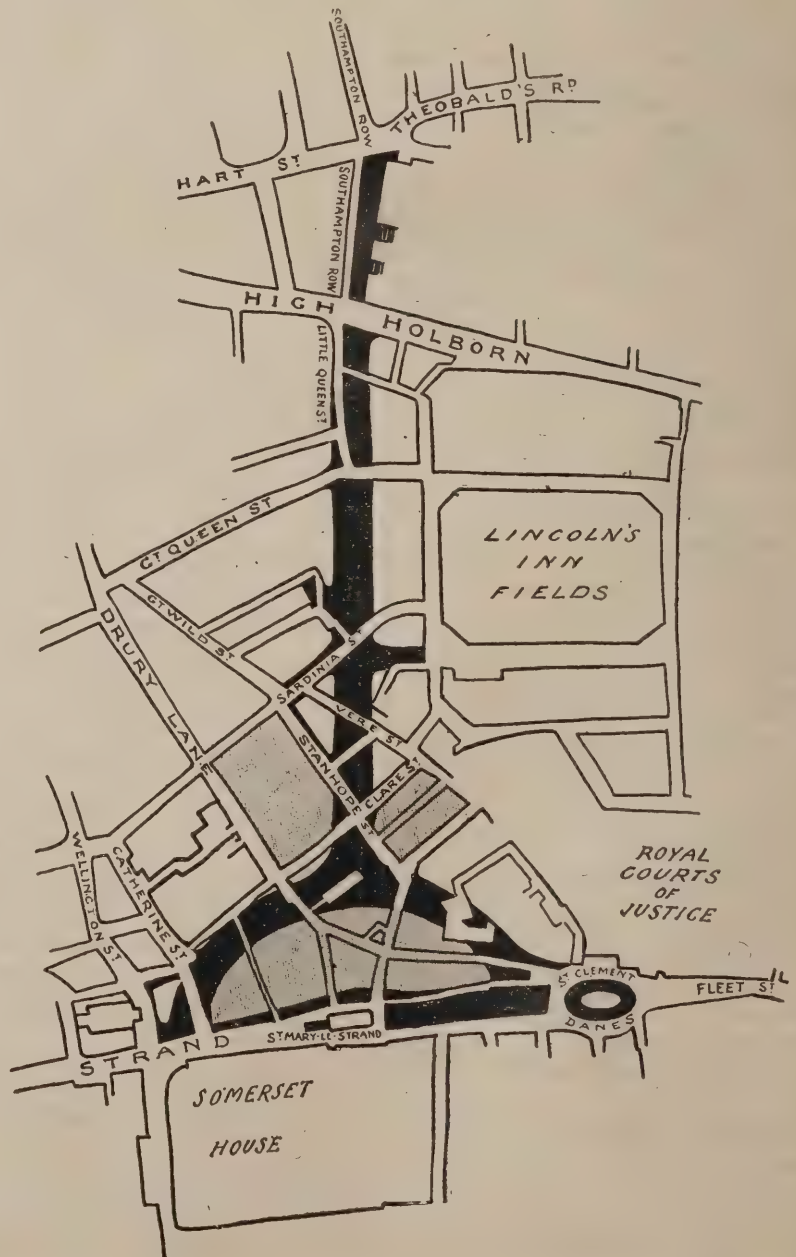
A MEETING of the Society of Architects was held at St. James's Hall, Piccadilly, W., on Thursday evening last (Lieut.-Col. F. Seymour Leslie, R.E., A.S.E.A., vice-president, in the chair) to discuss the architectural possibilities of the proposed new street from Holborn to the Strand.

The discussion was opened by Mr. W. Woodward, A.R.I.B.A., who said: "There can be little doubt that the new thoroughfare—the clearances for which are now in operation, and which will extend from Southampton Row, Holborn, to the Strand—affords a grand opportunity for architectural display, besides meeting a crying want as regards vehicular traffic from the north to the south of London. Personally, I am pleased to be able to speak to-night of this new street, because in the 'Prize Westgarth Essay,' which I gained in 1884, and in the papers on 'The Reconstruction of Central London,' which I subsequently read before the Royal Institute of British Architects and the Surveyors' Institution, I proposed a similar new street from Southampton Row to the Strand, terminating in a large Circus at the junction of Wellington Street,

and so on to Waterloo Bridge. That street is shown on the plans which accompanied my essay and papers, and in referring again, now, to my plan, I am not by any means convinced that the London County Council plan is better, either as regards traffic or architectural possibilities.

The new street really commences at the junction of Vernon Place with Southampton Row, and up to that point Southampton Row is widened, on its eastern side, to give a width of 80ft.; thence, from Holborn, there is a straight street 100ft. in width, terminating near the present Olympic Theatre, and then, curving eastwards and westwards in a graceful crescent-like form, the street discharges itself eastwards at St. Clement Danes Church, and westwards at Wellington Street. The Strand between St. Clement Danes Church is widened, giving a width of 100ft. and more at the narrowest part and leaving the church of St. Mary-le-Strand standing, and to that extent only reducing the width I have mentioned.

In considering this new thoroughfare, one's thoughts naturally turn to the Continent, and we think of Paris, of Brussels, Berlin, Vienna, and Budapest. The Boulevard de Sébastopol, the Grand Avenue des Champs-Élysées, the Boulevard Haussmann, in Paris; the Boulevard Anspach and others in Brussels; the comparatively poor streets and avenues



THE NEW HOLBORN TO STRAND THOROUGHFARE. PLAN SHOWING PROPERTY TO BE DEMOLISHED.

of Berlin; the magnificent streets and avenues of Vienna; and that fine thoroughfare, the Andrássy Street, in Budapest. And, with all this before us, we see that, properly dealt with, we Londoners have a chance now of eclipsing, or at all events equalling, architecturally, any of the streets or boulevards I have referred to. First, as regards the very

Important Question of Width.

I think that 100ft., building to building, is sufficient for fine effect, without entailing the dangers and difficulties of getting across which attach themselves to all great widths. Portland Place has a total width, building to building, of 126ft., made up of open area on each side, 10ft. in width; footway and curb, 17ft. in width; roadway and channels, 72ft. in width. The width of this street is the more striking because of the low altitude to which the houses are carried. Northumberland Avenue is 90ft. wide, which strikes everyone as insufficient, because of the high buildings which front it. The Gray's Inn Road, as widened, is 60ft. in width. One important question, therefore, which the Council will have to decide is the maximum height they will allow the new buildings to be carried.

I assume that a subway will be formed under the roadway for the sewers, gas and water pipes, telegraph and telephone wires, &c., and the material for covering the roadway, as well as that for the footways, will require careful consideration. The question of electric, steam, or other tramways will engage the attention of the Council, and I must say that I hope, if electric tramways are permitted, they will not be worked on the overhead wire system. The position of the electric lamps, whether in the centre or at the sides of the road, or whether in the centre from wires attached to each frontage, will also be a matter of importance. The great crescent does, undoubtedly, on plan, lend itself to great architectural possibilities; the beauty of the curve and its junctions with the straight open up a fine field for design, and the splendid width and length of the straight street should prove material upon which the skilful architect could erect structures worthy of the occasion and of the Metropolis. There is

One Criticism

of the Council's plan which will probably occur to architects in this room, and that is that the straight part of the new street, instead of terminating at the crescent, should have been extended so as to open up the flank of the church of St. Mary-le-Strand as a central feature; this I have shown on the accompanying plan. Everyone with an eye for effect must have tired of the long lines of architecture, all from the same mould, which grace most of the Continental thoroughfares, and the Council will therefore, to be successful, carefully consider the question of dealing with the street in blocks, and making each block so far one harmonious whole, but not necessarily making each block like its neighbour. A certain amount of freedom in design and in detail must be permitted, but in the mass the general lines must be adhered to. As regards this very essential matter of design, great care and discretion must be used by the Council. They must not be so severe and work on such hard and fast lines as to drive away building lessees; they must not strangle the picturesque in order to produce what may prove to be dull monotony, and on the other hand they must not allow this grand opportunity to be lost by permitting all sorts and sizes of buildings and all sorts and conditions of details.

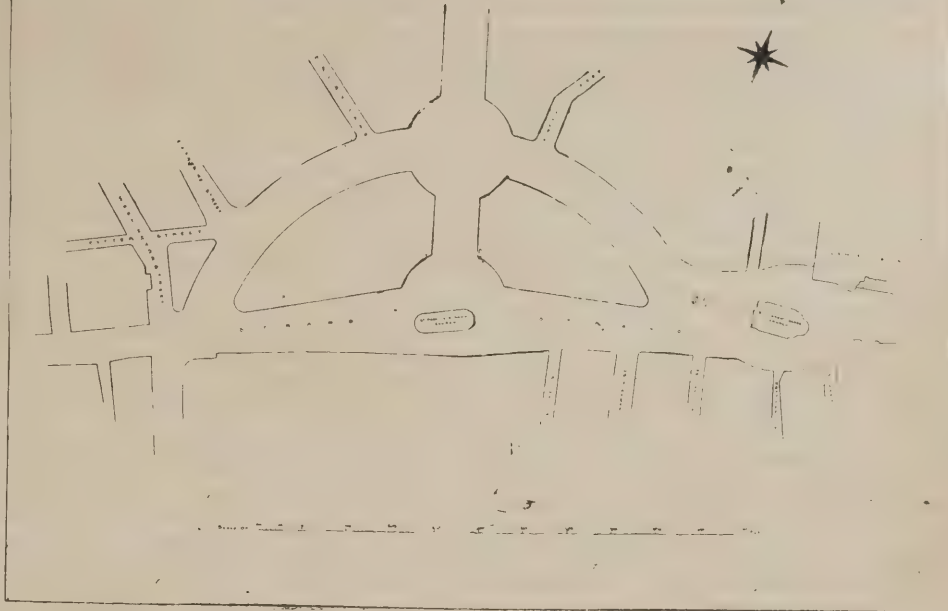
I suppose I need scarcely say that the Greenery Gallery and the Grosvenor Gallery and the Queen Anne and the Mary Anne will be tabooed, and I trust that the Council will put its foot heavily down on terra-cotta, and permit only Portland stone to be used in the fronts, as also in the chimney stacks and returns where left to be viewed from the streets.

On this question of architecture we all know that the Council, with a much-to-be-praised desire to obtain the best advice available, has decided to invite eight architects to send in

NEW STREET FROM HOLBORN TO THE STRAND

SUGGESTED ALTERATION BY W^o WOODWARD

TO OPEN UP THE CHURCH OF ST MARY-LE-STRAND.



designs for dealing with the difficult problems involved. Four of these the Council will themselves appoint, and four are to be nominated by the Royal Institute of British Architects. I do hope that the London County Council will insist upon the use of water pipes and sprinklers to prevent the great nuisance which arises from the pulling down and clearing away of old buildings."

Mr. W. R. Mallett, F.S.I., thought that the suggestion made by Mr. Woodward by which the church of St. Mary-le-Strand would complete the vista down the new street was a good one, though he did not see why a fine building could not be erected facing the end of the street as set out by the Council.

In the opinion of Mr. Ellis Marsland the Council were making a big mistake in choosing a select number of architects to design the new frontages, and it would have been better to have allowed building lessees to employ whom they wished, and then have had the designs submitted to a board of consultation. Referring to the height of the buildings, he said there was no indication to show what would be the depth, which would materially affect the height, but he thought a general height of 60ft. with two storeys in the roof would be satisfactory. This would not produce a street like Northumberland Avenue, which, though 90ft. wide, looked narrow on account of the tall buildings which fronted it. He objected to the scheme suggested by Mr. Woodward because it would give a view of the church of St. Mary-le-Strand which was never intended by the architect, who meant the church to be looked at from the west. It would be quite possible to have a monumental building opposite the end of the new street, and he thought such a site would be excellent for the Council's proposed hall. Besides, if the crescent were cut through as suggested, the traffic would go straight through and not divert in the manner particularly intended by the Council.

Mr. William Cooper regretted that the scheme was not thrown open to national competition, and, if it were not too late, he thought it would be advisable to petition the authority to make it national, and not restrict it to eight architects. He suggested that the crescent should be made more elliptical. With regard to the buildings, he

had always been struck by the opinions of foreigners, especially of Americans, about London, for they said that it was the most beautiful city in the world on account of its great variety. They did not want such monotonous uniformity as was seen in the buildings of Turin, for instance, and he did not think that the present architectural scheme would be satisfactory unless it was intended that all the new buildings should be of a monumental character, which was surely not the Council's intention.

Mr. R. Cromwell Edwards agreed with Mr. Woodward's proposal, but thought the street should be carried through as a footway and not as a carriage-way. He heartily concurred in prohibiting the use of terra-cotta, and pointed out that the flanks of the buildings should be finished in a proper manner, and not left in the rough manner now so common.

The chairman said it appeared that the elevations only were being considered, and he wanted to know what the buildings were to be used for—shops, offices, residential flats, or what?

Replying to questions Mr. Woodward said that it was the general opinion of the meeting that the limited competition was a mistake. He would have made it open to the world, and would not have been displeased even if a French or a Belgian architect were successful. The only way in which the Council could control the architecture was to stipulate that between certain points of the new street the buildings should be of one style, and between other points of another style. In suggesting the continuation of the street to the Strand he had in view a light and airy termination as opposed to a heavy one. In the matter of materials, terra-cotta seemed to him to be a hard, cast-iron material; it would not stand the London air, and showed a great change after fifty years' exposure, while Portland stone, as exemplified at St. Paul's Cathedral and the Horse Guards, weathered excellently. Nothing could be stated as to what buildings would be erected. The Council would have to wait for the building lessees. He thought that it would be better to build the proposed Hotel-de-Ville on a site near the Council's present offices at Spring Gardens, and not on a site facing the new street.

Lieut.-Colonel Probyn, who is a member of

the Improvements Committee of the London County Council, and who attended as a special visitor, said that, as the matters were now *sub judice*, he would need to speak with caution. But he would say that it was not the intention of the Improvements Committee, nor he believed of the Council, to impose upon lessees the employment of any particular architect, except in regard to the crescent portion of the new street. It might be in some persons' minds that the buildings of the whole street would be under the control of the selected eight architects. This was not so, and he assured them that while everything was being done to secure as fine a frontage as possible the greatest fairness would be extended to all concerned.

It might be mentioned in conclusion that this matter of the new street has been exhaustively dealt with in the "Architectural Review." In the number for December last appeared Mr. Mervyn Macartney's suggestions; in the March number the proposals of Mr. Norman Shaw, Mr. Reginald Blomfield, Mr. Halsey Ricardo, and Mr. Mervyn Macartney; and in the April number the opinions of Mr. T. G. Jackson, Mr. John Belcher, Mr. W. R. Lethaby, Mr. R. Weir Schultz, and Mr. Ernest Newton.

Surveying and Sanitary Notes.

The death is announced of Mr. George Dickenson, formerly town surveyor of Darlington, in his seventy-ninth year. For some years he carried on with his son, Mr. Joshua Dickenson, the practice of a surveyor and architect at Darlington.

Tender for Ludlow's New Sewerage Scheme.—The tender of Mr. J. A. Ewatts, of Warrington, amounting to £7,930, has been accepted for the new sewerage scheme for Ludlow. The lowest tender (£7,657) was sent in by Mr. Henry Roberts, of West Bromwich.

Sanitary Inspectors' Diploma.—The results of the examination held by the Sanitary Inspectors' Examination Board during the first week in May have just been announced. Candidates for the diploma of sanitary inspector required under the Public Health (London) Act of 1891 were examined orally and by written work, and were further required to examine and report on selected insanitary areas. The appended list gives the names of candidates who have passed the full examination and the institution at which each received instruction:—King's College: Mr. J. Johnson, Mr. J. Jones, Mr. A. W. Loughlin. Sanitary Institute and King's College: Miss E. S. Cann, Mr. J. I. Lonnon. Sanitary Institute: Mr. W. Brown, Miss E. A. McCleverty, Miss B. T. Orme. National Health Society: Miss M. K. Ede, Miss E. G. Gamble, Miss M. K. Long. Bedford College for Women: Miss M. O. Power.

The Mayor's Experiment.—The Mayor of Bradford has been trying a little sewage experiment privately at his house at Weeton, near Harrogate. Through the property there runs a drain which has suffered more or less pollution from a few of the neighbouring houses, and the Mayor was determined that if possible he would deal with the purification of this drainage effectively. Dr. H. Maclean Wilson, the chief inspector of the West Rivers Board, made certain suggestions which have been carried out by Mr. J. Wilcock, Mr. Lupton's architect, and which give every promise of a specially successful solution of the difficulty. The method suggested by Dr. Wilson was that of a septic tank and subsequent filtration. The sewage is led into a tank of about 600 gal. capacity, or sufficient for one day's flow. The tank is covered in and is air-tight, and here the microbes breed. From this tank the sewage is automatically syphoned out at intervals, and by means of a sparger it is distributed over the surface of a circular filter-bed, about 6ft. in diameter and about 5ft. deep. In this chamber the sewage is retained, and the filtered effluent is practically pure water.

Railway Charges for Builders' Materials, &c.—II.

By N. L.

(Concluded from page 266, No. CCLXXV.)

WHEN an article or a consignment is tendered for acceptance, it should always be closely examined, in order to ascertain that it is not broken or damaged in any way; before signing for it as having been received; or, if that is not possible, the words "not examined" should be added; but it is a common practice among many to sign for goods without seeing them. In the event of any loss or damage to goods they should either not be accepted, or accepted and signed for as damaged and a claim for the amount of the loss or damage sent to the railway company at once, excepting, of course, damaged articles carried at the reduced rate at owner's risk. Some companies are rather lax in dealing with correspondence relating to claims, and if nothing definite is heard it is well to remind them occasionally.

Exceptional Rates.—The exceptional rates for goods in which the builder is likely to deal are not difficult to understand. For most heavy goods, such as bricks, tiles, timber, &c., he is likely to find the exceptional rates hedged round with conditions, such as 4-ton lots, 4-ton loads, 2-ton lots, owner's risk, and, in goods from Classes 1 to 5, station to station (S to S) instead of collected and delivered (C and D). In the generic term of "hardware" (Class 3) most of his goods of that description are included, but not hollow ware, cast iron, nested and packed, Class 2; machines—(various), machinery—in parts in cases, Class 2; or files and rasps, Class 2. Builders' plant, described under "builders' implements" (which must not be new), comprises the following articles:—Barrows, centerings, crab winches, hoists, ladders, mortar boards, mortar mills, poling boards, pulleys, ropes, scaffold boards, steps, struts, trestles, wheeling pieces and planks, and windlasses; these are chargeable at the Class 1 rate. Timber is carried at the Class C rate, and, with a few exceptions, measurement weight is taken (being ascertained by calculating 66 cubic feet to the ton) of deals, battens and unprepared boards not exceeding 4in. in thickness of fir and pine, other than pitch-pine, which is calculated at 55 cubic feet to the ton. All light wood, such as chestnut, elm, fir, spruce and walnut, is calculated at 50 cubic feet to the ton, and heavy wood, like birch, green-heart, jarrah, mahogany, oak and teak, at 40 cubic feet to the ton. Posts and rails for fencing and paving blocks are calculated by actual machine weight. Deals, battens and boards of fir, pine, pitch-pine, also alder, ash, beech, birch, fir, hornbeam, larch, oak, pine, pitch-pine, plane, poplar, spruce, sycamore and teak sawn into planks or sawn and hewn into square or wany-edged logs, stavewood and lathwood, post and rails for fencing, and paving blocks, may be charged any exceptional rate noted for deals, battens and boards. Planed and prepared boards are charged Class C, or 10 per cent. over any exceptional rates for deals, battens and boards, but not to exceed Class C. Scaffold poles are charged 20 per cent. over Class C rate, or 20 per cent. over any exceptional rate noted for deals, battens and boards. When forwarding timber, the railway companies require that the number of cubic feet should be stated on the consignment note.

Insurance.—Under the Carriers' Act the railway companies are not liable for any damage to a few articles of a valuable nature unless they are insured, but the only one of interest to builders is glass, of all kinds. The charges for insurance are governed by the description. Plate glass of an area of more than 36 feet super. to the sheet, and stained, silvered and bent glass are in Division 4, and the insurance is about five times as much as that for any other kinds of glass, which are in Division 2. For instance, to insure glass worth £25 or less (any distance) in Division 4 is 2s. 6d.;

Division 2, 6d. From £26 to £50 in Division 4 is 5s.; Division 2, 1s. From £51 to £75 in Division 4 is 7s. 6d.; Division 2, 1s. 6d., and so on.

Returned empties are charged at a uniform rate on a mileage scale; thus, not exceeding 25 miles, 4d. per cwt. (minimum charge 4d.); 50 miles, 6d.; 100 miles, 10d.; 150 miles, 1s. 1d.; 200 miles, 1s. 4d.; 250 miles, 1s. 7d.; 300 miles, 1s. 10d.; and 350 miles, 2s. per cwt.; with minimum charges of 56lbs. and 6d.; but if the goods are going to or coming from a London station 2d. must be added to all these figures. Collection and delivery is included in places where such service is performed, but carriage must in all cases be prepaid. Returned empties must be from the same station and consignee to which and to whom they were carried full by railway, and to the same station and consignor from which and from whom they were carried full by railway. Returned empty china and earthenware crates are charged double ordinary rates, with a minimum charge for 56lbs. of 1s., except under 25 miles, which is 8d. A few of the smaller companies have a scale of their own for local traffic over their own lines.

In conclusion, I have tried to place the somewhat complicated matter of railway charges in as simple a manner as possible, but in these short articles it was obviously impossible to enter very fully into details; but I think sufficient information has been given, especially with the help of one of the books mentioned in the previous article, to enable any who may wish to go more fully into the subject to do so.

Builders' Notes.

Glasgow Building Regulations Bill.—This Bill (a summary of which is given on page 339 of the BUILDERS' JOURNAL for January 3rd last) has been passed by a Committee of the House of Lords on Unopposed Bills.

Scottish Timber Trade "Combine."—The new combine in the timber trade of the north-eastern district of Scotland includes Messrs. Fleming and Co., Ltd., Aberdeen; Bell and Sime, Dundee; and Thomson and Co., Glasgow. The shares will shortly be offered to the public.

A New Surveying Appliance.—The "orograph" is a new surveying machine made for the U.S. Army Engineering Corps. It is a species of bicycle drawn along the ground by two men, and it makes a profile of a road or stretch of country as though it were done by "chain and level." The apparatus is fully described in the "Scientific American."

London County Council.—At last week's meeting of the Council the tender of Messrs. Mowlem and Co., amounting to £92,680, for an additional northern outfall sewer was accepted. It was decided to spend £2,500 in laying out Archbishop's Park, at Lambeth. It was found that the expenditure of affording skilled mechanics the opportunity to visit the Paris Exhibition could not be justified.

Fire Tests.—The investigations undertaken by the British Fire Prevention Committee on Wednesday afternoon last comprised a test with two fire-blinds and a test with the so-called "Mack" partition. The test with the fire-blinds was intended to demonstrate the protection that could be afforded to windows and doors facing property in which there was an outbreak of fire, and which may be only separated by a small area or alley. This test was of one half-hour's duration. The partition test was to show the fire-resistance of a thin partition followed by the application of water, the test having a duration of one hour and a quarter, and the temperature ranging up to 2,000deg. Fahr. There was a large attendance of members and visitors at these tests, including many district surveyors and public officials, and prior to the testing operations the members of the executive and officers of the committee attended a luncheon in honour of Her Majesty's birthday; this luncheon will probably become an annual fixture.

Correspondence.

War Office Contracts.

To the Editor of THE BUILDERS' JOURNAL.
LONDON, S.E.

SIR,—On Saturday, May 12th, a statement appeared in the "Times" newspaper to the effect that we had been removed from the list of contractors to the War Office for offences under the Corrupt Practices Act. The following paragraph appeared in the "Times" on Friday, May 18th, contradicting their former incorrect report:—

WAR OFFICE CONTRACTS.

In reference to the report of the proceedings of the Select Committee on War Office contracts which appeared in our issue of the 12th inst., we are requested by Messrs. Stiff and Son to state that they were not struck off the list of War Office contractors for offences under the Corrupt Practices Act. The evidence appears to show that a young member of the firm went to Woolwich and looked at some stores that were under inspection and had been rejected. In the course of his visit he offered small gratuities to the foreman and viewer, which, he said, he did for assistance they rendered him, and in ignorance, as he thought it was in the ordinary course of business, when people had done a service, to give them a little remuneration. The witness, Mr. Major, who was under examination, stated this act was held to be sufficient to justify a suspension, but it was only a suspension for twelve months, because it was known that Messrs. Stiff and Son were a very respectable firm who had done a great deal of good work. We regret any injustice we may have done Messrs. Stiff and Son.

We may add that out of nearly £7,000 worth of work executed for the War Office during the last six months, less than £10 worth has been rejected, these small rejections being partly due to damage sustained by the goods in transit from our works to Woolwich. A few articles were, however, rejected principally because the weight and size were not quite correct. These articles formed the first delivery on account of contracts now in hand, and our representative spent nearly an hour at Woolwich in ascertaining very accurately the exact requirements of the War Office. On leaving he innocently offered the foreman and workman who had assisted him small gratuities. The War Office have a stringent rule that no employee of theirs is to receive a gratuity on any account whatever, and to mark their displeasure at this breach of their rules they have suspended us from their list of contractors for one year. In view of the partial and incorrect accounts which have appeared in various papers, we venture to ask you to insert this complete statement of the facts.—Yours faithfully,

JAMES STIFF and SONS.

The late Sir George Gilbert Scott R.A.

To the Editor of THE BUILDERS' JOURNAL.

EXETER.

SIR,—It is to be assumed that "C. G. H." is not old enough to remember the late Sir G. Gilbert Scott personally. Had he really known the greatest architect of the nineteenth century, he would have honoured his memory, and not sneered at him in the contemptible manner he does under the heading of "Restoring Doncaster Church" in your issue for last week. Sir Gilbert was neither grabbing nor grasping. He was a broad man, enthusiastic in his profession, a splendid general, and he possessed the happy knack of putting the right man into the right place. In the zenith of his fame, I recollect at his unobtrusive offices in Spring Gardens S.W., he had a staff of no less than thirty-six assistants, and these, taken as a whole, probably represented the very best Gothic men in the country. And the system that prevailed in those offices was simply marvellous. Contractors were never kept waiting by the hour, as was and is sometimes the case in minor architects' offices; details and everything else were always ready to the minute.

On this point Sir Gilbert offered striking contrast to the late Mr. George E. Street. Many a time I saw the latter in that upstairs office of his in Cavendish Place, W., standing at his desk knocking off large detail drawings—and beautiful drawings too—at the rate of a dozen and more an hour, but in spite of that and all his wonderful energy and

ability, Mr. Street was always behind. The most vexatious delays were constantly occurring "all over the shop" on Mr. Street's jobs, because the foreman or clerk of works in charge was "waiting for details." Mr. Street, as a rule, large as was his practice, drew all details with his own hand in pencil. Sir Gilbert aimed at nothing of the sort, but he had at his command splendid specialists who did what he wanted, and who, always in complete touch with their work, had everything ready as it was required. So far from "lacking time to perform his work with due care," he was an apt illustration of the old saying that it is the busiest man who has the most time. No architect I have known during the last forty odd years—and their name is legion—ever took greater pains to have everything thoroughly and conservatively worked out than did the late Sir G. G. Scott. Nothing was too little for him—nothing too big! His was the master mind, and he kept in touch with everything and everybody. When (from 1870 to 1877) he had the renovation of the interior of Exeter Cathedral in hand, he was frequently there, and was went to do his best to "dodge" the Dean and Chapter, so that he might have quiet converse with those employed upon the restoration. "There," he would say to the late Mark Brock, one of the best joiners who ever lived, "I have managed to get rid of them" (the Chapter), "now we can have a quiet hour together, and I shall learn something." And whilst learning he taught.

Very well do I remember his judging craftsmen's work and presenting the prizes one evening in 1864 at South Kensington Museum. An award was offered for the best miserere in oak. A splendidly-carved specimen represented a blacksmith shoeing a horse; it was exceedingly clever, and was the handiwork of a Scotsman named Kemure. We all thought he was sure of the prize, but Mr. Scott passed it over and gave it to a Taunton man called Seymour, who sent a miserere with a stone-mason at work at a banker carved upon it, which, as an actual work of art, was many degrees inferior. And this is what Sir Gilbert, then Professor, Scott said: "It may be considered Kemure's work is by far the best, and so in delicate manipulation it undoubtedly is; but in architectural detail we must always study utility. The shoeing smith would be valuable under a glass case; as a corbel it is practically valueless, for the first time that particular miserere was used the smith's hammer and the horse's detached and delicately undercut bridle would be broken off. The mason, with his stone and his upraised mallet securely attached to the ground of the projecting bracket, is, on the other hand, thoughtfully bossed, so that no amount of daily use can hurt it."

Remember, young men, that whatever work you do, must be thoughtful work. Grasp thoroughly what your respective task is, and that knowledge attained, go about it with all your might. That is one of the many lessons Sir Gilbert taught me years ago, and I am very grateful to him for it. The late Sir Gilbert taught workmen to think.

As for the matter of the stone decaying in places at Doncaster Church, built in the fifties, that is no fault of Sir Gilbert Scott. There is probably not a large stone building existing in England that was erected forty years ago upon which, to-day, defective masonry cannot be pointed out. If there is, I do not know it.—Yours obediently,

HARRY HEMS.

Architecture at H.M. Office of Works.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, W.C.

SIR,—It is a coincidence, although probably an accidental one, that the issue of your journal for May 16th contained two diatribes directed against those departments of the Government in which the architectural world is—or should be—most interested, against which it ceaselessly complains, and for the sins of which it fails to prescribe any remedial measure. Even the authors of the contributions referred to seem to content themselves

with adjectival averments which, even if accurate, leave matters at a standstill.

One cannot help regretting that the long letter on "Civil Service Appointments" (see page 265 of the issue mentioned) should be couched in such strong language. The truths which it contains necessarily fail to convince owing to the many statements made concerning the accuracy of which there cannot be entire unanimity of opinion.

It may be useful to confine our attention to one particular department, and probably the English Office of Works will prove the most interesting, since it possibly has called forth more criticism from the architectural profession than any other branch of the service. Owing to the many important buildings for which this department is responsible, it seems imperative that architects as a body should not content themselves with adverse criticism, but formulate a definite petition to right some of the wrongs which obviously exist.

Primarily, one would point out the harm of the present examination system for "2nd class surveyors," which appellation in itself seems an insult to any architect who wishes to join the permanent staff of the Office of Works. Until quite recently only the most superficial knowledge of architecture was necessary to enable the candidate to be successful in this examination, the result being such an alarming collection of surveyors, in the literal sense of the word, that even Government officials grew frightened and instituted an examination which necessitated some knowledge of architectural style and design. The first essay in this direction has been a deplorable failure, only three candidates presenting themselves. Of these three two failed entirely, whilst the remaining one barely managed to obtain the requisite half-marks in compulsory subjects.

Surely the time has arrived for the "powers that be" in the Office of Works to recognise the futility of examinations if they wish to obtain architects on their permanent staff?

The current number of "A. A. Notes" contains an article by Mr. Bulkeley Cresswell which deals with examinations in architecture; some of the remarks which occur in the course of the paper seem so pertinent that one ventures to apply them to the case in point. "An examination to qualify architects would reduce to an absurdity the established theory of education in this country. . . . Even if the test of memory, which is the test chiefly comprised in examination, were a sound and truly discriminating test in such positive subjects as law and medicine, it would still remain utterly fatuous to apply it in the case of architecture. . . . In every building each moulding drawn and each nail driven for the reason and by the mere knowledge, that it has been so done before is a contribution to the sarcophagus of architecture."

Such sentences, directed as they are against the general principle of qualifying architects by examination, appeal with additional force against examinations held by a department which already employs a presumably fully qualified architectural staff. One is aware of the fact that this staff is not officially recognised, that its members are called "temporary draughtsmen," and that theoretically the surveyors who have passed the examinations already referred to, in which architectural knowledge was considered superfluous, are responsible for the designs which emanate from the office.

The pretence of the past, however, has proved a failure, and if it is the desire of the chief of Office of Works to improve their architecture, one would suggest to them the desirability of improving the status of the architects they employ. What inducement at present exists to tempt a good designer to join or remain in the Office of Works? The highest salary he can ever hope to obtain is £312 a year; he is practically a weekly hiring and liable to seven days' notice of dismissal. Is it therefore wonderful that men of ability prefer to go to private firms or such bodies as the County Council, where they have chances of promotion?

The object of this letter has been to suggest some remedy for the ills that exist in the Office of Works, in order that the public may obtain

better architecture, and architects have less cause of complaint. It is, however, obviously impossible to do more than shadow forth a possible solution of the difficulty; one would like to see some of the prominent members of our calling memorialize the Chief Commissioner of Works, also Lord Esher and the Chief Surveyor of the Office of Works, who, fortunately, happens to be an architect, a Fellow of the Institute, and a member of its Council; one would like to see this sorry farce of a surveyors' examination dealt with as it deserves; and one would like to see young architects eager and proud to design Government buildings which should be a credit to our country and our craft.—Yours truly,
H. S. M.

“BUILDERS’ JOURNAL” SHILLING FUND.

BUILDING OPERATIONS BEGUN.

WE have received several further donations towards this fund, and shall publish our final list next week. Our readers have responded very liberally to our appeals, but we hope to receive still further contributions during the last few days our list remains open. Will all our friends kindly remember that Monday next, June 2nd, is the day on which we have decided to close the list? We should be glad to receive any outstanding collecting forms not later than the first post on that day. We give this week a few particulars of the progress of the general scheme with which our fund is connected.

Building operations on the Homes for Disabled Soldiers, presented by the Building Trades Gift, have just been commenced by Messrs. George Trollope and Sons, the well-known builders, who are kindly executing the work on behalf of the donors. A special light railway connection has already been formed between Bisley Station and the site so generously presented by Lord Pirbright, which lies to the east of the Ranges on the Stafford Lake Road, so that rapid progress can be made with the building operations.

About £6,000 in money is still required to complete the scheme for accommodating one hundred men, and collections have now been commenced throughout the Midlands and Yorkshire, which example of provincial effort it is hoped will be soon followed in other districts. All offers of assistance, whether in money or in kind, should be addressed to the Executive at 1, Waterloo Place, Pall Mall, S.W.

The Printing Arts Company Ltd., of Holbein House, 119, 121, 123, Shaftesbury Avenue, W.C., send us a copy of a little booklet containing Kipling's well-known war verses, illustrated by sketches by Gordon Browne, W. Hatherell, Stanley L. Wood, Frank Dadd, and Frank Craig. The feature of this publication is that it is the first issue from the Orloff Press in England, all the colours being printed at one operation, and not in succession, as is usual. Twice through the six-colour machine produces the same result as twelve times through an ordinary colour press. There are 100,000 copies of the booklet to be had at one shilling per copy, of which threepence (that is, the publishers' profit) will go to the “Daily Mail” Absent-minded Beggar Relief Fund.

Mr. T. F. Rider, Past-President National Association of Master Builders, as Honorary Secretary to the Gift, announces the following further contributions which have come to hand this week:—

SUBSCRIPTIONS.

	£	s.	d.
The Derby Master Builders' Association, per concert	50	0	0
Mr. A. Wright, being the proceeds of a concert	50	0	0
The Carpenters and Joiners of Wolverhampton, per Mr. W. Vincent Vale...	29	16	1
Workmen of Messrs. Dent and Hellyer	7	11	6
Workmen of Messrs. James Styles and Son	5	6	6
Messrs. James Styles and Son	5	5	0
Messrs. James Day Burchett, Ltd. (Ealing)	5	5	0
Mr. T. D. Grady (Bromley, Kent)	5	5	0
Mr. Lansbury (Bromley, Kent)	5	5	0
Messrs. Peill and Sons (Bromley, Kent)	5	5	0
Messrs. Darby Bros. (Bromley, Kent)	2	2	0
Mr. G. Lovelock (Beckenham)	2	2	0
Workmen of Mr. William Willett (Chelsea)	2	2	0



ROYAL CORINTHIAN YACHT CLUB HEADQUARTERS AT PORT VICTORIA. HENRY OUGH AND SONS, ARCHITECTS.

Professional Practice.

Bradford.—The foundation-stone of the Cartwright Memorial Hall in Manningham Park was laid by Lord Masham on Thursday last. With our issue for May 17th, 1899, we published plans and elevations of the first and second premiated designs, the former by Messrs. J. W. Simpson and J. Milner Allen, of London, and the latter by Mr. A. R. Jemmett, also of London; and in the same issue appears a critique of the drawings sent in for the competition. The architects' estimate of the cost at the time, just about twelve months ago, was £37,073 8s. 3d., but when, quite recently, tenders were asked for, it was found that such had been the advance in the cost of building material and labour that the original design could not be carried out, including architects' commission, &c., for less than £55,000. When this was discovered, it was proposed to alter the plans with a view to making them less expensive, but in the end it was agreed that the plans as accepted should be carried out and that the extra cost should be equally divided between the Corporation and Lord Masham. The accepted design is a type of Italian Renaissance, based on the order of coupled Ionic columns and pilasters, with appropriate entablature, standing upon a suitable basement of rusticated rockwork, suitable for a building placed in a park. An open carriage porch, surmounted by a lantern, supplies relief without interfering with the proper and economical lighting of the galleries, or breaking the lines of the roof-lights over them. Ornament is sparingly used, being massed at points where it will be most effective. The statue of Sir Titus Salt will form a centre of the main approach, an intermediate space being laid out as an Italian garden, with bandstand and spacious promenade, while the differences in the levels between the new gardens and the present flower-beds allow the latter to be formed into an upper garden, flanking the building and connecting its severe lines with those of the garden immediately surrounding it, and with the undulating park beyond. In the hall itself the whole of the first floor galleries will be grouped *en suite*, so as to form one continuous range of reception rooms, with a reception hall and the main stairs in the centre, double sliding doors permitting separation when desired. Cloakrooms are placed on the right and left of the entrance

vestibule. The grand staircase in duplicate is open to the central hall and leads direct to the reception hall. The drawing room is placed between the reception hall and banqueting room, as a convenient waiting position for the guests at banquets; the black and white room will be valuable as a private drawing room for distinguished guests after passing through the reception hall. The lighting of the whole suite of galleries and reception hall will be by double top lights, on the system recommended by the late Sir John Millais, P.R.A. The central hall, however, is lighted by high north windows, these being preferable to the direct top light for sculpture, as well as giving a finer internal effect. On the ground floor there are two spacious museum galleries, and other rooms, with a floor space of 4,806 superficial feet. The secondary entrance is placed at a half-level between the basement and the ground floor, giving convenient access to both the central hall and the refreshment room, but there are no separate entrances from the park to the refreshment room. The exterior and the interior of the central hall and staircase will be faced with approved white stone; the roof will be covered with slates and lead where not glazed, and the whole rendered as far as possible fire-proof. The entrances to the main body of the building will be carefully air-locked, and no windows will be made to open. Fresh air will be taken from a point at the roof level, and means are provided by which the air inside the building will be kept uniformly pure and at a regular temperature, and dirt, fog, and smoke being excluded. The total picture-hanging wall area will be 6,948 superficial feet, and the area to be occupied by the building 14,162 superficial feet.

Norwich.—The new Jenny Lind Infirmary for Sick Children, which is to be formally opened by the Prince and Princess of Wales at the end of June, has been designed by Mr. E. T. Boardman, and is approached from the city by way of Unthank Road. In some general sense the plan of the new infirmary resembles the letter Y. The branches of the letter are the wards, while its stem comprises the administration block and the domestic offices. The branches, however, are widely extended, for while the distance from the portico to the end of the domestic offices is 125ft., the extremes of the two wards, measured in a direct line, are separated by no less than 268ft. The portico runs up through

the whole of the three storeys, having square bays on each side of it, and terminating in a gable and finial. On the right of the main entrance is the board room, which measures 22ft. by 16ft. On the left are the visitors' room, the matron's sitting-room, and a large dining room for nurses, the last being of the same dimensions as the board room. On the two upper floors are the bed and sitting rooms of the nurses. Behind the administration block comes the domestic block, which is of two storeys and comprises kitchen, scullery, larders, pantries, work room, laundry and coal-house on the ground floor, while on the floor above are the servants' bedrooms and bathrooms. The wards are approached by means of corridors 7ft. wide branching off from the back of the administration block. At the outer end of each ward is a day room with movable shutters, so that under favourable conditions the children can go out and enjoy the air and sunshine. The operating block branches off northwards of the east ward, and comprises operating room, anaesthetic room, and lavatory. In the wards and the operating block the corners have all been rounded away. In the corridors there is a high dado of glazed brick, and in the wards one of glazed tile; and under both wards and corridors there is an open passage, so that access can be had to the heating, lighting and other fittings without interruption to the routine of the infirmary. As the result of prolonged enquiries concerning the material that best adapts itself to cleansing, the flooring in all the wards, corridors, and halls has been marbled on the Terazzo system. The site for the building was given by the late Mr. J. J. Colman, and the builder's contract, including the furnishing, heating and electric lighting, but excluding the fire hydrants, the laying out of the gardens, and the making of the approaches, was £12,000. The old infirmary accommodated twenty-six cots. The new one has room for fourteen more, or forty in all.

Nottingham.—Arrangements for commencing the proposed new Gordon Memorial Home are making substantial progress. An admirable site was secured time ago in Cranmer Street; it has an area of 1,754 sq. yds. and a frontage of 83ft. The selected designs are by Mr. E. R. Sutton. The buildings will be in the Georgian style, with red brick facings and moulded stone strings and cornices. The windows on the front will have stone mullions and transoms, and the main entrance will have rusticated columns with carved frieze, while

the boundary wall is to be of dressed Bulwell stone, with moulded stone coping. There will be two entrances in the boundary wall facing Cranmer Street, with wrought-iron gates. The Home when completed will accommodate 104 boys, but it is intended to provide at first accommodation for only seventy-two boys. On the basement floor will be a large recreation and drill room, boys' library and writing room facing the street, cloakrooms, day lavatories, and boot cleaning and brushing rooms, with the heating chamber and a cart and barrow house at the rear. On the ground floor will be the dining hall, with the kitchen, scullery, &c, adjoining. The committee room, office, and waiting room are to be on the south side of the principal entrance, and the manager's and matron's rooms on the north. On the first floor accommodation for thirty-six boys is provided in two dormitories, with lavatory and bathrooms adjoining. The manager's, matron's, and staff bedrooms are also on this floor. On the second floor will be similar dormitory, lavatory and bathroom accommodation, with a hospital or sick room, having bath and lavatory communicating. At the back of the main building a small laundry will be erected. The heating is to be by hot-water pipes, radiators, and open fireplaces, and the ventilation will be carried out by fresh air inlets and extractors. The total cost of the building (for accommodating seventy-two boys) is estimated at £5,000.

Port Victoria.—The new headquarters of the Royal Corinthian Yacht Club, of which a perspective and plans are given on this and the preceding page, was opened by the Commodore of the Club on Saturday, May 5th. The site faces the Medway, and the building has cost about £5,000. The architects were Messrs. Henry Ough and Son, of 64, Basinghall Street, E.C., and the contractors Messrs. West Brothers, of Strood, Kent. The foundations being on river mud were very difficult to deal with, and the building had to be floated on cement concrete. It is framed of baulk timber with steel stanchions and girders to carry the floors over the large spans, and filled in with steel lathing and cement plaster, faced with pebbles. There is a landing pier for boats opposite the principal entrance. On the ground floor is a large entrance hall and staircase, a club-room accommodating 200 persons, library, ladies' room, billiard room and lavatories; kitchen, bar, and serving rooms adjoin the club-room. The basement is fitted as a boat-house. On the first floor is sleeping accommodation for thirty members, with bath and lavatories; also steward's

quarters, reached by a private staircase from the kitchen. On the second floor a smoking room and look-out is provided, commanding an extensive view of the Thames and Medway estuary. The premises are lighted by acetylene gas.

Masters and Men.

The Ayr Joiners' Strike has ended by the masters agreeing to continue the old rate of 9d. per hour, and not reduce it to 8d.

The Hamilton Masons have had their wages reduced from 9½d. to 9d. per hour, to take effect from the month of August next.

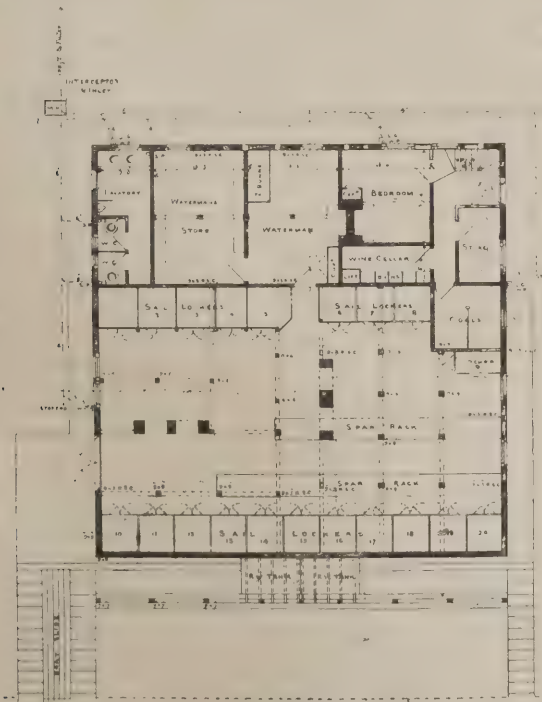
The Builders' Labourers at Beccles have struck for a rise of ½d. per hour on their wages on the present rate of 3½d. per hour, fifty-nine hours per week.

The Norwich Operative Bricklayers' Society served a notice on May 1st last on the Association of Master Builders, demanding an advance of 1d. per hour on their present rate of 7½d., and a reduction of hours from fifty-six to fifty-two and a half per week. The masters have refused to comply, and work will presumably cease on June 1st, when the customary three months' notice expires. About 400 men are affected.

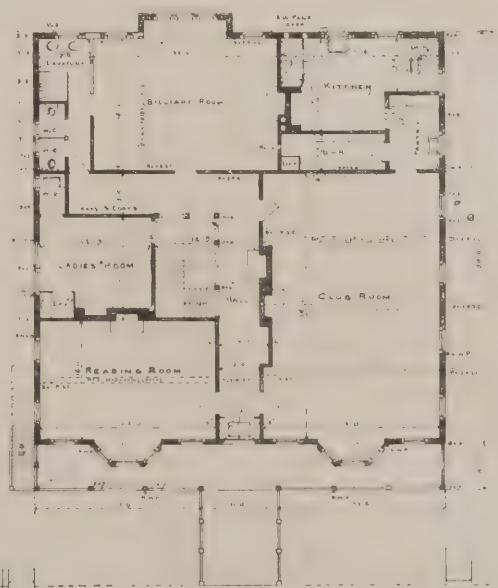
A new East Window at Thaxted Church, Dunmow, has been erected. It is by Mr. C. E. Kempe and is in the fifteenth century style.

A new Meat Market at Douglas, I.M., has been erected from the designs of Mr. T. G. Taylor, late borough surveyor, under the superintendence of Mr. Prescott, the present borough surveyor. Mr. W. J. Fargher was the contractor.

A Successful Lady Architect.—The plans of two buildings to be erected at Marshall, U.S.A., for the State asylum will be drawn, and the specifications furnished, by Miss Mamie Hale, of Columbia. Miss Hale has been selected as the architect by the Board of Managers, and she will have entire charge of the important work from the beginning to its completion. She will visit similar institutions in Pennsylvania, New York, and other states, with the object of getting the latest improvements. Miss Hale is well known professionally; the Christian College building at Columbia was built from her designs and under her supervision.



BASEMENT PLAN.



GROUND FLOOR PLAN.

ROYAL CORINTHIAN YACHT CLUB HEADQUARTERS AT PORT VICTORIA.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Repairing Bridge Piers.

APPLEBY.—PORTO RICO writes: "An iron bridge, with stone piers, having given somewhat on the up-river side of the middle pier, and crumbled at the cut-water, I consulted a bridge-master, who recommended that 'an air-tight wooden frame should be constructed the exact shape of the cut-water, sunk to the bottom of the river, and filled with cement concrete. The frame need not be more than 8in. wide.' Can you advise me as to best method of constructing it, size of materials, mode of preventing the breaking-up of the frame in filling and sinking, and how to remove the frame when concrete has set? The pier is 5ft. 3in. wide and 6ft. from bed of river to set-off at water-line."

The proposed wooden casing and concrete would not be a very satisfactory method of

repair. It would not strengthen the pier, and would have very little strength to resist collision by river craft. Either the defective stonework should be cut out and renewed in order to preserve the structure, or if the whole structure has been weakened by collisions and it is not desired to rebuild it, protection against further damage may be obtained by driving three piles as a starling, and bracing them together as shown in the accompanying illustration.

HENRY ADAMS.

Rust on Straight-Edges.

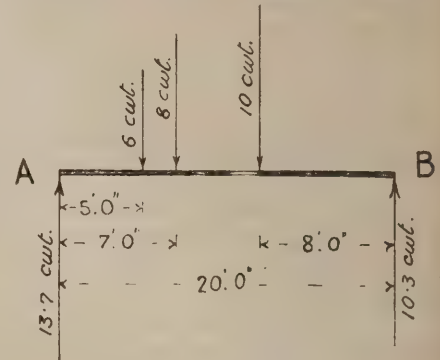
SILESSEN.—H. H. writes: "Could you tell me how I can keep steel straight-edges free from rust, and how I can remove the rust from one which has not been in use for some time? I have been recommended to use vaseline, but it is a great inconvenience having to remove it before using the straight-edge."

The obvious way to keep a straight-edge free from rust is to keep it in a dry place. If this is done there should be no trouble. A piece of lime is often placed in a tool-box to absorb any moisture in the air and so prevent the iron or steel tools rusting. To remove rust, some Bath-brick dust and paraffin will be found as effective as anything. With regard to the vas. line, our correspondent has

evidently been putting it on the straight-edge too thickly; it need only be smeared on with the finger, and the tool will not then be in such a condition that it has to be wiped before use.

Equivalent Weight on Beam.

KING'S NORTON, near BIRMINGHAM.—F. E. T. writes: "A beam of 20ft. span is loaded at three points; at the first point with 6cwt, at the



EQUIVALENT WEIGHT ON BEAM.

second with 8cwt., and at the third with 10cwt. The first point is 5ft. from one end of the beam, and the second point is 7ft. from the same end, the third point being 8ft. from the other end of the beam. Calculate the equivalent weight at the centre of the beam."

$$\text{Reaction at B} = \frac{6 \times 5 + 8 \times 7 + 10 \times 12}{20} = \frac{30 + 56 + 120}{20} = \frac{206}{20} = 10.3 \text{ cwt.}$$

$$\text{Reaction at A} = \frac{10 \times 8 + 8 \times 13 + 6 \times 6}{20} = \frac{80 + 104 + 36}{20} = \frac{220}{20} = 11.0 \text{ cwt.}$$

Bending moment under 6cwt. load = $13.7 \times 5 = 68.5 \text{ ft. cwt.}$

Bending moment under 8cwt. load = $13.7 \times 7 = 95.9 \text{ ft. cwt.}$

Bending moment under 10cwt. load = $10.3 \times 8 = 82.4 \text{ ft. cwt.}$

As the beam is assumed to be of uniform section, and the maximum present bending moment is 95.9 ft. cwt., a central load is required which shall produce the same bending moment.

$$\therefore \frac{\text{Max. bending moment}}{\text{half span}} = \frac{95.9}{10} = 9.59 \text{ reaction on each side.}$$

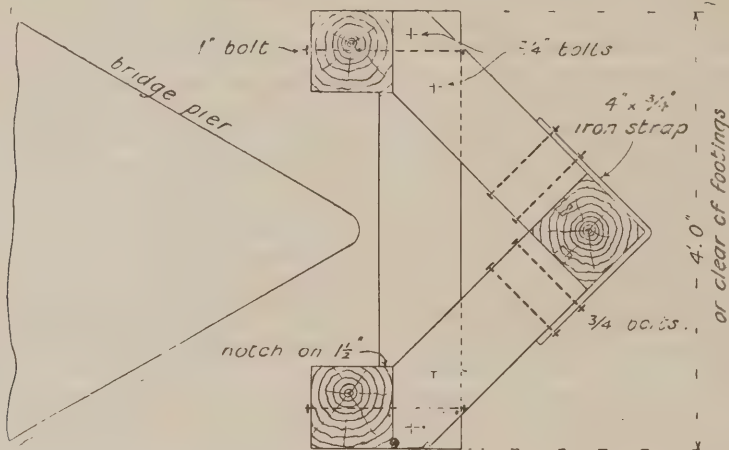
$$\text{Reaction} \times 2 = \text{central load} = 9.59 \times 2 = 19.18 \text{ cwt.}$$

HENRY ADAMS.

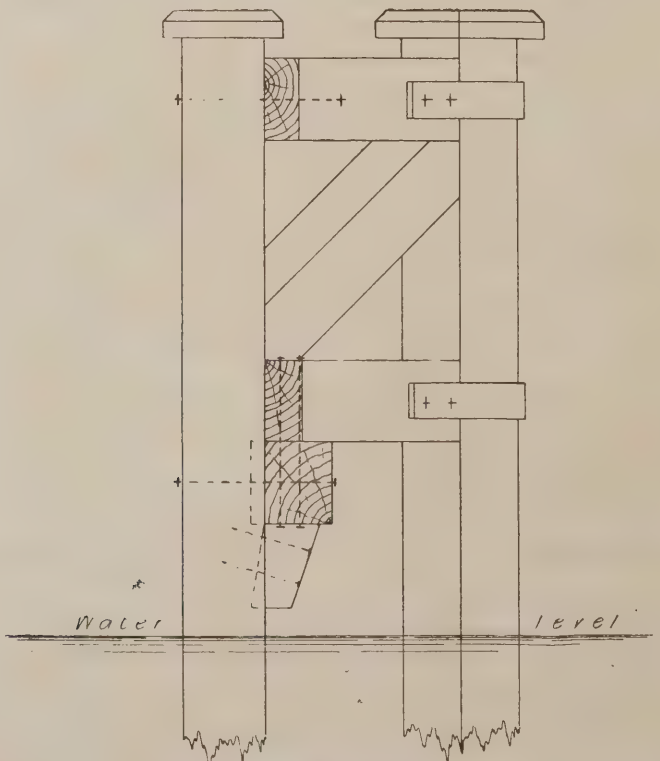
Moulds for Casting Composition Ornaments.

LONDON, N.—FOREMAN writes: "I have heard that there is a metal used as a substitute for sulphur and plaster moulds for casting 'paste composition.' Please inform me how this mould metal is made; also if the moulds require oiling."

Sulphur moulds for casting composition ornaments are made with a combination of sulphur and metal filings. The moulds are then let into wood blocks and bedded with plaster or cement to enable them to resist the screw pressure which is necessary to consolidate the compo. Iron frames, or cases, are also used to strengthen sulphur moulds. For stock models, as used for the decoration of furniture, mirrors and wood panelling, the moulds are carved "in the reverse" in box-wood or pear tree. This is an expensive method and is only used for stock work or for special designs. Spence's metal, a generation back, was largely used as a fusible metal for making moulds for casting composition; also cement work. This metal is now superseded by "Phelps' Metal," which, stronger and in every way more suitable for plastic purposes, does not rust and is acid-



All 9" x 9" timbers



REPAIRING BRIDGE PIERS

proof. It melts at about 300deg. Fahr., and it can be re-melted and used again as often as required. It can be cast on or in gelatine or carton-pierre. The moulds are oiled with ordinary lubricating oil, or with a combination of sweet oil and paraffin oil in equal parts. This metal is also useful for a variety of building purposes. For further details, apply to Phelps' Metal, Ltd., Suffolk House, Laurence Pountney Hill, Cannon Street, London, E.C.

How to Become an Architect.

PORTSLADE, near BRIGHTON.—F.N.R. writes: "Will you kindly tell me what subjects should be studied by someone wishing to become an architect, but having only spare time in which to study? Kindly recommend a book on the subject."

It would be the reverse of a kindness to our correspondent to comply with his request. The study of good books is of very great value to one who intends to practise as an architect, but no one can become an architect by such means alone. Some years must necessarily be spent in an architect's office, slowly acquiring the routine, and practising drawing, tracing, and planning under the conditions of actual everyday work. Supplementary to this, study is most important, and is preferably graduated to meet the requirements of the R.I.B.A. Preliminary, Intermediate and Final Examinations in sequence, particulars of which are to be obtained from the Secretary R.I.B.A., 9, Conduit Street, W. G. A. T. M.

Books on Wood-Turning.

OXFORD.—G. G. writes: "I should be much obliged if you would tell me the name and publisher of a good book (or books) on wood-turning suitable for beginners."

"The Wood-Turner's Handybook," by Paul N. Hasluck, price 1s.; "Turning" (a book for beginners), by Francis Campin, price 3s. 6d.; "Wood-Turning for Beginners," by the Rev. F. C. Lambert, 7d. (Dawburn and Ward, 6, Farringdon Avenue, E.C.). These books can be obtained post free at the prices named from B. T. Batsford, 94, High Holborn, W.C.

Style of Finial.

HUDDERSFIELD.—DISPUTE writes: "Please say whether the enclosed detail of finial is of Classic or Gothic architecture, and so settle a dispute as to its use in some Classic work. If Gothic, what period?"

The finial referred to belongs to no known architectural style or period. It is nothing more than a very bad piece of modern detail, such as is sometimes to be seen in a book of stock patterns.

G. A. T. M.

Lending Library for Technical Books.

APPLEBY.—DOUGLAS CRAIG writes: "Do you know of any lending library, such as Smith's or Mudie's, where technical works can be obtained by country members by post or parcel delivery? If so, can you give particulars?"

There is no lending library where our correspondent can obtain technical books in the manner he wishes. A certain number of these books can of course be obtained from ordinary public libraries in the usual way.

Engineering Notes.

Fratton Bridge, Portsmouth, is proposed to be widened.

Hot Water for Artisans' Dwellings.—The Local Government Board have sanctioned the borrowing by the Liverpool Corporation of £1,400 for the provision of a hot-water supply to the houses to be erected in Dryden Street and Rachel Street.

"Transbordeur" Bridge at Newport, Mon.—The Bill dealing with this proposed bridge (particulars and illustrations of which will be found in our issue for January 10th last) came before a Select Committee of the House of Commons last week.

New Bridge at Lancaster.—A new bridge has been erected over the Lancaster and Preston canal in Penny Street, Lancaster. The old bridge had served one hundred years, and was 34ft. wide. The new bridge is 59ft. wide at its narrowest part, and opens out to 80ft.

The Sheffield District Railway was formally opened last week. It connects Sheffield with Lancashire, Derbyshire, and the East Coast route to the Dukeries, and provides an alternative route to London by the Great Northern and Great Eastern systems.

Death of the Kidderminster Borough Engineer.—Mr. Arthur Comber, the borough engineer of Kidderminster, died on Saturday morning after a prolonged and severe illness. Mr. Comber was forty-nine years old, and had been in the service of the Corporation twenty-seven years.

Public Works at Keighley.—On Wednesday last a Local Government Board enquiry was held at the Municipal Offices, Keighley, into an application by the Corporation for borrowing powers as follows:—£45,000 for works of electric lighting; £10,300 for the provision of a Town Hall; and £8,565 for street improvements.

Middlesex Light Railway.—The Light Railway Commissioners held an enquiry last week into an application by the Middlesex County Council for permission to construct lines of electric tramways from Harlesden, through Sudbury, Wembley, and Harrow on the one side, and from Southgate to Finchley on the other. The total length of the lines is about seven miles, and the cost of construction and equipment is put at £117,000.

New Pier at Southwold.—The new pier which has been erected at the northern end of Southwold, almost in a line with the railway station, was designed by Mr. W. Jaffrey, M.I.C.E., and constructed by Messrs. A. Fasey and Son, contractors, of London, with Mr. F. Hunter acting as clerk of the works. The pier is nearly 900ft. long, and has cost about £8,000. It is the last part of the Coast Development Company's scheme. Some time ago this company purchased the Town Farm Estate from the Corporation, and it is now being laid out for building purposes by Mr. J. C. Trueman, of Swanley Junction. On a site facing the sea the Grand Hotel is being built at a cost of £20,000; the architect is Mr. C. H. M. Milcham, of Lincoln's Inn Fields.

Cardiff's New Dock.—The new Bute Dock at Cardiff will be 50 acres in extent and 56ft. deep, making it the deepest dock in the country. It will be 2,500ft. long on the quay walls on each side, and 300ft. wide, except near the junction to the Roath Dock, where it extends to 1,050ft. to facilitate the swinging of large steamers. The lock will be 900ft. long and 90ft. wide. Two graving docks 800ft. in length will be made alongside of it. The walls of the dock are 24ft. wide at the bottom and taper off to 12ft. at the top. It is expected that the whole of the work, which will cost about £1,500,000, will be completed in the early part of 1902. At the present time about 1,600 men are employed on the work. Messrs. Topham, Jones and Railton are the contractors.

London Water Intercommunication Scheme.—At the Guildhall, Westminster, last week, Mr. Charles Perrin, water examiner

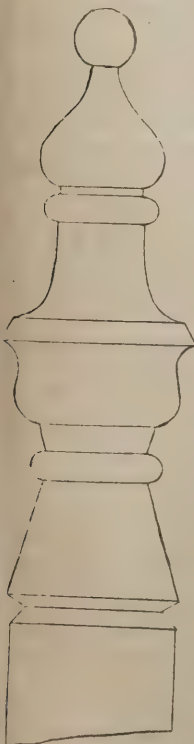
to the Local Government Board, held an enquiry into the scheme of intercommunication between the works of the London water companies which has been proposed in accordance with Mr. Chaplin's Act of last year. Mr. Lawrence, in opening the proceedings, said the scheme had received the sanction of the Royal Commission and had been provided for by the Legislature, so that in principle at all events there could be no sound grounds for opposition to it. There were eight companies in the metropolis, each of whom had a separate district of supply, and it was evident that it was in every way advisable to have some means of allowing the resources of all to be at the service of each when emergency or accident demanded it. The scheme provided for the utilisation of the Battersea works as a central station, and provision of pumping plant and filter beds at Hampton. The estimated cost of the whole scheme would be £627,987, and of this £155,754 had been already expended. Under this scheme an approximate quantity of ten million gallons a day could be supplied, if necessary, to the Chelsea Company, twenty millions to the East London Company, nineteen millions to the Grand Junction Company, twelve millions to the Kent Company, eighteen millions to the Lambeth Company, twenty millions to the New River Company, twenty millions to the Southwark and Vauxhall Company, and nineteen millions to the West Middlesex Company.

The Great Alpine Tunnels was the title of a lecture by Mr. Francis Fox at the Royal Institution last Friday evening. After briefly describing the manner in which tunnels were constructed, explaining in particular the precautions taken to ensure that the two driftways should exactly meet in the middle, he dealt with the Mont Cenis, the St. Gothard, and the Simplon tunnels, stating details of their length, gradients, &c. An interesting account was given of the difficulties encountered in securing ventilation, and of the plan by which they were overcome in the St. Gothard. Here the Saccardo system was installed, a ventilating fan near the mouth of the tunnel blowing in air through the annular space between the arch and the gauge of maximum construction. Plans were now being prepared for fitting the Mont Cenis tunnel with this system, which had also proved successful with the Pracchia, the worst tunnel between Bologna and Florence. Another interesting point was the temperature of the rocks passed through in the construction of a tunnel; this was found to depend on the character of the rock, the inclination of the beds, and the height of the mountain above the tunnel. For each 144ft. of superincumbent rock the increase was 1deg., Fahrenheit. With regard to the Simplon tunnel, now in course of construction, the lecturer said its total length would be 12.26 miles, of which at the end of last month 3,228 yards had been driven on the north side of the Alps, and 2,350 on the south—that was, three miles in little more than eighteen months. The time in which it was estimated to be completed ready for traffic was five and a-half years, and there was a penalty or bonus for delay or acceleration of £200 a day. The undertaking consisted of two single-line tunnels, parallel to each other, and one of its chief features was its low altitude above the sea; at its highest point it was 1,474ft. lower than the St. Gothard, 1,934ft. than the Mont Cenis, and 1,986ft. than the Arlberg.

The Death is announced of Mr. Alexander Christie, manager of the Seaton Brick and Tile Co., Limited, Aberdeen.

A School on Barry Island has just been completed from the designs of Mr. G. A. Birkenhead, architect, of Cardiff. The building is ventilated on the Plenum system.

An Architect's Gift.—Mr. Charles Ower, architect, has made a donation of five guineas for the purchase of architectural works for the Dundee Library. Further, he has intimated that he will make a similar donation for the same purpose on every anniversary of "Mafeking Day." There are few men so practically patriotic as Mr. Ower.



IN WHAT STYLE IS THIS FINIAL?

Under Discussion.

The Influence of Architecture.

At the recent annual meeting at Exeter of the Devon and Exeter Architectural Society the retiring president, Mr. C. King (Plymouth), took as the text of his address "The permanency of our work and its influence for good, or otherwise, upon the public mind." The profession, he said, had a hopeful future if we rightly used the inheritance which was ours to-day. The great enemy in the provinces had been in the past the slight knowledge the general public had acquired of the true principles of beauty in architecture, chiefly owing to the local dearth of that which was beautiful, the few sources of education and inspiration, and the resting satisfied with comfort or convenience, however barren the art. But the professional and non-professional educator was abroad to-day with cheap and good illustrations of the beautiful and admirable in architecture, painting and sculpture, and these, in addition to the travelling facilities provided for visiting places of interest all over the world, would be bound to exercise an influence for good and create a desire for better results. Mr. King said he was a firm believer in the refining influence upon character of the beautiful in art, and if we once thoroughly realised that our work was to be permanent—not merely a question of so many pounds, shillings, and pence earned to-day, but to be seen, enjoyed and admired or condemned by present and future generations, exercising upon them a refining and elevating influence, or the contrary—we had an ennobling ambition encouraging us to careful study, thoughtful application, and the production of our best, not restricted by the value of fees. Many were probably discouraged when they found how few, if any, were the opportunities for distinguishing themselves, or showing what they could do; but he for one was not prepared to give honour only to those who had designed and erected noble and beautiful ecclesiastical, imperial, municipal, or other large buildings of a public or private character, but rather to the man who, utilising the means, however small, placed at his disposal, exercised his talents successfully. It was not what we might have done if ten thousand pounds had been placed at our disposal for some building upon which only five thousand could be spent, but had we succeeded with the smaller sum as far as it would go, and realised a building answering in all respects to the purposes for which it was erected? The pleasure we ourselves enjoyed in the various beauties of our ancient buildings should be a strong inducement to us to hand down to posterity a heritage which should at least bring credit, and not shame, upon our generation of architects. This refining influence of the beautiful in art was not a sentiment, but a fact. We were told that we learnt more from our failures than from our successes; certainly it was not an easy matter to be rid of them, for they were constantly staring us in the face. We might, indeed, learn much from the one or the other; but our duty was to learn, not to rest satisfied with successes or be discouraged by failures, but to aim higher and still higher, ever bearing in mind the permanency of our work and the effect, good or bad, it will have upon the minds and characters of those who are influenced by it.—A vote of thanks having been unanimously passed to Mr. King, the following elections were made: Mr. C. J. Tait, president; Mr. H. G. Luff (Devonport), vice-president; to fill vacancies on the council, Mr. B. P. Shires (Plymouth), Mr. James Jerman (Exeter), Mr. A. S. Parker (Plymouth), Mr. A. Thorne (Barnstaple); hon. treasurer, Mr. O. Ralling; hon. secretary, Mr. Harbottle Reed.

St. Mary Woolnoth Church, Lombard Street, which has been closed for more than three years in consequence of the construction of the Bank Station of the City and South London Railway, has now been re-opened. It was built by Hawksmoor (1666-1736), who was a pupil of Sir Christopher Wren.

New Patents.

These patents are open to opposition until July 2nd.

1899.—Incandescent Gas Burners.—9,380. G. H. FIRTH, F. H. BENTHAM and J. H. STOTT; all of Bradford. In order to secure the mantle from vibration, the cap and crutch which support it are separated from the body of the burner and rest on the top of a tube that fits over the Bunsen and is weighted at its lower end. Between the top of this tube and the burner is placed a conical spring.

Wood-working Machines.—10,917. C. W. FERGUSON, Glasgow. This machine combines a circular saw, a hand saw, a boring mill and a lathe. There is a table, supported by legs and struts, at one end of which is a band saw, and at the other a circular saw, both being driven from a fly-wheel in the centre. Hand or motive power can be used. When desired, the circular saw (which is only a small one for cross-cutting or ripping) can be removed and a boring bar or lathe chuck substituted. A lathe bed may also be attached.

Sewage Purification.—11,994. W. C. C. PAKES, London, W.C. By this invention the sewage is passed through a series of beds, alternately anaerobic and aerobic. The aerobic chambers may be in pairs, or larger groups, so that while the sewage is passing through one chamber of a group the others may be resting. The treatment by the anaerobic bacteria is not completed in the first chamber, but is resumed in the third, fifth, &c., chambers, after passing through the second, fourth, &c., chambers, in which the aerobic action goes on. It is claimed that a purer effluent is obtained by this system than by the usual method of completing the anaerobic treatment of the sewage before it passes to the aerobic bed.

Flooring Blocks.—12,332. C. SPIGHI, Florence, Italy. The characteristic feature of the blocks made according to this invention is that they have an upper part formed of wood and a lower part of asphalt, mastic, cement, plaster, or similar material, so that they can be laid like bricks with mortar or cement.

Tile-making Machines.—12,482. G. W. WINN, Wakefield. In machines of this class it has hitherto been customary to cut off "bats" or lengths of clay either by a hand cutter or by knives mounted on a drum. According to this invention the cutting wheels are carried by an endless chain driven by contact with the moving clay. The cut is made perfectly at right angles and is clean, besides which the action is rapid.

Hinges.—13,110. J. PRIEST, Old Hill, Staffs. This invention relates to that class of hinges for doors and gates which have a metal strap at the top and bottom working on pins. The hinge pin has a shoulder at each end, and the strap is fastened around the portion between, the pin itself working within a bracket that is fixed to the gate post. By this means the strap is prevented from moving down the pin and riding on the bottom socket.

Lifting Jacks.—15,814. A. L. MARCOTTE and M. A. LEGROS; both of Les Iris, France. The device combines two internally and oppositely screwed tubes in which works a rod, also screwed. The upper tube is applied below the object to be lifted, and the lower one has a foot for supporting the jack. Working on the rod, between the tubes, is a ratchet and lever, by turning which the lift is effected. In order to lower the object a second pawl is brought into play.

1900.—Travelling Scaffolds.—1,223. E. J. and E. T. PALMER, London, S.E. This self-contained travelling scaffold consists essentially of a wheeled base supporting vertical ladders that constitute standards, being strutted and braced by adjustable wire stays. A working platform is carried by the wrungs of the ladders so as to be capable of adjustment at any desired height on the standards. The scaffold runs on rails, and is specially adapted for indoor use. When not required it can be taken to pieces and packed within a small compass.

The following specifications were published on Saturday last, and are open to opposition until July 9th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—9,334, REEVE, appliances for holding doors in open positions. 9,337, MERCER, paint removers. 9,338, MERCER, distemper compositions and paints. 9,541, SMITH, machines for curling and wiring the edges of sheet metal. 9,543, REINCKE, machines for the manufacture of artificial stone. 10,108, POINTON, manufacture of gas for heating purposes. 10,970, REDMAN, apparatus for applying paint or other composition to surfaces. 10,983, STEWART-WALLACE, COWELL, PAISLEY, KEMP-WELCH, manufacture of gas for motive, heating and lighting purposes. 11,142, ALEXANDER and HOLDING, mould for brick-making and similar purposes. 11,536, McLEAN, manufacture of artificial stone. 11,960, VERWER, acetylene lamps. 11,984, SMITH, poles for supporting overhead wires in electric tramways. 11,995, PARE, apparatus for the treatment of sewage or other liquids. 12,935, MATHEWSON, reversing motions for planing, shaping and other machines. 13,351, VAN KANDEL REVOLVING DOOR CO., LTD. (*Van Kannel*), revolving doors. 13,595, BOOTH, construction of drying rooms or chambers especially suitable for treating cement, slurry, &c. 13,634, GAUFROY, drawing pen. 13,684, GRAY, fanlight, skylight and casement openers. 13,835, O'BRIEN (*Martin*), illuminated fountains. 13,933, DAY, bond for tramway and railway rails. 14,205, GRUNDON and GREGG, flap inlet boxes for letters. 14,506, PRUCE, panic bolts. 16,653, CROSS and BEVAN, manufacture of refractory materials for building and other purposes. 18,809, SCHWARZ, process of preparing the raw materials for the manufacture of calcareous sandstone. 21,946, CHEESE, glass tiles and their manufacture. 24,227, LAKE (*Huestis*), treads for stairs and pavements.

1900.—1,290, IZAMBARD, reproduction of writing, printing or drawing by the Röntgen rays. 2,125, CROWSON, sliding or extending ladders. 2,775, BOND, door checks. 4,167, SCHMERTZ, door locks. 4,457, SCHADF, electrically-controlled door locks. 4,554, BARNARD, wood-working machinery. 4,737, BOULT (*Dickinson*), chimneys and ventilating shafts. 5,000, WILLMORE, prismatic lights for pavements, roofs, &c. 5,020, NEWTON (*New Jersey Wire-Cloth Co.*), fireproof floors and ceilings. 5,021, NEWTON (*New Jersey Wire-Cloth Co.*), fireproof floors and ceilings. 5,022, NEWTON (*New Jersey Wire-Cloth Co.*), fireproof floors and ceilings. 5,023, NEWTON (*New Jersey Wire-Cloth Co.*), fireproof floors and ceilings. 5,177, DAY (*White*), metal joint. 5,284, HAUSLICH, deep-well pumps. 5,555, THOMSON or PURVES and PURVES, attachment of window blinds to their rollers. 5,580, THORNE, device for cleaning windows. 5,821, DE LÉRY and RICHARDSON, incandescent mantles and methods of making them. 5,829, DE NAEYER, process of making artificial stone. 5,848, SMITH, conduits and conduction supports for electric tramways. 5,893, LAKE (*American Wood Fireproofing Co., Ltd.*), fireproofing and preserving of combustible substances. 5,894, CARNEY and GORTON, riveting machines. 5,906, EVANS (*Noel*), door-closing devices. 5,994, GOLBY (*Hepburn*), waterproofing process. 6,023, BRITISH ELECTRIC WORKS CO., LTD. and BRANDER, electric bells. 6,063, METZGER, pumps. 6,098, ADAMS, lavatory basins. 6,146, FLORENCE, grates for fireplaces, stoves and ranges. 6,213, GOLBY (*Müller*), incandescent gas burners. 6,222, EDWARDS (*Pedrick and Ayer Co.*), pneumatic hoisting apparatus. 6,336, WEBER and MÜLLER, combination tool machine for working in metal.

Improvement of St. John de Sepulchre, Norwich.—It is proposed to repair the tower of this church by taking down and rebuilding the parapet and part of the buttresses, to re-hang the bells, lay down a new floor for the ringers, erect pinnacles, and put in rafters for the support of the flagstaff. The cost is estimated at £500.

Keystones.

A Memorial Window in Attercliffe Church, Sheffield, has been erected by Messrs. Jeffery and Foster, of Sheffield.

A new Recreation Ground at Aldington, Sussex, was opened last week by the Mayoress of Hove (Mrs. J. Colman).

For the Proposed new School at Ramsey, Essex, Mr. J. W. Start, of 54, New Broad Street, E.C., has been appointed architect.

Public Baths at Winchester are to be erected by the local corporation according to the designs of Messrs. Lansdell and Harrison, of 38, Bow Lane, E.C.

New Baptist Chapel at Ferme Park, N.—Mr. George Baines, F.R.I.B.A., and Mr. Reginald P. Baines, of 5, Clement's Inn, Strand, are the architects for this building.

Mr. J. Eadie Reid, who was at one time a pupil of Sir W. B. Richmond, has finished one of the frescoes that he is painting in the church of St. Columba, Southwick, Sunderland.

A new Chapel at Tonbridge School is being built at an estimated cost of £23,000. Accommodation will be provided for 650 worshippers. Mr. W. Campbell Jones is the architect.

A Board School at Lofthouse Gate, near Wakefield, is being built from designs by Mr. W. Watson, architect, of Wakefield. The mixed school will accommodate 300 children, and the infants' department 160.

New Mission Church for Leeds.—A new mission church in connection with Burley Parish Church is about to be erected. The building is to be of brick with dressings of red Runcorn stone. Mr. Percy Robinson, of Leeds, is the architect.

The Church of St. Mary the Virgin, Eccleston, has been consecrated on Thursday last. It has been built at the expense of the late Duke of Westminster, the cost being between £30,000 and £40,000. Mr. G. F. Bodley, A.R.A., was the architect.

New Band Stands at Birmingham.—Two new band stands at Birmingham were opened last week—one in the Queen's Park, Harborne, and the other in Highgate Park. The latter was erected from the designs of Mr. Job Cox, superintendent engineer of the Baths and Parks Department, the ironwork being supplied by Messrs. Hart, Peard and Co.

A Byron Memorial.—The site of the house where Lord Byron was born in 1788—No. 24, Holles Street, now swallowed up by the premises of Messrs. Lewis—has been marked by a handsome bronze bust set in a suitable architectural framework. The memorial is high up on the second storey of the building, but it is large enough to be well seen. It was designed by Mr. Taylerson after the picture at Newstead Abbey.

Passmore Edwards' Hall.—The foundation stone of this building will be laid by the Bishop of London during the last week in June. The site is close to the proposed new street between Holborn and the Strand, and the building will furnish a home in connection with the University of London for the School of Economy. It will be established at a cost of £30,000, towards which amount Mr. Passmore Edwards has contributed £10,000.

New Government Offices, Barrow.—It is expected that the new Government offices which are to be built on the High Level Bridge, Barrow, will take twelve months to complete. The offices comprise County Court Office, Board of Trade Office, Custom House, and Inland Revenue Offices. The building will immediately adjoin the Burlington Hotel, and, occupying about 53ft frontage and 50ft. from front to back, will be constructed of local bricks and St. Bees stone. Mr. J. H. Neal has secured the whole of the contract, and he has let the joinery work to Messrs. Gradwell, the stonework to Mr. Fairbairn, and the plumbing and painting to Mr. Morris.

New London Theatre.—Mr. Penley has had the old Novelty Theatre remodelled, and has reopened it under the name of the "Great Queen Street Theatre."

At Bow Brewery, E., a tank house is in course of erection from designs by Messrs. Foulsham and Herbert Riches, architects, of 3, Crooked Lane, King William Street, E.C.

A new Wesleyan Church at Willington Quay, Newcastle, has been built from designs by Messrs. T. A. Page and Son, of South Shields, the contractors being Messrs. Cowper and Henderson, of Jarrow.

New Municipal Buildings at Wallsend.—The Wallsend Urban District Council have decided to purchase an acre of land, in a field near the Coach and Horses Inn, for the erection of a block of municipal and other offices.

New Police Buildings at Hales Owen, Birmingham, have been erected in Stourbridge Road from the designs of the county surveyor (Mr. Rowe) by Messrs. J. H. Whitaker and Co., of Dudley, at a cost of £6,650.

The Registration of Architects' Bill, which was read for a first time on May 15th, will come up for its second reading in the House of Commons on June 13th. It is in charge of Mr. L. A. Atherley-Jones, Q.C., M.P. for North Durham.

"Modern Industry and the Village."—Messrs. Grayson and Ould, of Liverpool, and not Messrs. Douglas and Fordham, as stated, are the architects of the block of timber cottages shown on page 280 of last week's issue in connection with the article bearing the above title.

A new Lion House at the Dublin Zoo is to be built at a cost of £5,000. It is to be called "Lord Roberts' House," in order that in the gardens of the Royal Zoological Society there may be a permanent memorial of the period during which he has held the office of president of the society.

Hull Town Hall Competition.—It has been decided to ask Mr. Thomas Blashill, F.R.I.B.A., late superintending architect to the London County Council, to act as assessor in the competition for the extension of the Hull Town Hall, in connection with which premiums of £300, £200 and £100 are offered.

A new Mill for Pemberton, Wigan, called May Mill, is being erected from designs by Messrs. Stott and Sons, architects, of Manchester. The present old mill is 92ft. wide; the new one will be 102ft. wide. Mr. J. Partington, of Middleton Junction, is the builder, and Messrs. Dorman, Long and Co., of Middlesbrough, are supplying the rolled steelwork.

The British Pavilion at the Paris Exhibition was formally inaugurated on Thursday last. Mr. Edward Lutyens is the architect, and he has made the river front of the building a copy of Kingston House, Bradford-on-Avon. The total result is to give a very perfect imitation of a Jacobean house; the walls are covered with a grand selection of pictures by eighteenth century artists.

Tunbridge Castle and grounds, opened on Wednesday last to the public by Earl Stanhope, dates back to the days of Richard de Tonebridge, the uncle and devout follower of William the Conqueror. The ruins to be seen to-day represent merely the entrance gateway to the former fortress. Part of the outer walls remain, and the lower portion of the water tower. The mound of the keep, too, survives, and the entrance gateway, flanked by circular towers.

New Church for Roundhay, Leeds.—It is proposed to erect a new church at Roundhay, the estimated cost of which is £15,000. Mr. W. Carby Hall, architect, of Leeds, has prepared plans. It is intended to proceed at once with the erection of the parochial hall, the plans of which have been passed by the Plans Committee of Leeds Corporation, and it is expected that the building will be ready for use before the end of the year. In this, services will be conducted until the church, which will be known as St. Paul's, is built. The hall will accommodate 350 worshippers, and will cost about £3,000.

Musselburgh New Municipal Buildings.—It has been decided to invite competitive designs for the reconstruction of the town hall and municipal offices at Musselburgh at a cost of £5,000. The exterior of the old Tolbooth is not to be affected.

Honour for Mr. Thomas Drew.—The Lord Lieutenant of Ireland has intimated his intention to confer the honour of knighthood, with the approval of Her Majesty, upon Mr. Thomas Drew, R.H.A., F.R.I.B.A., President of the Royal Institute of the Architects of Ireland.

An Avenue of Statues.—A proposal has been made in Paris to erect an avenue, consisting of statues of distinguished living Frenchmen, from the Champs Elysées to the Invalides. The distance is considerable. One wonders, supposing they start at the Invalides, whether they will ever reach the Elysian Fields.

Art Exhibition in South-East London.—Sir L. Alma-Tadema opened the eleventh annual free loan exhibition of pictures for Southwark and Lambeth on Saturday last at the Borough Road Polytechnic Institute. The exhibition will remain open till June 17th, the hours on week-days being from twelve to ten, and on Sundays from three to ten.

St. Oswald's Church, Bradford.—This building, which is a chapel-of-ease to St. Stephen's, West Bowling, is being erected in the Late Decorated style at a cost of £10,000. Messrs. T. H. and F. Healey are the architects, and the following are the contractors:—Mason, T. Obank and Sons, Thackley; joiner, T. Taylor and Sons; slater, Hill and Nelson; plasterer, Cordingley and Sons; plumber, S. Rushworth, Shipley.

Royal Window removed from Christ's Hospital.—The great hall at Christ's Hospital is being gradually denuded of its ancient and modern glories in the shape of stained glass and armorial bearings. The chief portions of the window named the Royal window have just been removed, and will be placed in position in the new school buildings at Horsham, which will probably be opened in the autumn of next year.

Workmen's Compensation: Definition of an "Undertaker."—The ground of the recent appeal of John Garner in the arbitration from an award of his honour Judge Carter at the Liverpool County Court was that the claim had been made against him as the "undertaker," whereas his contract with the building owner did not constitute him one within the Act. The facts were as follows:—Messrs. Bowman, chemical manufacturers, desired to build new works adjoining their factory near Liverpool. They found all the materials and employed their own architect and foreman, under whose supervision the work was to be carried out. They required, however, labourers to do the brickwork, and they arranged with the present appellant to supply men for this purpose. The men supplied were paid for at so much per hour, the appellant's profit being the difference between the sum he received and the wages he paid away. When once the men were found his part of the contract was ended. One of the men so supplied was a man named Percival. He was working on a scaffold, which gave way, and he was killed. The man's widow and daughter sought compensation, and the county court judge made an award in their favour. The question for decision was whether the present appellant had rightly been held by the county court judge to be an undertaker, the appellant's contention being that he was merely himself a sub-contractor, and that Messrs. Bowman were the persons liable under the Act—Lord Justice A. L. Smith, in giving judgment, said the Act made the undertaker liable for any accident that befel the workman when engaged in work that came within the scope of its provisions. In the case of a building the undertaker was defined as the person undertaking its construction, repair, or demolition. It was clear that the present appellant was not employed in the construction of the new chemical works, and, whether Messrs. Bowman were liable or not as the undertakers, at any rate he was not. The appeal was therefore allowed.

LAST YEAR'S PATENTS.

THE seventeenth report of the Comptroller-General of Patents, Designs and Trade Marks, which has just been issued, supplies much interesting matter. Last year there were 25,786 applications for patents, 14,160 being sealed. The receipts from patent fees were £202,977, as compared with £200,418 in 1898, while the total receipts amounted to £225,700. The total expenditure only reached £123,216, so that the Patent Office made the handsome profit of £102,484 last year—a profit which might very well be largely reduced in favour of the inventors, by lowering the fees for obtaining a patent and the fees for maintaining it. And this magnificent profit was £19,886 less than it was in 1898. The applications from women inventors numbered 574, which works out at about 2.2 per cent. of the total number. From certain averages it appears that upon every 100 applications for patents, 50 have been sealed; and that out of every 100 patents sealed, 31 are kept in force for five years, 23 for six, 18 for seven, 15 for eight, 12 for nine, 11 for ten, 9 for eleven, 8 for twelve, 7 for thirteen, and 5 for fourteen. Putting this in another form, out of every 100 patents sealed, 69 expire after four years, 8 after five, 5 after six, and so on. The effect of the Workmen's Compensation Act is shown by the increase in the class "Wood," which is almost entirely due to inventions for guards to prevent accidents with working circular saws. (It may be mentioned, by-the-way, that the patenting of these guards is greatly overdone, as there are now hundreds of them.) To show how current events affect the Patent Office, it is interesting to note that after a fatal accident in Ireland to a passenger on an electric tramcar there were several applications for safety arrangements for such cars; but up to the present the war has not stimulated inventors. The following particulars will give an idea of the number of patents taken out in connection with building and allied work:—During 1898 there were 359 accepted complete specifications under the class "Buildings, &c." (this includes foundations, rooms, and a number of other details), 102 specifications for cements, 40 for chimneys, 144 for closets, 92 in connection with drains, 119 for filtering apparatus, 76 for fire-extinguishing apparatus, 129 for gas manufacture and distribution, 49 for glass, 72 for grinding and crushing appliances, 203 for heating apparatus, 128 for hinges, 189 for lifting appliances, 149 for nails and similar articles, 74 for paints, 131 for pumps, 35 in connection with roads, 47 for sewage apparatus, 16 for patent stone, 37 in connection with ventilation, and 138 in connection with wood. It is apparent on the face of it that the greater majority of these patents must be failures, or enjoy only a very short life, otherwise the market would be utterly overstocked—it is bad enough already. With regard to designs, the report states that 597 applications were made for the registration of designs for articles of glass, earthenware, porcelain, bricks, tiles and cement, and 142 for paper-hangings.

London Topographical Society.—The annual general meeting of this society was held on Monday evening last in the rooms of the Society of Antiquaries at Burlington House. The Right Hon. Lord Welby, G.C.B., vice-president, took the chair.

New Church for Upper Knowle, Bristol.—The new Church of St. Martin for the rapidly growing district of Upper Knowle, Bristol, is to be erected on the Wells Road in the Early English style. Pennant stone will be used, with Bath stone dressings, and accommodation will be provided in the completed building for 700 worshippers; but it is only proposed now to build the chancel, vestries and organ chamber, and two bays of the nave and aisles, to hold 400 persons. The cost of this will be £3,000. Mr. W. V. Gough, of Bristol, is the architect, and Mr. Maton Durnford, of Knowle, the builder.

New Companies.

Newport Ironmongery Company, Ltd.

This company was registered on May 15th with twenty members, each liable for £1, to carry on the business of furnishing and general ironmongers, ironfounders, &c. Registered office: 17, Commercial Road, Newport, Monmouthshire.

Keighley Stone-Sawing Company, Ltd.

This company was registered on May 17th with a capital of £4,000 in £1 shares to carry on the business of stone sawyers, cutters, and workers, quarry and mine owners, &c. The first directors (to number not less than three nor more than six) are E. Turner, E. Smith, J. Smith, S. Whitaker and W. Fowlds.

Brush Union, Limited.

This company was registered on May 10th with a capital of £12,000 in £1 shares to carry on the business of brush manufacturers, dealers, agents, and factors. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers. Registered office: 1-2, Chiswell Street, E.C.

Henry Addison and Co., Limited.

This company was registered on May 18th with a capital of £10,000 in £1 shares (3,000 five per cent. preference) to acquire the business of Henry Addison and Co., and to carry on the business of church and school furniture manufacturers, cabinet manufacturers, joiners, ironfounders, builders, contractors, &c. Registered office: Waterloo Works, Wellington, Salop.

Clogwyn Slate Quarries, Limited.

This company was registered on May 18th with a capital of £10,000 in £1 shares to adopt an agreement with V. Groom, R. F. Miller and T. H. Willis, trading as the Clogwyn Slate Quarries, and to carry on the business of quarry and mine owners, slate, stone and mineral merchants, &c. The first directors (to number not less than three nor more than seven) are V. Groom, R. F. Miller, and T. H. Willis.

Ingram Houses, Limited.

This company was registered on May 11th with a capital of £55,000 in £1 shares to establish, maintain, control, and carry on residential clubs, residences, homes, and dwelling-houses, as brick, tile, and terra-cotta manufacturers, as timber merchants, joiners, saw millers, dealers in building materials of every description, &c. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the company.

Amerells and Feverills Brick and Traction Company, Limited.

This company was registered on May 9th with a capital of £500 in £1 shares to carry on the business of brick and tile makers, engineers, owners and operators of steam traction engines and rollers. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers. Registered office: Amerells and Feverills Estate Office, Little Clacton, Essex.

Harris and Sheldon, Limited.

This company was registered on May 17th with a capital of £75,000 in 7,500 £5 preference shares and 37,500 £1 ordinary shares to acquire the business of shop front builders, air-tight show-case makers, makers of all kinds of fittings, and as general brassfounders, &c., carried on by S. Harris and J. E. Sheldon at Stafford Street, Birmingham; 69, Wood Street, Cheapside, London, E.C.; Hilton, Manchester; and 71, Queen Street, Glasgow, and, generally, to carry on in all or any of their respective branches the businesses of builders, brassfounders, shopfitters, metal workers, &c. The first directors (of whom there shall be not less than three nor more than seven) are H. Rogers (chairman), J. E. Hoskins, S. Harris and J. E. Sheldon.

Forest of Dean Stone Firms, Limited.

This company was registered on May 9th with a capital of £60,000 in £1 shares to acquire the businesses now carried on by David and Sant, Limited, at Park End and elsewhere in the Forest of Dean, by the Wilderness Brick and Stone Company, Limited, at Mitcheldean, Gloucestershire, and by W. W. O. McGaul at Bridgend, Glamorganshire, with a view, generally, to carry on the businesses of quarry owners, stone merchants, brick and tile makers, lime burners, &c.

Tate and Oglesby, Limited.

This company was registered on May 15th with a capital of £10,000 in £1 shares to acquire the business carried on at Whitefriargate and Charlotte Street, Hull, by W. Tate and H. W. Tate as William Tate and Son and R. Oglesby and Son, and to carry on the business of china and glass salesmen, wood, stone, and metal workers, builders, joiners, timber merchants, carvers, ironmongers, furnishers, &c. The first directors (to number not less than three nor more than seven) are W. Tate, J. A. Adams and H. W. Tate.

Carlisle Varnish Company, Limited.

This company was registered on May 10th with a capital of £5,000 in £1 shares to acquire the business carried on by the late A. Thompson at Canal Bank, Carlisle, as the Carlisle Varnish Company, and to carry on the business of varnish manufacturers, oil and colour men, dealers in proprietary articles, &c. The first directors (to number not less than two nor more than seven) are R. Creighton, J. Reary, T. S. Strong, J. Watson, sen., and T. Williamson. Registered office: Devonshire Buildings, 24, Devonshire Street, Carlisle.

Bournemouth and District Property Company, Limited.

This company was registered on May 9th with a capital of £10,000 in £1 shares to acquire certain leasehold messuage and buildings at East Cliff, Bournemouth, known as Brunstath, and to carry on the businesses of landowners, builders, contractors, brick, timber and hardware merchants, &c. The number of directors is to be ten. The first are J. J. Allen, J. E. Beale, W. E. Bury, T. J. Hankinson, F. H. Hankinson, E. W. Jenkins, G. J. Lawson, G. A. Mate, S. J. Mate and W. T. Reynolds. Registered office: Richmond Chambers, The Square, Bournemouth.

H. H. Martyn and Co., Limited.

This company was registered on May 17th with a capital of £18,500 in £1 shares to acquire the sculpture studios, carving, masonry and monumental works at Sunning-end, High Street, Cheltenham, and the art joinery and cabinet works at Belle Vue, Cheltenham, with the business carried on as H. H. Martyn and Co., and to carry on the business of sculptors, art carvers, wood and metal workers, joiners, &c. The first directors (to number not less than two nor more than five) are H. H. Martyn, A. W. Martyn, and H. W. Dutton. Registered office: 59, High Street, Cheltenham.

Parsons Brothers, Limited.

This company was registered on May 4th with a capital of £110,000 in £10 shares to acquire and amalgamate the businesses of timber and slate merchants now being carried on at Eastbourne and Newhaven under the style or firm of Latter Parsons and Co. and as Parsons Bros. at Lewes, both in the county of Sussex, and, generally, to carry on in all or any of their respective branches the businesses of dealers in timber, manufacturers of and dealers in slate, cement, coal, coke, &c.; as timber growers, sawmill proprietors, and saw millers, brick, tile and terra-cotta manufacturers, as quarry owners and stone merchants, marble masons, &c. The first directors (of whom there shall be not less than three nor more than eight) are L. Parsons, J. Parsons, T. Parsons (life directors), E. D. C. Davey, W. J. Parsons, W. L. Mannington and S. Hume. Registered office: Eastgate, Lewes, Sussex.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
June 1	London, E.—Repairs, &c., to Boys' School	Governors of Stepney and Bow Foundation	G. Elkington, 95, Cannon street, E.C.
" 1	Alnwick—Stabling	Urban District Council	G. Wilson, Surveyor, Council Offices, Alnwick.
" 1	Kintore, Scotland—House	Mr. E. J. Meynell	Mr. Davidson, Builder, Altnacraig, Huntly.
" 1	Thirsk, Yorks.—House	Midland Railway Co.	T. Stokes, Architect, Thirsk.
" 1	London, S.E.—Accumulator House	Mr. D. Fairgrieve	Engineer, Midland Railway Station, Derby.
" 2	Cork—Gate Lodge	Duke of Buccleuch	Rev. R. F. Clarke, Brinny Glebe, Upton, co. Cork.
" 2	Alnwick—Residence	School Board	G. Beavell, jun., Architect and Surveyor, Alnwick.
" 2	Dalton-in-Furness—Farm Buildings	Urban District Council	Wadham and Son, 6, Cornwalls-street, Barrow-in-Furness.
" 2	Portobello, Scotland—Addition	East Ham Urban District Council	R. Wilson, 3, Queen-street, Edinburgh.
" 2	St. Agnes, Cornwall—House	Vestry	E. Rodda, Trenethick Farm, St. Andrews, St. Agnes, Cornwall.
" 2	Stanley, Wakefield—Extensions	Bucks County Council	The Clerk, Council Offices, Coach-road, Outwood.
" 2	Warkworth, Northumberland—Houses	Corporation	J. Wallace, Warkworth.
" 3	Blackburn—Church	Town Council	Stones and Stones, 10, Richmond-terrace, Blackburn.
" 4	London, E.—Public Buildings	Magistrates and Council	Surveyor, Public Offices, East Ham, E.
" 4	Plumstead—Town Hall	Urban District Council	E. Hughes, Vestry Hall, Maxey-road, Plumstead.
" 4	Holyhead—Shops	Urban District Council	H. P. Jones, Market-street, Holyhead.
" 5	Blyth, near Retford—Chapel	Urban District Council	Eyre and Southall, Chapel-gate, Retford.
" 6	Aylesbury—Arch Works	Urban District Council	R. J. Thomas, County Surveyor, County Hall, Aylesbury.
" 6	Blackpool—Fire Station	Corporation	T. Loftus, Town Hall, Blackpool.
" 6	Bridgewater—Electricity Works	Town Council	The Clerk, Municipal Offices, High-street, Bridgewater.
" 6	Cork—Repairs to Pier Head	Urban District Council	The Clerk, Office of Public Works, Dublin.
" 6	Leith, Scotland—Weigh House	Magistrates and Council	Surveyor, Town Hall, Leith, Scotland.
" 7	Ealing, W.—Alterations, &c., to Fire Station	Urban District Council	C. Jones, Engineer, Public Buildings, Ealing, W.
" 8	Lanacombe, Devon—Coastguard Buildings	Admiralty	Director of Works, 21, Northumberland-av., London, W.C.
" 8	Leeds Alterations and Additions to Inn	J. R. Heaton	F. Mitchell, 9, Upper Fountain-street, Leeds.
" 9	Markethill, Ireland—Renovating Church	Urban District Council	J. Brown, 41, Kilmorey-street, Newry.
" 9	Weston-super-Mare—Pavilion	Urban District Council	Surveyor, Town Hall, Weston-super-Mare.
" 11	Castletownbere, co. Cork—Coastguard Station	Metropolitan Asylums Board	H. Williams, Secretary, Office of Public Works, Dublin.
" 11	Leavesden, Herts.—Storey	School Board	T. D. Mann, Board Offices, Carmelite st., Embankment, E.C.
" 11	Newcastle-upon-Tyne—School	Gas and Water Committee	C. S. Errington, Grainger-street West, Newcastle-on-Tyne.
" 11	Ramsgate—Retort House	Rev. J. K. O'Doherty	W. M. Valon, Gas Offices, Ramsgate.
" 12	Londonderry—Belfry, &c.	Hackney Vestry	G. C. Ashlin and E. J. Toye, 7, Dawson-street, Dublin.
" 12	London, N.—Disinfecting Station, Shelters, &c.	Town Council	Gordio and Gunton, Architects, Finsbury House, E.C.
" 12	Brighton—Alterations	Hackney Vestry	F. J. C. May, Town Hall, Brighton.
" 12	London, N.E.—Buildings	School Board	Gordon and Gunton, Finsbury House, E.C.
" 12	Erith—School	Admiralty	Ford, Son, and Burrows, 21, Aldermanbury, E.C.
" 13	Warrington—Turkish Bath	Town Council	T. Longdin, Town Hall, Warrington.
" 15	Cromer, Norfolk—Coastguard Buildings	Gas Co.	Director of Works, Admiralty, Northumberland-av., E.C.
" 18	Luton—Engine house, Boiler-house, &c.	Vestry	Borough Engineer, Town Hall, Luton.
" 18	Scarborough—Roof	Markets Committee	W. J. Holliday, Gas Offices, 32, Westborough, Scarborough.
" 20	Plumstead—Building	Corporation	F. Summer, Vestry Offices, Maxey-road, Plumstead.
" 22	West Hartlepool—Church	Corporation	E. and W. Richardson, Park-road, West Hartlepool.
" 25	Wolverhampton—Shops	Corporation	J. W. Bradley, Town Hall, Wolverhampton.
ENGINEERING—			
June 1	Newcastle-upon-Tyne—Electric Tramways	Corporation	C. Hopkinson, 26, Victoria-street, London.
" 1	Croydon—Hydraulic Lift and Laundry Machinery	Council	Borough Engineer, Town Hall, Croydon.
" 1	Grimsby—Electrical Meters	Corporation	Town Clerk, St. Mary's Gate, Grimsby.
" 1	Uttoxeter—Borehole	Urban District Council	F. S. Hawthorne, Clerk, Market-place, Uttoxeter.
" 1	Pangbourne—Lamps	Parish Council	A. Butler, Clerk, Pangbourne.
" 2	London, S.E.—Electric Lighting	South London Electric Supply Corporation, Ltd.	H. H. Boyer, 54, Bengeworth-road, Loughborough Junction, S.E.
" 2	Fort Augustus, Scotland—Water Supply Works	Fulham Vestry	G. Gordon and Co., Engineers, Inverness.
" 4	London, S.W.—Wiring	Cambrian Railways Co.	F. Medhurst, 13, Victoria-street, S.W.
" 5	Port-y-waen and Llangynog—Light Railway	Town Council	A. J. Collin, Engineer, Oswald-road, Oswestry.
" 7	Bridgewater—Electrical Plant	Corporation	W. H. Trentham, 39, Victoria-street, Westminster, S.W.
" 7	Leeds—Water Mains	Provost, Magistrates, & Commissioners	T. Hewson, Municipal-buildings, Leeds.
" 8	Partick, Scotland—Dust Destructor	Spanish Government	J. Donaldson, 97, West Regent-street, Glasgow.
" 9	Bilbao—Twelve Buoys	Corporation	Commercial Department, Foreign Office, S.W.
" 9	Leominster—Valves	Corporation	J. Budd, Town Hall, Leominster.
" 9	Leominster—Tank	Corporation	J. Budd, Town Hall, Leominster.
" 9	Manchester—Equipment of Electrical Tram-lines	Urban District Council	J. M. M'Elroy, Tramways Dept., Town Hall, Manchester.
" 9	Bolsover, near Chesterfield—Sewers	Town Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
" 11	Crowe—Electric Wiring	Urban District Council	F. Cooke, Municipal Offices, Crewe.
" 11	Bromyard—Waterworks	Glasgow and South-Western Railway Co.	A. H. Parker, 5, Foregate-street, Worcester.
" 11	Glasgow—Railway	Corporation	The Engineer, St. Enoch Station, Glasgow.
" 12	Glasgow—Switchboards	Town Council	W. A. Chamen, 75, Waterloo-street, Glasgow.
" 12	Dover—Boilers	Secretary of State for India	H. E. Stilgoe, Town Hall, Dover.
" 12	India Office—Locomotives	Sanitary Committee	Director-General of Stores, India Office, Whitehall, S.W.
" 14	Much Wenlock, Salop—Waterworks	Urban District Council	G. C. Cooper, Town Clerk, Much Wenlock.
" 15	Newcastle-Emlyn, Wales—Reservoir	City Council	T. Thomas, Terra-Cotta-buildings, Newcastle-Emlyn.
" 15	Wells, Somerset—Sewage Purification	Corporation	Cameron, Commis. and Martin, 7, Bedford-circus, Exeter.
" 16	Bacup—Reservoir	Ferry Committee	J. Diggle, 3, Longford-street, Heywood, Lancs.
" 16	Middlesbrough—Crane	London County Council	F. Baker, Municipal-buildings, Middlesbrough.
" 16	Horton, near Epsom—Electric Lighting	Council	R. W. Partridge, 6, Waterloo-place, S.W.
" 18	Croydon—Engines and Pumps	Corporation	Borough Engineer, Town Hall, Croydon.
" 21	Sutton Coldfield—Electric Lighting Plant	Rural District Council	T. V. Holbeche, Town Clerk, Sutton Coldfield.
" 22	Uxbridge—Filters	Markets Committee	Bailey, Denton and Co., Palace chambers, Westminster, S.W.
" 25	Wolverhampton—Abattoir Fittings	Spanish Government	J. W. Bradley, Town Hall, Wolverhampton.
" 26	Wolverhampton—Tramway Track	Peruvian Government	J. W. Bailey, Engineer, Town Hall, Wolverhampton.
July 7	Madrid—Electric Tramway	Corporation	Commercial Department, Foreign Office, S.W.
" 23	Callao—Reconstruction of Railway	Corporation	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5, East India-avenue, Leadenhall-street, E.C.
IRON AND STEEL—			
June 1	Grimsby—Arc Lamp Posts	Corporation	W. Grange, St. Mary's Gate, Grimsby.
" 2	Eggleston, Durham—Fencing	Parish Council	Hill and Stoddart, Eggleston.
" 6	Leeds—Tree Guards	Corporation	City Engineer, Municipal-buildings, Leeds.
" 9	Leominster—Water Mains	Corporation	J. Budd, Town Hall, Leominster.
PAINTING AND PLUMBING—			
June 1	Derby—Cleaning and Painting Stations	Midland Railway Company	Engineer, Midland Railway Station, Derby.
" 4	Nuneaton—Painting	Guardians	The Master, Union Workhouse, Chivers Coton.
" 5	Alecdon, Cumberland—Painting, &c., Schools	School Board	J. R. Thompson, 18, Scotch street, Whitehaven.
" 5	Lo. don, W., Painting, &c.	Paddington Guardians	E. H. Sim, 8, Craig's-court, Charing Cross, S.W.
" 5	Shafield—Painting	Hospital Committee	City Surveyor, Town Hall, Sheffield.
" 7	London, S.W.—Painting	Fulham Guardians	D. Matthews, 650, Fulham-road, S.W.
" 11	Wanstead—Painting and Repairs	School Board	J. T. Bressey, 70, Bishopsgate-street Within, E.C.
ROADS AND CARTAGE—			
June 1	East Hettin, Durham—Channelling	Rural District Council	G. Gregson, "Eastwood," Western Hill, Durham.
" 1	Hull—Paving	Corporation	A. E. White, Town Hall, Hull.
" 1	Little Woolton, Liverpool—Macadam	Urban District Council	B. Simmons, Grange-lane, Gateacre, near Liverpool.
" 2	Car. i. k. fergus, Ireland—Roa. l Met. l	Urban Council	J. Boyd, Town Hall, Carrickfergus.
" 2	Saffron Walden, Essex—Granite Macadam	Corporation	A. H. Forbes, Borough Surveyor, Saffron Walden.
" 5	Branksome, Dorset—Road, &c.	Urban District Council	S. J. Newman, 3, Tennyson-bldg., Ashley-rd., Branksome.
" 5	Ha. npton, Middlesex—Street Works	Urban District Council	J. Kemp, Park House, Hampton.
" 5	Leyton—Flints	Urban District Council	W. Dawson, Town Hall, Leyton.
" 5	Shoburness—Street Works	Urban District Council	W. Harris, Clarence-street, Southend-on-Sea.
" 6	Littlehampton—Flints	Urban District Council	A. Shelley, Clerk, Town Offices, Littlehampton.
" 6	Kingston-upon-Thames—Paving, &c.	Corporation	Borough Surveyor, Clattern House, Kingston-upon-Thames.
" 6	Hove, Sussex—Roadmaking	Magistrates and Council	H. H. Scott, Town Hall, Hove.
" 6	Leith—Paving	Urban District Council	Borough Surveyor, Town Hall, Leith.
" 7	Leadgate, Durham—Asphalting	Urban District Council	T. S. Longstaff, Surveyor, Leadgate, R.S.O.
" 7	Newmarket—Granite and Slag	Urban District Council	S. J. Ennion, Deva-chambers, Newmarket.
" 9	Bolsover, near Chesterfield—Road	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ROADS AND CARTAGE—Continued.			
June 11	Crewe—Street	Town Council	G. E. Shore, Borough Surveyor, Crewe.
" 11	Leavesden, Herts.—Paths	Metropolitan Asylums Board	T. D. Mann, Board Offices, Carmelite-st., Embankment, E.C.
" 11	Warrington—Forming	Paving and Sewerage Committee	T. Longdin, Town Hall, Warrington.
" 19	Acton—Making-up	Urban District Council	D. J. Ebbetts, 242, High-street, Acton.
SANITARY—			
June 4	Evenwood, Bishop Auckland	Rural District Council	C. Johnston, Crofton House, Bishop Auckland.
" 4	King's Lynn—Sewers	Corporation	E. J. Silcock, Engineer, King-street, King's Lynn.
" 5	Whickham, Durham—Sewerage Works	Urban District Council	J. P. Spencer, 13, Grainger-st. West, Newcastle-on-Tyne.
" 5	Tonbridge, Kent—Sewer	Urban District Council	W. L. Bradley, Tonbridge Castle, Kent.
" 9	Bolsover, nr. Chesterfield—Sewers, Tanks, Beds, &c.	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
" 11	Bingley, Yorks.—Sewerage Works	Urban District Council	R. Armistead, 1, 3, Charles-street, Bradford.
" 11	Ripley, Derby—Sewerage Works	Urban District Council	R. Argile, Engineer, Ripley, Derby.
" 11	Woolston, near Southampton—Sewerage Works	Itchin Urban District Council	F. W. Shields, 1, Cranbury-road, Southampton.
" 13	Denby Dale, near Huddersfield—Sewers	Urban District Council	S. Shaw, Union-street, Dewsbury.
" 13	London, E.—Sanitary Work	Shoreditch Guardians	F. J. Smith, Parliament Mansions, Victoria-street, S.W.
" 18	Croydon—Sewers	Engineer, Town Hall, Croydon.	Taylor, Sons, and Crimp, 27, Great George-street, S.W.
" 18	Thame, Oxon—Sewers	Urban District Council	Denton and Co., Palace Chambers, Westminster.
" 22	Uxbridge—Sewerage Works	Rural District Council	S. J. Ennion, Deva Chambers, High street, Newmarket.
" 25	Newmarket—Sewerage Works	Urban District Council	
TIMBER—			
June 2	Genoa—Woods	Italian Admiralty	Manager, Commercial Dept., Foreign Office, London, S.W.
" 11	South Hetton, Durham—Colliery Timber	Coal Company Limited	J. R. Lambert, South Hetton, Sunderland.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
May 31	Honiton, Devon—Supplying Town with Water	£21, £5 5s.	Town Clerk, Honiton.
June 1	Bury, Lancs.—Schools	£100, £60, £30	S. Woodcock, Clerk, Broad-street, Bury.
" 16	Berkhamstead—Girls' Grammar School	£50, £35, £15	A. W. Vaisay, Solicitor, Berkhamstead.
" 30	Rivers—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."
July 16	Falmouth—Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.
Aug. 1	Sunderland—Church		William Wilson, 7, Azalea-terrace, South Sunderland.

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LONDON.—For alterations and repairs at No. 2 Alexander-mews, Westbourne Park, W. for Mr. Francis F. Giraud. Mr. H. Fuller Clark, architect, 28, John-street, Bedford-row, W.C.:

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Hayward and Son	167		

LONDON.—For refitting and other works at Deptford Park School, for the London School Board. Mr. T. J. Bailey, architect:—

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Edwards and Medway	3,000	J. and C. Bowyer	2,724
W. V. Goad	2,900	Falkner and Son	2,473

LONDON.—For the erection of new school at Mansfield-road, for the London School Board. Mr. T. J. Bailey, architect:—

Chessum and Sons	£23,143	+	£155
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Leslie and Co., Limited ..	22,502	+	160
Williams and Son	22,490	+	295
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† If walls of classrooms and halls are plastered add.

LONDON.—For the erection of a new school at Millbank for the London School Board. Mr. T. J. Bailey, architect:—

Johnson and Co., Ltd.	£29,759	0 0	+	£335
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Spencer, Santo and Co., Ltd.	28,470	0 0	+	220
T. L. Green	28,273	0 0	+	362
C. Wall	28,250	0 0	+	230
Scrivener and Co.	27,875	0 0	+	373
Grover and Son	27,850	0 0	+	390
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T. Crawys	£1,500	Hawkins and Co.	£1,118
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R. F. Yeo, Torquay	610 0 0	G. Hicks	530 0 0
J. Bearne	599 17 6		

[Rest of Newton Abbot.]

SALTASH (Cornwall).—For alterations to Hatt House, near Saltash, for Lady Penn Symons. Mr. E. M. Leest, architect, Public Hall Chambers, Devonport, and 59, Fore-street, Saltash:—

S. E. D. Ough	£191 0	F. G. Widger	£139 0
J. C. Churchmond	170 0	T. King	130 5
W. E. Blake	167 0	Taylor and Mutton	118 0
W. T. Stevenson	150 0		

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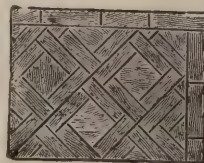
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JUNE 6, 1900.
No. CCLXXVIII.

EFFINGHAM HOUSE,
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An Architectural Causerie.

In the Matter of Roads. **CRITICISM of County Councils has been a legitimate amusement**

ever since those authorities came into being, and has afforded plenty of occupation both for avowed enemies and pledged friends of this form of local government; but no matter in what other directions the Councils may have been adversely criticised, they have, in the matter of roads at least, amply justified their existence. The condition of our roads is of vital importance, not only to all those who use them for heavy traction, but to those who desire to travel quickly and easily from point to point; and finally is a matter of peculiar interest to those who are engaged in the development of suburban estates. Before the institution of County Councils, the control of the roads outside municipal boroughs was in a very unsatisfactory state. A General Highway Act had in the early thirties superseded such obsolescent specimens of early statute-law as the Statute of Philip and Mary, which provided for parish road-surveyors, and for men, horses, carts, and materials to be supplied, in lieu of rates, by the farmers and yeomen, at their orders; and "statute labour" after an existence of three hundred years thus disappeared. The General Highway Act allowed parishes to combine and form Highway Boards, just in the same manner as they formed Poor Law Boards. Levying a common rate, and choosing a surveyor, they set about mending their parish roads, leaving the old turnpike roads in the care of the Trusts which formed separate authorities having the main lines of communication between important towns in their charge, and deriving the funds for their proper maintenance from the tolls they were, by Acts of Parliament, authorised to collect. Turnpike roads were thus entirely independent of rate aid. They were roads of great excellence, both as regards gradient and surface, and they were, in fact, the only good roads in the country. Those roads which were in the hands of the individual parishes, or of the parishes allied as Highway Boards, were at the extremity of badness. Their surveyors were not always—nor often—competent men, and were in fact, elected by the Boards from a crowd of necessitous inhabitants whose only qualifications were that they were in want of employment, no matter of what kind. These "surveyors" in their turn were instructed to give work to the broken down old men who would otherwise have become inmates of the workhouse. In this way the parishes saved something on the Poor Rates, but it may readily be supposed that the roads were not greatly benefited by this kind of labour, and it is a matter for sur-

prise that more bad roads were not indicted, as they were liable to be, in common law. But just when turnpike roads were at their best, and "highways," *i.e.* the rate-repaired roads, at their worst, railways came, and, for a time, rendered the subject of secondary interest. It was only, indeed, when County Councils came into being that the Renaissance of rural roads dawned. Between the era when the Romans left Britain, and the present, the scientific construction of local roads was a lost art, however skilfully the main roads were engineered and metalled by Telford and Macadam. Some of the old travellers' tales of the roads are, indeed, almost incredible, and had another than that careful and conscientious observer, Arthur Young, described the roads existing in his time in such terms as he uses, we might not un-

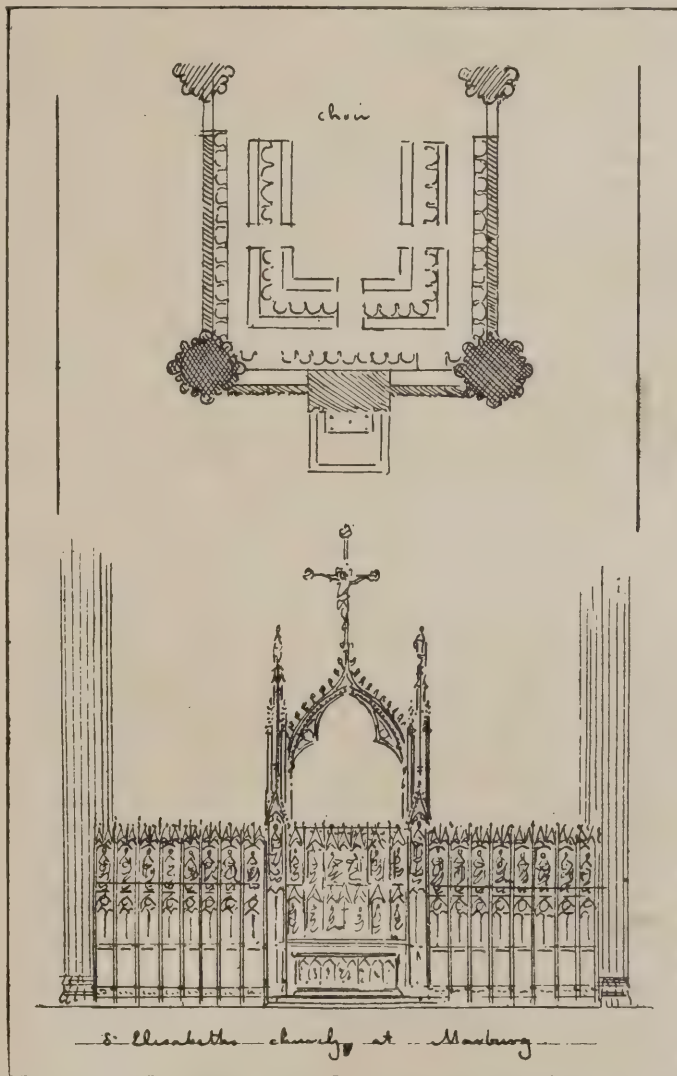
completed than rents rose from 7s. to 11s. per acre."

Here, then, we perceive an instance of virtue bringing a reward in cash, as well as the less tangible satisfaction which is supposed to come from the commission of good deeds. Here, at least, we perceive good roads to be justified to the present generation.

C. G. H.

A Drawing by Pugin.

THE illustration on this page is reproduced from one of the original drawings made by Welby Pugin for his "Treatise on Chancel Screens." In many cases Pugin actually etched the plates which serve as illustrations to his works, but in this instance



SCREEN AT ST. ELIZABETH'S CHURCH AT MARBURG. FACSIMILE OF A SKETCH BY WELBY PUGIN.

reasonably be excused from believing him. But Young is an unquestioned authority, therefore, when he tells us of the condition of the road to Horsham from London just previous to the existing road being constructed in 1756, and of the route which travellers were obliged to take, we do well to be astonished.

"It was," he says, "so execrably bad that whoever went on wheels were forced to go round by Canterbury, which is one of the most extraordinary circumstances that the history of non-communication in this kingdom can furnish.

"The making of the road was opposed," he adds (and this is a touch which has not lost its air of modernity), "for what measure of common sense could ever be started that would not be opposed? It was no sooner

the published illustrations were clearly worked up by some intervening hand, and, though they have a more finished appearance than the original sketches, have undoubtedly suffered artistically in the process of transformation. The illustration, it will be noticed, is a very fine pen drawing, almost microscopically fine; yet, none the less, it is bold and firm, suggesting often by the merest scratch a richness of ornament which the transcriber has had much ado to render in the finished illustration by a much greater profusion of line. The minuteness of the execution is partly explained by the fact that in all such work Pugin used a lens like a watchmaker's glass, held in the eye.

On Story in Stone.

I WOULD like to discover a fulcrum whereon one might move the architectural mind on the subject of storiation. By the architectural mind I mean, firstly, the client who commissions; and, secondly, the architect who devises. Would that we could stir up, in the ordinary British mind, a desire for (and a willingness to pay for) somewhat more of story, or meaning, in the decorative carving, mosaic, moulded work, or painting applied to the office and shop fronts that we see as we pass along the streets of our cities. It need not cost more than the unmeaning but elaborate foliage and curly mouldings that so often break the repose of a street front, and testify to poverty of thought; but committees and individuals are alike timid and nervous about what the well-known old lady will say, and collectively or singly they prefer the path of safe incoherency or stupidity. However, the success (and there is nothing that succeeds so well as success) of such interesting experiments, as the sculpture by Mr. Thornycroft in the City, or the terra-cotta frieze by Mr. Creswick over the hat shop at the West End, should stimulate others to ask of their architects that spaces should be provided for such storiation in all new buildings. Architects also might use fewer panels of mere ornament, and in their stead, make provision for decorative work which, in addition to giving variety and making bands, and masses, of light and shade or "texture," shall arrest the attention of the man in the street and give him something to think about. The trade or business carried on in the building—some contemporary event, *e.g.*, a jubilee of any kind, a little bit of national or local history, the preservation of some antiquarian record, even an accident occurring during the execution of the works, *e.g.*, the "Dig awa' boys, I'm no dead yet" at Edinburgh, each of these is worthy of commemoration in some way or other, and all would tell their story to those who come after. Mosaic might be much more frequently introduced in the panels and friezes now left in decorous but uninteresting plainness. It has one advantage over sculpture—that it gives colour; and the splendour of gold grounds would light up the dinginess on the south side of many of our east to west thoroughfares. It is also more independent of bright light and serene hours than relief work; and would be therefore more useful in the gloomy corners. But—colour and relief, mosaic and sculpture—both are necessary; and both will be felt to be valuable adjuncts in our exterior architecture.

I would plead, then, for more storiation; that its educational function may be appreciated by the client; and its artistic value be felt by the architect. And let it not be said that it is impossible or difficult to arrange and execute schemes of storiation which shall be suitable, or at least not incongruous on all kinds of buildings; for when the scheme is arranged, *i.e.*, the subjects for illustration are set down in connected order, then there are mosaic workers, like Spence, and relief workers in numbers, like Roscoe Mullins, who could execute all that might be demanded from them to make our highways beautiful with colour.

H. H. S.

On Reflection.

A Squabble about Prices.

MR. GEORGE E. WRAGGE, Hon. Sec., the London Association of Lime, Cement and Brick Merchants, sends us, at the request of his Committee, copies of letters which have passed between himself and the editor of our contemporary, "The Builder," and asks us to publish this correspondence. We have not space to print it *in extenso*, but the controversy is as follows: Mr. Wragge in his private capacity first wrote to "The Building News," pointing out that "The Builder" was giving prices for materials such as bricks, remarking that the price given for stocks was 36s. 6d. per 1,000 alongside in the river, and for Flettons at London Railway Depots, 31s. 6d., which prices he referred to as "simply absurd." Then in his official capacity, at the request of his Committee, Mr. Wragge wrote to the editor of "The Builder," regretting the prices of Portland cement and lime published in that journal were incorrect, "being, in fact, the actual minimum prices operating at the present time." The editor, in answer, said he could do nothing in the matter until he had consulted his contributor who compiled the price lists; and then Mr. Wragge wrote that he could not agree that nothing could be done in the matter, and asked for his letter to be inserted in the next issue, as the information given was incorrect. The editor of "The Builder" replied that three firms in London had supplied him with prices, and said that if Mr. Wragge's association wanted to put up the prices, it was no concern of his, as the paper was not conducted in the interests of the Association. He also referred to the letter in "The Building News" as a gratuitous attack, in view of which Mr. Wragge had forfeited the right to expect the use of "The Builder's" columns. The closing letter is from Mr. Wragge denying any intention of the Association to put up prices, and pointing out that the letter to "The Building News" was in his private capacity, and referred only to the price of bricks. Now we have no axe to grind in this matter, and we are not concerned with the controversy between Mr. Wragge and our contemporary, except in so far as it affects the general subject of builders' prices, on which we may be able to throw a little light. We cannot agree that the prices given by "The Builder" were absurd or the minimum, as we have knowledge of these materials having been bought, in large quantities, at slightly lower prices than those given. But surely there is no need for all this fuss to be made over the prices given by our contemporary, for its prices are—by their very nature—most unreliable and can be of use to neither the merchants nor the buyers.

Conditions Governing Prices.

It will be noticed that we do not in this Journal give prices for any other materials than those sold in the open market. Before we started our list of "Current Prices" some time ago we carefully considered the whole matter and came to the conclusion that we would give only the prices actually realised in open market, which are open to everyone to buy at if he attends the sales, and, therefore, form an exact scale to show how the prices are rising and falling; more than this, they cannot do. Even this limited value would be wanting in the case of average prices for other average materials not in open market, as no standard would be fixed for gauging the fluctuation. For the prices to be of any value the maker's name must be given, and

although we are in a position to give this information, we refuse to advertise any particular firms and thus upset the relations of trade. The prices now depend upon so many things—the quality, the standing of the merchant, the distance from place of manufacture, the financial standing of the buyer, and the quantity bought—that no one about to purchase any considerable quantity would think of doing so without getting definite quotations. As an instance of the differences that may arise, one large purchaser of sound financial standing with whom we are acquainted was obtaining only last week Portland cement alongside in barges just below London Bridge at 29s. 6d. per ton, whereas another purchaser had three quotations for 30s., one from the very firm who was supplying at 29s. 6d., and a small builder was being quoted 32s. 6d. per ton. With regard to timber, we give only actual results of sales in open market for those kinds which are largely and generally used and being sold almost every week. To give the price of Greenheart, Sequoia, Lancewood, &c., seems to us waste of space, when only twenty or thirty logs sometimes are sold in two or three months; and to dilate upon the wood of various sizes and qualities and of many different ports of export is just as useless, for every buyer of timber knows that the lower qualities of timber from one exporter are equal to the higher of other exporters, and therefore announcements of results of sales cannot be relied upon unless the timber is of standard quality, or has been seen at the sale. The same might almost be said with regard to varnishes.

Fire and the National Gallery.

THOUGH the danger to the National Gallery was grossly exaggerated, the fire which broke out in the adjacent property last week served as an unpleasant reminder of the standing menace to which our art collection is subjected. At no time during the outbreak was the Gallery likely to catch fire; but in another conflagration the wind might not be so propitious, or the officials so prompt in getting the flames under, and we should have the mortification of seeing our priceless property reduced to ashes. Therefore it is necessary that the building should be properly isolated without further delay. This can only be effected by cutting a broad road through on the west side of the Gallery from Pall Mall to Green Street. As a street it is unnecessary, but as a means of ensuring the safety of the National and Portrait galleries it is imperative. Successive Governments have deferred the matter on the ground of economy, and economy which is likely to cost us dear, seeing that we shall now have to acquire the new block of public house and hotel property at the corner of Green Street and Charing Cross Road. There must be no mincing matters, the thing must be done and done effectually. One of our contemporaries suggests that the L.C.C. should take up the matter, but in this we do not agree. The collections belong to the nation, and money spent in safeguarding them must be provided by the nation. Besides the L.C.C. have in hand the new street improvement, which will tax all their resources for some time to come, and London is impatient to see this work completed. If the Government purchase the adjoining properties, and, from motives of economy, turn the sites into the barrack ground, no one will complain, for an open barrack ground will be as safe, if not safer, than a public street; and there is nothing beautiful about the rear building of the galleries that requires a street to set them off. But the safety of our national collection is of primary importance, and must be no longer delayed.



FIG. 1.

GESO.

ITS USE IN DECORATIVE PAINTING.

By F. HAMILTON JACKSON.

THE word "gesso" is an Italian word, signifying gypsum—plaster of Paris; so that if you speak to an Italian of work in "gesso" he understands you to refer to what we are accustomed to call plaster casts. But the word has been used also to express a mixture, of which there are many forms, the basis of which is whiting mixed with glue or size, and generally applied to the surfaces to be decorated with a brush while in a wet state, though this treatment may be varied in several ways without impairing the permanence of the work or altering its effect to any great extent. It is a form of art peculiarly suited to the painter's use, and one by means of which decorative effects of the richest, as well as of the most delicate, quality may be obtained with comparative ease.

It is, though closely allied thereto, a quite different form of art from stucco duro, with which it is often confused, this being distinctly a sculptor's medium, and lending itself much more readily to modelling and carving than "gesso" does. Stucco duro was the material in which many devotional bas-reliefs of the Renaissance were executed, shop replicas of marble originals, the productions of the ecclesiastical furnishers of the time, which were painted and finished with added ornaments of true "gesso," coloured and gilded very often by way of enrichment. Examples of this sort of work are to be seen at South Kensington, and there was a very fine collection of them in a winter exhibition at the Royal Academy some few years ago.

The use of "gesso" or some similar material is of the highest antiquity. The Egyptians of the Fourth Dynasty, in making those effigies of their departed friends which startle us even now with their extraordinary lifelikeness, first roughly shaped the figure in wood, then covered it with fine linen, like a skin, and upon this spread a thin layer of plaster, by means of which refinements of modelling were easily added, colour being subsequently applied to ensure a still greater resemblance to life—their object being to exactly simulate the person of the deceased. This process is much the same as that employed in Italian work of the Middle Age and Renaissance periods, and indeed in much of the "gesso" produced to this day. The Egyptians also employed the same material a good deal in decorating furniture, generally of the cheaper sorts, making use of painting and gilding over it in place of the inlays of precious stones and ivory and golden ornaments used in their more sumptuous cabinet work.

In Roman times, a material seems to have been preferred more resembling marble, and carved like it, and stucco duro was employed for small architectonic decorations.

The materials with which this was made

were well-burned and slacked lime, a little fine sand, and finely-ground limestone or white marble dust. The whole was well tempered together with water, and beaten up with sticks till compounded into a good workable paste, and when properly worked was susceptible of such surface finish that, after being polished with chalk and powdered lime, it was sometimes used for mirrors, Vitruvius tells us!

Ornamental designs were rather carved than modelled in it—a process of subtraction—which produces quite a different effect from that of addition, as in "gesso" work, and the same process was used by the various "stuccatori," whose work adds so much charm to the earlier Renaissance buildings in Italy. Jewellers, too, made use of it for models, in place of wax, as being more permanent, and, on the other hand, it was used for large work, such as Henry the Eighth's vanished palace of Nonesuch, which was no doubt the parent of the pargetry still to be seen on the fronts of a few old houses in the provinces.

If one visits the National Gallery and enters the rooms devoted to early pictures of the Italian and German schools, the first thing to strike the eye is the very different standpoint from which craftsmen of those days looked at their art productions from that usual to artists of the present day. Their first object seems to have been the decorative effect of the whole, and for the purpose of gaining richness and splendour of colour and surface they resorted to the lavish use of gilding, probably moved thereto by the fact that goldsmithery and painting were then closely allied crafts, and by the recollection of lovely Byzantine enamels, then more common than they are now, alas! The accurate representation of Nature, the effects of aerial perspective, appear to have been quite a minor consideration, instead of being, as now seems to be the case generally, the be-all and end-all of artistic effort. Looking more closely one sees that the golden surface is broken up in various ways—a depressed diaper appears in some places, in others rays seem to be cut out of the surface, and in others, again, ornaments appear raised above it. Indeed, in some of the later pictures of the period details are made to project with the projection of Nature—for instance, in the great altar piece by Crivelli, in which jewels and crowns stand out half an inch or so; and St. Peter's keys are suspended by a piece of actual cord dipped in "gesso" and gilded, behind which one can pass a finger. The earliest of these pictures is one by Margaritone of Arezzo, painted in the middle of the thirteenth century. The latest is by Fungai, the Sienese, who died in 1516. The Sienese always loved decoration, and this belated decorator died only four years before Raphael's death, which shows with what extraordinary rapidity art advanced at that period; for it is plain that the use of "gesso" and gilding was abandoned because the artists thought that they could imitate everything in paint; and were, in fact, proud of their achievements, as they well might be. In proof of this pictures by Mantegna may be cited, such as the lovely

triptych in the Uffizi and the Gonzaga portrait, in which a great deal of actual gold is used, as it is, too, in his chiaroscuro paintings very often, while there are also pictures of his to be seen in which he has painted the effect of gold in the draperies. Crivelli, too, while in some works he uses "gesso" and gilding lavishly, side by side in the same work uses gold in flat patches for patterns, and hatchings of gold on the lights of the draperies, and paints the relief of some of the same ornaments which he has raised with "gesso" in another part of the picture. The direction of their aim changed, it was no longer the production of a beautiful piece of decoration which was uppermost in their minds, but the contest with the difficulties of the representation of Nature in the chosen medium, a contest in which the manual dexterity of the workman became so tremendously developed that in the next generation or two it served in place of mental excellence and sentiment, till in the marvellous achievements of Luca Giordano a point is reached which may be usefully considered as a warning to modern artists of the Nemesis which certainly overtakes exclusive attention to triumphs of manipulation.

The decorative effect of "gesso" and gilding appears to have been particularly to the taste of the Tuscans, most of the pictures referred to being the work of either Florentine or Sienese artists, though a few are the productions of the Venetian and allied schools, and the early Perugian artists also made use of the process for pictorial purposes. There are two or three altar pieces of which mention may be made, which appear to be in their original frames, and show how useful the "gesso" was in making picture and frame one whole, which in decorative work is a matter of the first importance. One by Spinello Aretino is by the left hand entrance, the architectural portions of the frame of which are enriched with stucco patterns, capitals, corbels, &c., all worked with "gesso" upon a core, probably of wood, and the softness of the angles, especially in the canopy, assists the decorative effect of the painting very much. In the painting itself is no relief work—only engraved and punched patterns. In one of the cross rooms is another by Jacopo Landini, the frame of which is very like one surrounding a picture of Giotto's in the Uffizi, and here, too, the scroll patterns are very good, and assist the decorative effect of the whole work very much. The extreme value of the softened edges of the mouldings may here be noted, in contra-distinction to modern decorative work of the same kind, in which sharp edges seem to be sought, giving a littleness and pettiness to the whole effect, with their fidgety lines and sparkles of light (when gilded), most damaging to the impressiveness of the painting, instead of assisting it as the old frames do. There is also an unnamed fifteenth century Florentine Madonna, a "tondo," with an elaborate frame worked on the panel with "gesso"—two much ornamented circles, one within the other, separated by cable mouldings and with a background spotted all over with raised spots, which is a

very decorative work and quite different in treatment. In the German pictures graving was soon abandoned, and lines painted over a gold ground were used instead.

All these early pictures were painted in *tempera*, that is to say the colours, in the form of powder, were mixed with a medium such as size, or egg diluted with white wine. This mode of painting was universal before the use of oil with the colours became general both on cloth and panel, and some authorities maintain that large works were executed on canvas in *tempera* as late as Carpaccio's time, whose pictures illustrating the story of St. Ursula, in the Academy of Venice, were held to be so painted by Signor Botti, who was the director of the academy some twenty years ago. But most of such works were painted on panels, and these panels were prepared with "gesso" in the following manner, as Theophilus tells us:—"Take gypsum, burnt like lime, or chalk with which skins are whitened, and carefully grind it with water upon a stone, then place it in a baked earthen vessel, and pouring in some glue made from skins, place it over the coals, that the glue may liquify, and in this manner paint over the skin (or canvas) very thinly with a pencil (this skin or canvas has first been glued to the panel). When it is dry paint somewhat thicker, and, if needed, paint a third time (the passes of the brush being made in different directions). When it is quite dry, take the herb called shave grass, which grows like a bulrush and is ragged; when you have gathered it in summer you will dry it in the sun, and will rub this whitening with it until it is made everywhere smooth and polished."

The patterns appear to have been mainly produced with punches, something in the way in which a skilful bookbinder will build up an elaborate design for a cover with three or four tools used in different combinations, and with the addition of lines.

It is better, however, though vastly more wearisome, to grave the pattern out of the "gesso" surface, but better still to have it raised instead of sunk. There are many

beautiful screens to be seen in the eastern counties, in those churches which were built in the late fourteenth and fifteenth centuries under French and Flemish influence, and in these screens are panels painted with figures, with diapers and borders upon their robes and with ornamented backgrounds which are enriched with raised ornaments in "gesso;" in fact one finds it to have been in use almost everywhere for the purpose of enriching the effect of smallish works of art.

In addition to its use for pictorial purposes it was largely employed in the decoration of articles of furniture and equipment. Examples of such objects are to be seen in the Museum at South Kensington, such as marriage coffers and boxes, picture frames, &c., and Theophilus gives us an interesting list of such things with the way of preparing them. "Saddles and octofori, that is, folding chairs, footstools, litters, and other things which are sculptured and cannot be covered with leather or canvas, you will polish with the grass as soon as you have scraped them with an iron, and in this state will whiten them over twice; and when they are dry will smooth them again with the grass. After this measure them with the compass and rule, and dispose your work, that is, figures or animals, birds and foliage, or whatever you may wish to portray. Which done, if you wish to ornament your work, lay on gold leaf," &c., and one may remark that the gilding is to be done with white of egg, which bookbinders do still, and that sometimes three leaves of gold are to be laid one on top of another!

The composition ornament used nowadays by frame-makers is a base descendant of the mediæval "gesso," and shows how a good material may be degraded by being put to a false use. The object of this ornament being to simulate carved work, to give at small cost the appearance of that which would be necessarily expensive if properly done, it has become contemptible in the eyes of all men of clear perceptions.

The use of true "gesso" has been revived of late years, more perhaps in the direction of



FIG. 3.

relief than of painting, and while in the hands of those who understand it beautiful results have been obtained—works may be instanced by Mr. Walter Crane, and Mr. Aldam Heaton showed some at the Paris Exhibition of 1878, which attracted a great deal of attention, while in the direction of relief work nothing can be more charming than the arabesques modelled by Mr. Stephen Webb—yet the greater part of the work done has failed, because too great relief has been attempted. One reads in the instruction books directions for preparing heads and other prominent parts with tow and rough "gesso," finishing with finer coats. It is much simpler to use a very flat relief which gives no opportunity for cracking off, and by finishing with transparent colour a quite startling appearance of projection may be obtained. The curtain in the accompanying illustrations (Figs. 4 and 5) was so slightly raised as to be only just perceptible to the finger passed over it, and in the figures of angels from the same reredos (Figs. 2 and 3) the relief was nowhere more than a sixteenth of an inch.

There are many different recipes for the production of the medium with which the whitening is mixed to be found in books of workshop receipts, but it is of little use to quote what might prove misleading. "Gesso" is not a thing which can be bought at the artists' colourman's shop ready put up in tubes, and laid on with any certainty of the result being satisfactory. Whatever mixture be used the worker must be prepared for many failures before success is attained, and much loss of temper, for the material is always providing surprises for the unfortunate experimentalist. Perhaps the panel may have just received the final touches and been put aside to dry, and there comes an ominous crack, and half of the work scales off! Perhaps it may crack deeply down one side, while the other remains quite right (and that entails cutting it out right down to the ground), or it may remain wet the whole day, when it is of the greatest importance that it should dry quickly; when one counts on it doing the same thing the next day and so arranging one's work as to take advantage of the probability, it may dry in an hour! Or, if it dry properly, one part may be yellow and another white, one part rough and mealy on the surface, another horny and shiny, and these variations occur when the same medium has been used from the beginning to the end. In fact, the uncertainty is so great that one well-known decorator abandoned the use of it some years ago, because after five successes came a failure, and he could not find out the reason. He was not the actual workman himself, and that, perhaps, explains his failure to do so, for success lies in knowing the medium thoroughly and its behaviour under all circumstances. The "gesso" worker's life is not altogether a happy life; for the earlier stages of the work are best accomplished with the panel in a horizontal position, and he



FIG. 2.

needs "a cast-iron back with a hinge in it," almost as much as Charles Dudley Warner's gardener; for, if the panels are large, they must be either on the floor or on a low table that he may reach all over them. And if it turn out to be necessary to rub the surface down and engrave a pattern, his throat becomes as dry as a lime-kiln, and his clothes resemble a miller's. Again, if the work is to be done on a ceiling, he endures the tortures which Michael Angelo sets forth in his sonnet on his sufferings while painting the roof of the Sistine Chapel.

The mode of work made use of in the production of the things illustrated was as follows: First a sketch was made settling the

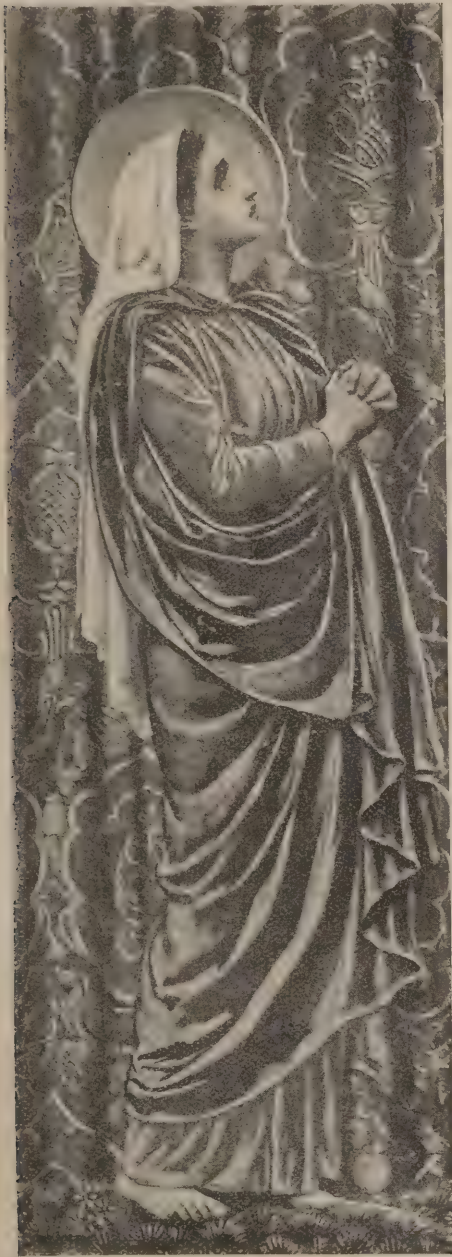


FIG. 4.

main lines of composition and giving some idea of the proportions of bossed and plain or engraved surface—such a sketch as Fig. 6, which was made for a drum-shaped ceiling—then a cartoon was drawn, on which all important details were settled, such as folds of draperies, silhouettes of limbs and heads, main branches of trees, &c. This cartoon is useful also to make sure of the drawing of features and expressions, though the modelling of flesh surfaces is left to be expressed by painting, only a slight raising without detail being given in the "gesso." Fig. 1 gives the effect of a panel for a music room when nearly complete, worked in this manner.

Then the panels were prepared. Those for the reredos, of which fragments are given,

were of oak which had been in the church for eleven years, the panel for the music-room was of mahogany, while the ceiling was fibrous plaster. This preparation was the same as that described by Theophilus, already quoted, except that glass-paper was used instead of shave grass. The next process was to trace in carefully from the cartoons the larger masses of the design, and "float" them in with "gesso." When dry the smaller details were traced and raised, and finally the surface brought to the required condition. The greater part of the work was done with the brush, but sand-paper was a very useful assistant in getting smoothness over large surfaces, and occasional resort was had to the knife to sharpen edges and grave a pattern. Next, the whole surface was covered with aluminium leaf. The advantage of this is that colours that cannot be got transparently over gold because of its yellow colour, such as sea greens and purples, are obtainable easily over a white metal. Silver tarnishes and turns black easily, which makes it less suitable than aluminium, though it is the metal which was employed by the mediæval decorators. And, finally, the painting was done with a combination of transparent, semi-opaque, and solid colouring. The surface was first tinted and the lights wiped out, a process which the raised preparation underneath made quite easy, and then the shadows were painted with strong colour. The metal showing through nearly everywhere enables one to work with pure colour to a degree incredible to the easel picture painter. One of the angels shown in Fig. 2 had robes, the shadows of which were painted with vermillion and rose-madder—and something of the splendour of effect of ancient mosaics and enamels is within reach of the worker in this process; by means of it, too, intelligibility may be attained at an enormous distance. Figs. 2 to 5 are portions of a reredos with figures about 3ft. high, and from a distance of 150 feet and more the composition could be made out in a church not over well lighted. This is a result which the writer believes is not to be obtained by any other process. It is also suitable for work near the eye, and small work; the original of Fig. 7 (see inset sheet) is but 1ft. by 8in.

On the question of permanence: If the back of the panel, of whatever material, be coated with some preparation to resist damp, the face is well protected by, first, the gold size which holds the aluminium; second, the medium in which the colours are ground, or which may be mixed with them during the process of application; third, the medium with which the painting is finished—either a varnish if the surface is desired to be shiny, or a wax medium if dull. So that one may leave damp out of consideration; and if the relief is kept as slight as has been suggested, there is small likelihood of any accident, for the adhesive power of the medium is so great that it is very difficult to detach it even from a shiny, non-absorbent surface, such as glass or polished wood.

The mediæval "gessos" are, many of them, in a tolerable state of preservation, though they have been subjected to centuries of neglect, and the materials which we have now ready to our hands are at least as good as any which were to be obtained in those times.

In the course of the last few years examples of coloured sculpture have been shown in various exhibitions, and it has been used for the decoration both of ecclesiastical and secular buildings. Although the artists making use of it have been men of considerable talent, they have not been able to evade the æsthetic objections to the use of colour in sculpture, the intention of which must be to add a further charm to an object which is already complete in itself, and the effect has not been altogether satisfactory. The process here described is not open to the same objections. The relief is only a raised preparation for subsequent painting, not a modelled surface to which colour is afterwards added; and, although the "gesso" is delightfully suggestive before the metal is put on (a suggestiveness which it is impossible to reproduce here, because features and limbs are without modelling and drawing except in silhouette), it is a colour treatment which it suggests to the mind, not completion in relief.

The process is not complete until the colouring is finished, and through all the steps the completed result is kept steadily in view. The appearance of projection produced is astonishing, yet without the vulgarity which one may describe as "leaping out of the frame."

The drawback which most affects the work is that there is no place for repentance. Everything must be foreseen from the beginning and provided for. No "pentimenti," no repaintings, no alterations so dear to the painter of easel pictures, no "putting it in just to see how it looks," and feeling for a something which may turn out finer than what was

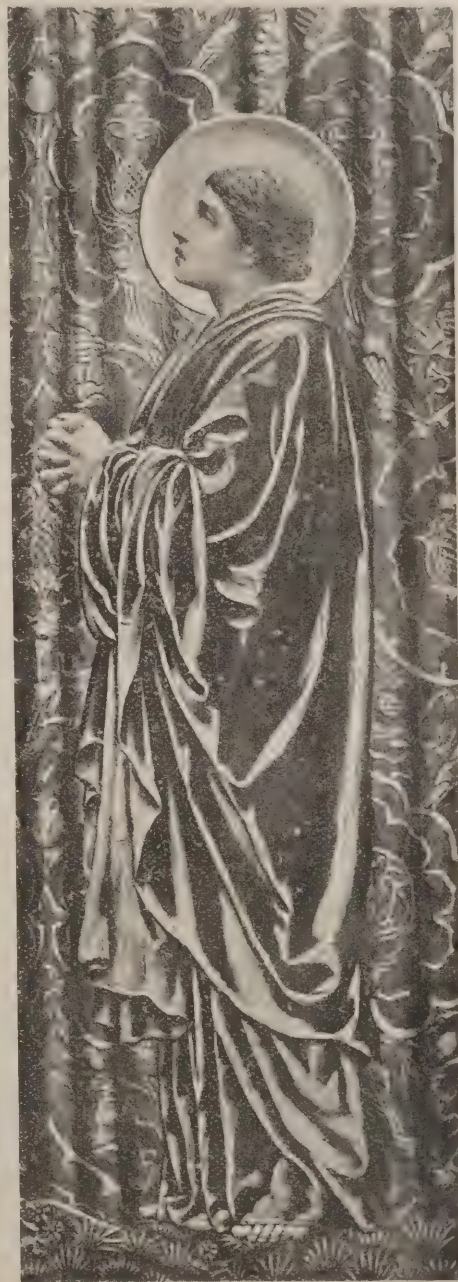


FIG. 5.

originally intended. The raising has to be done and finished, then the metalling to be done and finished, before the work in colour begins, and no great alteration is possible. But after all this only shows its near kinship to architecture, a relationship of which "gesso" workers should be proud! Even in the minor arts success is to be attained only by knowing thoroughly what one has to do and doing it; by getting a firm mental grip of all the necessary conditions; in a word—by vision, by seeing the completed work by the power of imagination—absolutely the same power, though differing in degree, as that by which the greatest artists of all time have conceived those works which still move and ever will move the whole world to admiration.

ARCHITECTURAL ASSOCIATION.

THE ANNUAL DINNER.

THE banqueting room at the Criterion Restaurant in Piccadilly looked very festive on Thursday evening last, when the Architectural Association were holding their annual dinner, presided over by Mr. G. H. Fellowes Prynne, who has so ably filled the post of president for the past two years. The gentlemen present included: The Bishop of Rochester, Rev. A. B. Boyd Carpenter, Mr. William

Lewis, Mr. E. Greenop, Mr. E. Howley Sim, V.-P., Mr. H. G. Tayler, Mr. G. Bailey, Mr. A. Wingate, Mr. H. E. Rider, Mr. W. Thornton, Mr. C. Brée, Mr. F. W. Macey, Mr. P. Buckman, Mr. T. C. Yates, Mr. P. L. Forbes, Mr. G. H. Smith, Mr. D. G. Driver, Rev. J. Beeby, Mr. E. Prynne, Mr. E. Symons, Mr. W. A. Forsyth, Mr. W. A. Pite, Mr. A. Bolton, Mr. A. S. Flower, Mr. D. Seth-Smith, Mr. C. Trollope, Mr. H. Prynne, Mr. R. H. Hale, Mr. E. Runtz, Mr. F. R. Farrow, Mr. A. H. Hart, Mr. F. D. Wood, Mr. R. Dircks, Mr. R. G. Booth, Mr. W. Wonnacott, Mr. G. S. Fleetwood, Mr. R. H. M. Bowen, Mr. W. C. Williams, Mr. Buckingham, Mr. C. Reader, Mr. G. Trot-

The next toast, which also fell to the lot of the Chairman, was

The Church and the Legislature.

For this toast, which had not always been on their list, no apology was needed, and he wished to treat it broadly, for as artists they knew no party in politics and no narrow-mindedness in religious thought. Art as art had no distinction whatever, and we admired it wherever we saw it, in the cathedral or elsewhere. And who could gauge the enormous influence which the Church had exercised on architecture? It was impossible to do so. Had not the greatest incentives during the past ages to build the noblest edifices been, from the first, religious incentives, and had not the Church been the great force and lever? Look for one moment at the temples of Egypt, of Persia, India, Greece or Rome, and it would be plainly seen that they all spoke one tale. Or look again at the beautiful and the symbolic that permeated the grand Byzantine and Christian periods; there again was the same story. Man's highest monuments had been those raised to the glory of God, and second only to the instinct of religion had been the national instinct, that desire to pass on from age to age the nation's history. But to-day there was a change. Were we satisfied with the buildings around us, did they tell us the history of our day, and were we satisfied with the mean economy which cut down the expense of our buildings? Surely some man would arise who would think not only of utilitarian but of monumental and national buildings, for he was of those who believed that Church works and national works had a great influence on the minds of men, and they either spoke of the greatness or the littleness, the riches or the poverty, the strength or the weakness of a nation.

The Bishop of Rochester, in responding, said that Church and Architecture owed a great deal to one another. If we asked what were the noblest outward possessions of the Church in our country to-day the answer would be the great cathedrals erected by the men of the Middle Ages, to whom the Church gave their best opportunities. Very often it was the architect and the ecclesiastic combined in those days, as in the case of William of Wykeham. There being this connection, we were conscious of each other's weaknesses and foibles, and had lived together through revivals. We had our great buildings, but he could mention the names of some clergy who were suffering from the architectural experiments of the early part of the nineteenth century; while on the other hand they all knew of architects whose schemes had been cut and altered to meet a strong-minded clergyman's views. But, turning to matters more serious, there was, indeed, a connection between architecture and the highest faiths of man, and he was quite sure that a great uplifting power of humanity in the future would be the relation between its highest spheres of activity and the highest creative forms of its spirit; and similarly between religion and all the forms of art, architecture most decidedly included.

Sir Henry Howorth, who responded for the Legislature, made a speech characteristic of so well-known a member of the House of Commons, and not being in the regulation dress for dinners, he humorously explained that it was not his fault but his misfortune. "I looked around," he said, "and I thought what a handsome lot young architects are, but I am sure, gentlemen, it is due to yourselves and not to your costume." Incidentally he referred to Mr. Gladstone and Mr. John Bright, and to emphasize what a glorious House was that of the Lords he said that the late Duke of Argyll was not only hereditarily a duke, but was descended from a grand list of mythical heroes of the worst kind. Referring to art, he said this was a most difficult question to deal with in the House of Commons, which body included a large number of Philistines, who, however were willing to do the right thing if the doctors would agree. We had what he considered to be the greatest marvel of buildings in the House of Commons, if we remembered when it was built, for the middle portion of the Victorian Era was conspicuously debased



FIG. 6. (See Article on "Gesso," p. 321.)

Emerson, Pres. R.I.B.A., Sir Henry Howorth, Mr. H. L. Florence, Mr. Basil Champneys, Mr. Seth-Smith, President-elect A.A., Mr. E. W. Mountford, Col. Ottley, Mr. W. E. Riley, superintending architect to the London County Council, Mr. Beresford Pite, Mr. L. A. Stokes, Mr. W. J. Locke, Mr. Thomas Blashill, Mr. A. Jacob, Mr. E. T. Hall, Mr. F. Machin, Prof. Hulme, Mr. H. W. Pratt, Mr. F. W. Pomeroy, Prof. R. Elsey Smith, Mr. H. Holloway, Mr. C. Wall, Mr. H. Lovegrove, Mr. G. Tooley, Mr. G. B. Carvill, Rev. W. J. B. Wonnacott, Mr. A. Stalman, Mr. S. Constanduros, Mr. L. Butler, Mr. A. J. Dalton, Mr. E. Carless, Mr. S. C. Arding, Mr. W. E. Davis, Mr. W. G. B.

man, Mr. R. Lovell, Mr. R. H. Weymouth, Mr. R. S. Balfour, Mr. F. R. Taylor, Mr. F. W. Foster, Mr. J. F. Bull, Mr. H. A. Satchell, Mr. H. G. Turner, and Mr. M. Garbutt. "After an excellent repast," to quote a hackneyed reporting phrase, the Chairman gave "The Queen and Royal Family." He referred to the war now being waged, or perhaps better, now practically finished, in South Africa, to the feelings of loyalty which it had evoked in the breasts of our countrymen, and to the influence it had exerted on our Colonial Empire, bringing all parts into one great whole. He gave them "The Queen," and the toast was drunk with enthusiasm and fervour.

in its standards, and it was remarkable that such men as Barry and Pugin should have been given such freedom. But we were thankful for their work. As to glass-painting, what could be worse than that produced thirty years ago? There was also sculpture, in relation to which the House of Commons had been most lucky and most unlucky. We had a lot of statues of kings and queens which were despicable, yet there was recently added that excellent statue of Mr. Gladstone by Mr. Pomeroy, who was with them as a guest that evening. But we were commemorating a number of commonplace persons in the House, and he hoped that their children or grandchildren would take the works away. He urged young men never to sacrifice art for money, and cited the instance of the sculptor at Parma who executed a figure of the Virgin for the Venetian Council. These men wanted so much of this done and that altered that the sculptor smashed the statue, for which he was brought before the dreaded Inquisition and narrowly escaped death.

At this point we had a song, "Listen, my Darling," from Mr. S. Constanduros, who made so successful a hit with the same song at the recent A.A. soirée. The next toast on the list was

The Royal Academy and the R.I.B.A.,

which Mr. Beresford Pite proposed. The link that existed between these two institutions, said Mr. Pike, was a very definite one, both by the examinations held, and by the fact that we could not obtain a complete view of our own art if we became out of sympathy with the sister arts. The highest expression of art was the literary art of poetry, which was, however, rather outside their own, and did not create such mutual sympathy as the more graphic arts. The Royal Academy included sculpture, which was really an architectonic art, and we could not be blind to what had been called the spiritual element of Greek art exemplified in the underlying beauty of the great Greek sculptures. Moreover, the highest expressions of Greek architecture were allied to sculpture, and we had a golden bridge to build between the baser use of life and its noblest plane. Our life's work was to ennoble what we touched, and to beautify the common habitations of our race and cities. The R.I.B.A. was a real help, and facilitated by its forms and agreements many of the problems in practical work which were daily occurring. The president, Mr. Emerson, had handed down the traditions of the Gothic revival from the great office of William Burges, and had fulfilled his task in the most able and admirable manner.

Mr. Emerson, in replying, said he had the deepest sympathy with the work of the Architectural Association, and knew that they were animated with the highest art motives. That examinations did promote education had been strikingly shown by the matriculation examinations at the London University, and, though he did not think they helped to make one an artist, they did give a grounding of knowledge which was so essential, but which formerly was not required of the architectural student. He deprecated the system of entering for competitions on purely personal grounds, especially when there had recently been so many competitions the conditions of which were absolutely unfair. He congratulated Mr. Prynne on the excellent way he had filled the presidential chair, and said he was one of the best and most hard-working presidents the Architectural Association had ever had. He was in accord with former speakers that we should try to show our national history and our religion in the buildings we erected, and he regretted that the erections of the present day could not be said to possess these characteristics.

The next toast was that of "The Army and Navy," which was proposed by Mr. E. T. Hall (who coupled the name of the Reserve Forces with the toast), and responded to by Colonel Otley, who assured the company that if we only had 30,000 British "knights" we could march through Europe.

We had next another recollection of the soirée, by the late Mayor of Montillado (Mr. G. B. Carvill) rendering "Isn't that a funny thing to do," with an additional war verse

including the latest news from the front. The Rev. A. B. Boyd Carpenter then rose to propose the toast of the evening,

The Architectural Association,

and in the course of a very eloquent speech said that the great thing in all art was the motive which animated it, and that it would be admitted architecture held its own in the face of all the other arts. Their Association was a young one, for fifty-three was not a long period; yet they had become a great teaching body, and he hoped the time would come when we should understand the spirit of our age and artists should represent powerfully its latest developments.

The Chairman replied. The position of their Association, he regretted to say, was much misunderstood, both by societies, who should know better, and by the public. They were confounded with the Royal Institute of British Architects, and thought to be a junior branch of that body, and they were confounded with the Society of Architects. They were *not* what they were represented to be, but were an independent association working on their own lines, and from the small body of enthusiastic young architects who had formed the Association they had grown into a membership of 1,318; while their list of past-presidents included men who were now coming into the very front rank of the architectural profession. The primary object of their Association was education, with the simple and earnest motive of helping their great art, in which endeavour the officers and the committee had worked splendidly. He wished there were more students at their annual dinner, for he should like them to join in thoroughly in the social engagements of the Association. As for their new president, Mr. Seth-Smith, he felt that he was just the man for the post.

Mr. E. W. Mountford next proposed "The Lecturers and Instructors." The young men were the architects of the future, and he was glad to know they had such excellent instructors, but he failed to agree with Sir Henry Howorth when he said that the nabobs of their profession built the churches and the town halls; he thought these gentlemen were those who designed the public-houses. Professor Hulme and Professor R. Elsey Smith replied, the latter testifying that the Architectural Association students came for instruction, which could not be said of all students.

Mr. C. W. Trollope next gave a recitation describing in a humorous manner the labyrinths of a certain play, which was based on no known principles of dramatic art.

"The Guests" was then proposed by Mr. L. A. Stokes, being responded to by Mr. Basil Champneys and Mr. W. E. Riley, the latter remarking that the ages of great productions had been those of great national trials, and he hoped the same would result from the present war. The toast of "The Committee and Officers" was given to Mr. Thomas Blashill, Mr. G. B. Carvill replying; and the last toast, "The President-elect," was proposed by Mr. H. L. Florence. Mr. Seth-Smith, in responding, thanked them for what they had said, and assured them that having the real interests of their Association at heart he should do all in his power towards its advancement and the improvement of their profession generally.

A new Public Library at Gloucester was opened last Thursday. It adjoins the Art, Science, and Technical Schools, and has cost about £7,000. Messrs. Walker and Sons, of Gloucester, were the architects.

Excavations at Corinth.—The excavations at Corinth carried on by the American Archaeological Institute continue to yield good results. The workmen recently discovered a fountain mentioned by Pausanias. It was partly built and partly carved out of the rock, and is intact. The waters for the fountain were carried by iron pipes, and issued from the heads of brazen lions. Four large marble statues, representing Asiatics, support a marble roof, round which are bas-reliefs with figures of the sun and moon and two dancing Bacchantes. The head of a colossal statue of Adriane has also been found.

NEWCASTLE CITY LUNATIC ASYLUM.

THE NEW BUILDINGS.

THE extension buildings of the Newcastle City Lunatic Asylum, which were formally opened last week, constitute one of the largest works ever undertaken by the Corporation of Newcastle. The Lunatic Asylum was opened at Coxlodge in 1868, and served its purpose until 1884, when, enlargement being necessary, two wings were added. In 1891 it was found that a further enlargement of the institution was imperative, and the site, which had originally been 52 acres in extent, was increased to 100 acres. The foundations of the new buildings, which were the subject of a separate contract, and which involved a vast amount of labour, were put in by Mr. Ferguson, and in July, 1895, Mr. Walter Scott, who has been the contractor for the erection of the buildings, commenced the operations which have now been completed. Mr. J. W. Dyson had been chosen architect out of a large number of competitors, and it is from his excellent design that the new asylum has been erected. The buildings extend over five acres and are substantial and convenient. The old asylum runs east and west in order to give a southern aspect, and the extension is in the same line. Its length from east to west is 1,700ft., and its depth from north to south 130ft. The building contracts amounted to about £138,000, and furnishing and other items are expected to bring the total cost up to about £200,000. The administrative block faces north, and is built roughly in the form of an irregular triangle, at the base of which there is a covered corridor connecting the building with the patients' blocks, which are placed behind in echelon formation, that is to say, one block is behind the block in front of it and just overlaps it at the end. This gives compactness and leaves plenty of air space around the buildings, the ward blocks being placed behind the administrative block and yet keeping a southern aspect open to all. From the main corridor to each of the four blocks there is a cross corridor, and there is easy access to each. The main corridor runs right away to the old asylum, the total length of the passage being 650ft. The male patients are to inhabit the new buildings, which will accommodate 361 persons, the female patients being retained in the older part, where there is room for 450. Each block has two storeys, and each storey is a ward in itself, so that there are altogether in the new building eight wards, each with its own living and sleeping rooms and its own attendants. From each there are two exits, so that in case of fire or panic the patients could be easily removed. Some idea of the extent of the work may be gathered from the fact that the architect's designs covered an acre of paper, and that 400,000 glazed bricks and 300,000 slates have been used. The building is of stone, and the main front is surmounted by a tower 100ft. high, with a clock. To the left of the entrance hall of the administrative department are rooms for the committee, and on the opposite side are apartments for the officials—the superintendent, assistant medical officer, clerical assistant, storekeeper, and others—the bedrooms of the servants being above. The kitchens are on the ground floor, and so is the dining room, which seats 200 persons. The recreation hall is 93ft. long, 48ft. wide, and 32ft. high, having at one end a stage 21ft. wide and 22ft. deep.

A Bandstand in the Victoria Gardens, Bridlington, is to be erected at a cost of £200. The borough surveyor has prepared the design.

The Late Mr. Westerberg.—The death is announced at Gothenburg, Sweden, of Mr. Johan August Westerberg, architect. After leaving Aberdeen, he proceeded to London, and continued his studies there. He afterwards settled in Gothenburg as an architect, and was largely engaged in the extension and rebuilding of the city.

THE PRACTICE OF LETTERING.*

BY EDWARD F. STRANGE.

IN this paper I have no new discovery to bring before your notice, and no new process of study to advise. My subject is the one most intimately bound up with the life of every person of elementary education next to the faculty of intelligible speech; and my object in bringing it before this Society is to endeavour to gain some supporters for a movement against certain tendencies of the day, which appear to many of us to be ugly, unnecessary—the terms are almost synonymous—and fraught with great danger to the younger generation of artists and craftsmen.

I need not take up your time with a catalogue of the various faults of most modern lettering. There is hardly a street in which you may not see bad letters displayed with all the frankness in the world; there is hardly a publication in which you will not find type or drawn letters calmly devoid of any pretensions to beauty; there is hardly a public building which does not possess some weakly pretentious inscription in which the carelessness or variety of the writer is set forth in a way he hardly intended. And my whole object on the present occasion is to try and point out how easily these things might have been better done, and how greatly a little thought, a little modesty, a little good taste would have assisted the makers of these bad letters in the objects they had in view when they produced them.

The Cause of Bad Lettering.

Now the first element of a cure is to ascertain the origin of the disease. In this case I am convinced that much of the trouble arises from an idea that students and craftsmen seem to be continually getting into their heads that they have to design the letters of the inscriptions on their works. Now that is precisely what they must be warned against. You cannot design a letter. You may burlesque it. You may mutilate it by breaking its back in unexpected places. You may complicate it with weird growths of a more or less fungoid nature. But you cannot design it, for design implies invention, and no one can be said to invent what already exists; while any attempt to give new forms to the letters in current use can only be compared for audacity with deliberate experiments in the making of new words—I would even go so far as to say new languages.

Now, if a craftsman lays himself out to give a letter a new shape he is paying himself the compliment of asking several hundred millions of persons to accept his image and superscription, instead of that which many generations of themselves have already agreed upon. It would be sublime if it succeeded. But in practice it is simply ridiculous.

I must guard against being misunderstood on this subject. I have said that

you cannot design a letter

—the form stands. But it must be made absolutely clear that this statement applies only to essential structure. It is impossible for anyone who possesses any individuality whatever to express himself in any medium without endowing it with character. That may be seen in handwriting, slipshod and utterly bad as most of our scrawls are. If we want to be understood there is always a point beyond which we may not go. However our training, our carelessness, our physical peculiarities may warp them, we must always keep recognisably close to the accepted forms of the written letter, or our purpose in writing fails, we do not convey our thought to the intended recipient of it, we have simply spoiled paper with futile and illegible marks.

But as to character. This means, for us, a certain personal singularity in the making of letters which gives distinction—individuality anyway—to the accepted and still easily understood letter. I would instance to you the types made by William Morris, and especially the Roman type on the basis of that of Jensen.

There is nothing to prevent a craftsman from getting his character into his lettering—if he has any, and takes pains enough to develop it. But it will not be done by setting to work as I see so many do, who simply sit down at the last minute to hunt up a convenient model for the hated but necessary lettering, copy it more or less perfunctorily, put in a few eccentricities or excrescences on the spur of the moment, and then wonder why the result does not look well.

So far I have dealt with the abstract drawing of the letter, but there are other considerations of high importance. But before passing on to them, I wish to draw your attention to an example of definite form, which is not only historically interesting, but of the greatest practical value. This is the alphabet of square capitals from

The "Geometria" of Albert Durer,

A.D. 1525. Each letter is placed in a square, and a relative scale of proportion is worked out to one side of the square. Thus the thickness of the main shafts of the letters is one-tenth of a side. The great curves are struck from circles nine-tenths of a side in diameter, the smaller curves from circles respectively one-third, one-fifth, and one-tenth of a side in diameter, and the distance of the uprights from the side is generally one-tenth. Now I know I must face a protest against a mechanical hard and fast rule for the drawing of letters. But the objectors, if such there be, must not too hastily conclude that this example is nothing more. To begin with, it will be a singularly good alphabet. And a little consideration will show that Durer—the last man one would expect to tie himself down to a formalism—did not invent the construction to produce the letter; but seeing that the letter was good, worked out the natural law of its excellence, and set it down for the benefit of his fellows. This alphabet with construction is to be found—essentially the same—in nearly all the copy-books of the period. Only one explanation is possible. The form of the letter was, as I have said, practically invariable. Up to the invention of printing, it had been a workshop tradition handed on by rule of thumb from master to apprentice. But as soon as a generation had well learned to read, the multiplication and cheapening of printing processes at the end of the fifteenth century created a demand for the means of learning to write, and the result was the production of the copy-book in the beginning of the sixteenth century, and the publication of methods which were not new; but only now for the first time made easy of access to those interested.

The influence of material on the form of the letter is a matter that the craftsman can only work out for himself. It is impossible to give him rules or teach him his limitations. For the very fact that he is entrusting himself with the making of an inscription implies a mastery of his tools, and if he has acquired a good form of letter those tools will do the rest. Yet it is necessary—with so inconsiderate and light a heart does a man often set about a serious operation—to point out

One Danger.

He must not take a style of lettering which is good in one material, and for one purpose, and try to adapt it by brute force to other circumstances. His method of study must be a genuine one, and it goes without saying, somewhat laborious. I can give it in no better words than those used by William Morris in describing the means by which he arrived at the first of the Keimscott types. Having decided on Jensen's type as his model, he set to work to learn it, "Drawing it over many times," said he, "before I began designing my own letter, so that though I think I mastered the essence of it, I did not copy it servilely." That, indeed, is the crux of the whole matter of learning to make good letters. The essential form of a good model must be acquired till it can be produced without conscious effort, and, as it were, automatically. The personality of the craftsman, and the materials with which he is working, will then

re-act on this, giving it interest, beauty, or character, according to his talent.

Before leaving the discussion of the form of letters to deal with one or two points in the application of them, Mr. Strange made some remarks on the subject of type. Continuing, he said: Nothing is more irritating or defeats its own end more thoroughly than an eccentricity in the form of the letters which withdraws your attention from the word which they are used to make. For this is, after all, one of the greatest faults of the modern maker of letters; he is so eaten up with his ingenuity or phantasy as to forget that his letters are only the elements of what should be a legible announcement. It should be unnecessary, even ridiculous, to remind craftsmen that the

Purpose of Making Letters

is to convey information and not to advertise their own dexterity; but the examples of every-day life seem to show the former to be too often the last consideration. The modern poster depends, as a rule, on a design of weird tints, which may or may not be capable of suggesting anything to the beholder save a pardonable desire for colour-blindness. The lettering, very often tied in an inextricable knot, dances drunkenly across a portion of the design; or in great mis-shapen masses makes it top-heavy. No one seems to dare to try the experiment of extreme simplicity; a good, bold, well-chosen letter, spaced with regard to the relative value of the different portions of the announcement and free from any complications of pattern of any kind whatsoever. Yet surely it is one of the highest canons of fine art that beauty and force are dependent upon simplicity rather than elaboration. The fact is that too much attention is given to the letter as a unit. It must be considered in relation to its fellows—the whole alphabet as a whole—for it is only after you have settled the shapes of your letters that your designing begins, when the question arises as to what you will do with them.

The craft of letter making is not to be lightly laid aside as a mere appendage of another art. It is the easiest thing in the world for an artist who has made a fine work of art, a medal, a piece of sculptured decoration—anything you will—to spoil it utterly by the badness of the inscription. For human nature is such that it cannot forgive so obvious a fault; the very label, as it should be, of the perfection of the handicraftsmanship. It is easy to make a great church or public building appear indescribably mean by the badness of the lettering displayed on it; while nothing can be more decorative or dignified than a well-proportioned, simple block of lettering in its right place.

The makers of letters, whether in the arts or books, must take themselves more seriously. They must realise the greatness of the audience to which their works may appeal, and divest themselves of little personal eccentricities accordingly. And how great and splendid that audience may be if the lettering only rises above the petty fashions in ornament that live but for a day or two, may be suggested to you by a remembrance of the inscription from the base of the Trajan Column. Millions of passers-by have been able to read those words as easily during eighteen hundred years as if they had been carved yesterday. And no single designer, nor the aggregate influence of all the generations since has been able to alter the form, add to the legibility, or improve the proportion of any single letter therein. That is my case.

— The new English Church at Assouan is now completed. The cost, exclusive of the furniture, has been £1,290. The ground all round the church still needs to be levelled and surrounded by a wall, and no provision for any flooring in the edifice has yet been made.

Sudden Death of a Newcastle Architect. —Mr. F. Vanse, while returning to his residence in Whitley on Wednesday last, after having bathed in the sea, was seen to drop to the ground, and on being picked up was found to be quite dead. An architect by profession, he had been acting as assistant in an office in Newcastle for about twelve months. He was only twenty-four years of age.

* A paper read before the Applied Art Section of the Society of Arts on May 22nd, 1900.

"BUILDERS' JOURNAL" SHILLING FUND.

IT was our intention, as announced in last week's issue, to close this fund on Monday last and publish the final list of subscriptions in the present number. But just as we go to press several collecting sheets have come to hand, some with many names on them, and as we have not space to publish these in full, we are obliged to defer publishing the final list of subscriptions until next week. There are, therefore, still a few days during which we are open to receive contributions. Anything sent in this week will be included in the final list to be published in next week's issue. It will be seen that the fund now amounts to 3,499½ shillings.

Shillings.

Previously acknowledged... 3,425

Per Algernon Hallam, St. Mark's Crescent, Regent's Park Road, N.W.:-

F. G. B. ...	1
M. Hallam ...	1
J. H. ...	1
M. ...	1
A. H. ...	1
B. P. Haigh ...	1
M. ...	1
F. K. ...	1½
E. Reid ...	1
N. A. ...	1½
G. ...	1
L. ...	1
C. O. ...	1½
L. J. ...	1½
C. V. ...	1
M. Kirkman ...	1

15

Per T. Noller, foreman of works, Felixstowe, collected from employees of Fred Bennett, contractor, Ipswich:-

T. Noller ...	2
A. Smith ...	1
G. E. Sherritt ...	1
James Hicks ...	1
R. Mutton ...	1½
James Woods ...	1½
G. F. Moss ...	1
T. Dawkins ...	1
M. Meade ...	1
A. Green ...	1
C. Pretty ...	1
G. Steed ...	1
James Morling ...	1
R. Berry ...	1
E. Manning ...	1
C. Marshall ...	1
A. Wise ...	1
G. Hogger ...	1
J. Manning ...	1
W. Read ...	1

20

Per F. W. Anderson, Highbridge Road, Wylde Green, Birmingham (second contribution):-

Winter and Lyne ...	10
W. Sadler ...	1
M. Curay ...	1
J. Hill ...	1
J. Heath ...	1½
F. Purley ...	1½
W. C. ...	2
H. Winney ...	2
J. Winney ...	1

19

Per Spencer Bush, 24, Windsor Street, Coventry (second contribution):-

T. Plummer ...	10½
J. and E. Broad ...	10

20½

Total ... 3,499½

Mr. T. F. Rider, Past-President National Association of Master Builders, as Honorary Secretary to the Gift, announces the following additional contributions:-

Messrs. Wheeler and Co. (Tilehurst, Reading), per Mr. G. Montgomery, of the "British Clayworker,"-10,000 red facing bricks.

The Tibbington Brick Co. Limited (Tipton, Staffs.), per Messrs. Wood and Ivory,-5,000 fire bricks.
Messrs. Peter Wood, Limited (West Bromwich), per Messrs. Wood and Ivory,-5,000 blue bricks.
The Hookley Hall and Whately Collieries and Brick Works, Limited (Tamworth), per Messrs. Wood and Ivory,-5,000 blue bricks.
Messrs. Williams Brothers and Co. (Chester).-The cathedral glazing for the church.

SUBSCRIPTIONS.

£ s. d.

Mr. William Blackburn and Workmen (Chiswick) ...	2	1	0
Workmen of Mr. William Willett (Chelsea), second donation ...	1	19	3
Workmen of Messrs. W. H. Lorden and Sons ...	1	17	6
Workmen of Mr. H. Lovatt (West Kensington) ...	1	14	0
Workmen of Messrs. Whitechurch and Co. ...	1	13	6
Mr. Edmund Woodthorpe ...	1	1	0
Workmen of the Brosely Tileries (Brosely) ...	1	0	6
Mr. Thomas Jones (Liverpool) ...	1	0	0
Workmen of Messrs. Ernest Mathews and Co. ...	1	0	0
Workmen of Messrs. Roberts and Robinson, Limited (Liverpool) ...	0	15	6
Mr. W. B. Tuteur ...	0	10	6

THE NEW SESSIONS HOUSE.

ON page 327 of the present issue will be found the decision arrived at by the Court of Common Council on Thursday last with regard to the new Sessions House. On the eve of going to press we are able to obtain some particulars of the design (numbered "4") recommended by the Committee. It is estimated to cost £265,000, as compared with £217,000, the estimated cost of executing No. 6. Professor Aitchison reported that the plan of No. 4 was excellent, that the architect's fronts were simple, dignified, and effective, and that his grand staircase and the halls in connection with them were striking. The Committee thoroughly agreed upon the curving of the whole of the Newgate Street façade. The Chief Commoner laid stress upon the fact that the Committee considered that it was a great advantage that the four courts should be placed on the first floor, being approached by a main entrance from the Old Bailey, 14ft. in width, leading into a spacious entrance hall, 21ft. high by 100ft. by 40ft., with bold corridors right and left, of the same height and 20ft. wide. Immediately facing the entrance was a grand staircase, 13ft. wide, and this carried the public to the first floor. The four courts were placed together, opening out upon a spacious central hall, which was approached by a fine staircase, and surmounted by a dome. With regard to the courts, the most important feature was that there was a private corridor connecting them with the various retiring rooms for the Judges, Lord Mayor, Sheriffs, Recorder, and Common Serjeant, and to this corridor the public would have no access. There was also a staircase leading to the Grand Jury room below. The cells had also private staircases to the dock. It was further pointed out that the Committee had considered it highly desirable to check the cubical contents of the building, and for this purpose an eminent quantity surveyor was appointed. The figures were gone through and found to be correct, but, in the opinion of the gentleman in question, although the architects had estimated the cost of the building at 1s. 6d. per foot, it was more likely to be 1s. 10d., owing to the increased cost of material and labour since the time (September) when they made up their prices. Professor Aitchison also advised that the successful competitor would have under any circumstances to make working plans, and must consult every official from the Recorder to the turnkey in order that any modification or alteration really needed in small matters of detail might be made on the advice of those having an intimate knowledge of the requirements of the various offices. The arrangement of the witnesses' rooms were excellent, the apartments for witnesses immediately required being close to the courts on the opposite side of the great central hall. A separate room was also provided on the ground floor for special witnesses. The various offices of the officials were approached by a separate door, and were quite apart from the main entrance. The design was essentially English, and was decidedly dignified and impressive.

SIR WILLIAM RICHMOND ON ARTS AND CRAFTS.

AT last week's opening of the Victoria Art Gallery at Bath, particulars of which will be found on page 334 of the present issue, the speakers included Sir William Richmond, who, as everyone knows, is superintending the mosaic work now in progress at St. Paul's Cathedral. Fifty years ago, he said, there were only two or three art schools in London; now there were scores of them. Next to John Ruskin, William Morris did more than anyone to root out the commonplace in England, to make people understand that the study of beauty was as important as the study of utility. There was then no Tate Gallery, where now were exhibited the masterpieces of English art-works which proclaimed the versatility and refinement of English art. Although in Academic technicalities the French might still be ahead, they could not be said to have attained precedence over English art as regarded individuality of vision or poetry of conception. One of the most marked features of English art was the absence of mannerism, a healthy love of detail, and a certain freshness with which Nature was regarded by English artists. He should like to call their attention to the art of sculpture, and to the extraordinary and swift progress that her votaries had been and were making. Never in the history of English art had sculpture had so vigorous an existence as now. He begged them not to neglect this noble art, even for the sake of the more popular and more remunerative and attractive art of painting. Now, a few words on that favourite hobby of his, the lesser arts. Technical schools where they were taught were springing up in most of the towns of England, where were studied enamel, wood carving, repoussé, and cast metal design, embroidery, tapestry, and such like; and it was being demonstrated by them that a latent fund of capacity had been lying hidden, which was now being roused into activity by opportunity for its display and emulation for its stimulus. And now, if ever, was the moment to foster the efforts which craftsmen were making not only to design, but, what was far more important, to make articles of daily use and common service. Important, indeed-were they not?-these crafts whose efforts resulted in beauty or the reverse, seeing that they handled them daily, and they were ever before them. Once they had succeeded in making the majority prefer good design to bad design in things in constant use they would soon abjure the vulgar and the commonplace and come to see that there was no reason why the simplest, even the least costly, object should not be graceful and desirable and a work of art. Referring to architecture-the mother of arts-the speaker said it might be granted that the cathedrals and parish churches of English building and design were amongst the noblest works of art in the world, yet how lamentably ignorant were the majority of folk concerning their beauty, even of their dates. Might he make a suggestion to their library committee? Photography had now reached such a pitch of excellence, and its results were so inexpensive, that at a comparatively small cost a collection of photographs of English cathedrals and celebrated churches could be obtained. He made bold to suggest that such a collection be placed in their library. It would possibly kindle a desire on the part of many to take up with interest and intelligence the study of architecture, which would prove to be as fascinating as it was desirable. He confessed that he held the opinion, which he knew many artists shared with him, that too much attention was concentrated upon pictures to the exclusion of other productions, and that painting was regarded as the chief medium through which an artist conveyed his inspiration and impressions. One more suggestion. Gainsborough executed some of his most interesting portraits in Bath. He was not aware whether any of these remained in the families for whom they were executed, or not.



ROCHESTER CATHEDRAL, FROM THE CASTLE.
DRAWN BY HEDLEY FITTON.

If so, their owners would be benefactors to Bath in permitting their treasures to be exhibited in this new gallery. Indeed, he could not think of a more worthy inaugural exhibition than that one would be which represented the genius of Gainsborough as it was displayed during his residence in Bath.

Views and Reviews.

FACTS ABOUT THE HOUSING PROBLEM.

The publication of the second edition of Mr. George How's reprint of his valuable studies in the London housing problem is very opportune in view of the discussion on the Government Bill relating to the subject. As we have already expressed our sense of the value of this book to all who wish to be correctly informed on this most pressing of social questions, we need do little more than call attention to the fact that this new issue has been revised and enlarged, and contains an introduction by Sir Walter Besant. Mr. Haw deals in a concluding chapter with a number of remedies which he thinks would remove, or at any rate alleviate, the evil of over-crowding. Needless to say they go very much further than the tentative proposals of Mr. Chaplin's bill. Mr. Haw has no panacea to offer, but looks for reform in many directions, and as one reads the practical suggestions he has to offer, one feels that the problem is after all not so hopeless as is sometimes supposed, for few of the needed reforms are at all revolutionary and most of them could be carried out without any change in the existing laws. The chief value, however, of this book lies, we think, rather in its statements of facts than in any proposals for reform. As Sir Walter Besant says: "The facts are startling. They go far beyond the current belief and opinion upon the evil." In these pages the facts are marshalled with admirable clearness and force, and whoever would know what is the real problem of the housing of the poor can have no pleasanter and no more reliable means of gaining the information than the perusal of Mr. Haw's well-written chapters.

"No Room to Live." By George Haw. London: Wells Gardner, Darton and Co. Price 2s. 6d.

ROCHESTER CATHEDRAL.

Rochester is one of the least satisfactory of our English cathedrals. Hemmed in by houses, its outward appearance is not very

impressive; the fabric has had a most chequered existence, and bears traces of the bad treatment it has received at the hands of the fifteenth century builders, who seem to have been inspired with a desire to improve upon the original Norman work, and later at the hands of modern restorers. Nevertheless, it contains a great deal that is very beautiful and interesting, and Canon Benham's little book on the Cathedral is a very readable, and, in the attractive form Messrs. Isbister have given to it, a very charming production. It is embellished with a number of excellent pen-and-ink drawings by Mr. Hedley Fitton, two of which are here reproduced. In a little book of sixty-four pages which is evidently intended to serve as a popular guide to the cathedral or a pleasant souvenir of a visit, one does not, of course, expect anything like elaborate architectural criticism; Canon Benham, however, does not omit to deal in a popular way with many points of interest in the architecture, though he is somewhat over lenient towards the misdirected zeal of modern restorers. An example of the way in which one of these, Lewis Cottingham, who carried out a somewhat exten-

sive course of renovation in 1825, blundered in regard to historical accuracy as well as artistic taste is mentioned by the author. In renovating the beautiful chapter-house doorway, Cottingham found that the head of one of the figures, which symbolised the Christian church, had been broken off; he accordingly added a bishop's head and a cathedral and crosier, not knowing that the Church was always symbolised by a female figure. A ground plan of the cathedral is given and a few notes are included on Rochester's associations with the past, but undoubtedly the chief value of the book lies in Mr. Hedley Fitton's clever sketches, which are a pleasant variant on the photographic reproductions usually found in books of this kind.

"Rochester Cathedral." By the Rev. William Benham, D.D. London: Isbister and Co., Ltd. Price 1s. net.



ROCHESTER CATHEDRAL: THE NAVE AND CHOIR.
DRAWN BY HEDLEY FITTON.

Current Periodicals.

The *Canadian Architect* for May has articles on "The Commercial Value of Art," by Mr. A. O. Elzner; "Hints on Reading Plans," by Mr. James K. Carpenter, and an interesting illustrated one on Maori art, by Mr. R. M. Fripp, F.R.I.B.A., in which he points out the high place the art of the Maoris takes among savage nations, notwithstanding they were a people addicted to cannibalism, engaged in perpetual warfare, and sunk in gross superstition. Instead of our "boasted civilisation" ennobling their ideals, we have, of course, sent our galvanised iron, our stolen former-age "design" and cheap manufactured goods, not content with providing those other blessings, the rum bottle, the rifle bullet, consumption and small-pox. There are a number of interesting and useful short articles, and several papers that have already been published in the English journals. The plates consist of a sketch for a bungalow of the cosy-corner type, rather badly planned, and a perspective sketch of a very effective and neat little brick Baptist church, at London, South Ontario, with half-timber porch and gable. This church is entirely adapted to the country, expressive of its use, suited to its denomination, and, we are happy to see, is not decorated with forms elaborated by a people of another country and climate, or of an architecture of the past with its tradition broken; the architects are Messrs. Burke and Horwood, of Toronto.

The *Architectural Review* (Boston, Mass.) for April contains an article by Mr. Robert Brown on "Old Woodwork in English Churches," well illustrated with a number of rambling sketches. The article is of a fragmentary character, and does not pretend to be anything else. Mr. W. P. P. Longfellow contributes a memorial notice of John Ruskin, in which he endeavours to take a scrupulously judicial view, but does not avoid, we think, displaying a certain amount of bias. The plates consist of competitive designs for the New York Custom House by Mr. Cass Gilbert and Messrs. Carrère and Hastings.

The *American Architect* for April 28th has an article on "Painting and Painting Specifications." The illustrations are of but ordinary merit; the railing in East Thirty-sixth Street, and the railing and gate at No. 681, Madison Avenue, New York, are good suitable pieces of work, but the railing

at 38, East Thirty-seventh Street, is much too flimsy. The points to always keep before one in designing ironwork, as in everything else, are that the forms must be suitable to the material, to its intended uses and its situation; the last point is the one generally ignored in metal-work, for although a frail piece of ironwork may be suitable to the interior of a building, if placed in the open air it will decay, and is sure to suffer injury. The New York "Box-Stoops" in this number are characteristic horrors. Some neat and simple furniture designs by Mr. R. Brown, of Boston, are also shown. The number for May 5th gives the continuation of the series of articles on architectural acoustics. Several illustrations are given of the Court House of the Appellate Division, New York, to which we have referred before. St. Olave's Grammar School, by Mr. E. W. Mountford, is one of his characteristic pieces of work; the plan is somewhat rambling, but the building shows how a pleasing result may be obtained by simple regard to proportion and material. In the issue for May 12th a further paper is given on architectural acoustics. The illustrations are interesting, but that is not saying the subjects are good. The house at St. Louis is an example of how Classic

styles should not be treated; if the worker considers that a style suitable to his country is not suitable to him, it is quite allowable for him to decide to work in a foreign one, but then unless he works with the ideals and spirit of the creators of that style—that is to say, works with academic accuracy—his work will merely become a trivial patchwork of styles of peoples foreign to each other and of different stages of growth; this is the manner in which this design has failed, and likewise the houses at Tuxedo Park and in East Sixty-eighth Street, New York. This last also shows a very crudely designed bay window. The house at Baltimore is somewhat better than the others, but fails from the misuse of material, brick columns always looking bad. The issue for May 19th contains nothing of much interest. Designs for the Pan-American Exhibition Buildings at Buffalo, N. Y., are given; they are of an extremely false Classic character. Further illustrations of the Court House of the Appellate Division are included. The George Draper Memorial Church, Hopedale, Mass. (Mr. E. J. Lewis, jun., architect), is a simple Gothic structure, without ornament, but would have been improved by using smooth stone—the large roughly-hewn blocks ruin the scale—and tiles instead of slates. The furniture designed for this church by Mr. Robert Brown is suitable.

The Architectural Record (New York) for April is a most interesting number. Mr. G. A. T. Middleton, A.R.I.B.A., contributes "Some Notes from the Rhine Valley," illustrated with very meagre sketches. Mr. Jean Schopfer writes on wooden houses in France during the Middle Ages—or half-timber, we should call them. These houses were built on the system called *pan de bois*—a system of framework in which the resistance of the timber, serving in turn as brace, or support, or belting-course, is greatly increased by the multiple combinations of the joinery. The spaces left between the different pieces of framework were pugged or filled in with old plaster work, bricks, &c., which do not bear, but simply stop up. The *pan de bois* constitutes the carcass of the house. It is, in fact, the present method of building in wood, the only one that French carpenters know; but the wooden framework is now exclusively employed for attics and upper storeys, stone or brick forming the bearing part, whereas in the edifices of the Middle Ages the *pan de bois* was systematic and general. We would suggest that this very effective system of brick filling might be adopted in London in place of the untruthful and absurd half-timber work done under the London Building Act, where, as the plaster or rough cast cannot be done except on a backing of brick, it would be much preferable to use the bricks as a face direct. The illustrations of entrances to sky-scrapers show the depths of degradation to which the system of copying design can take us. Mr. L. P. Gratacap writes a practical and sensible article on the making of a museum, illustrated by the design of the Museum of Natural History, a huge, ugly, barrack-like structure, which is happily not yet completed. Mr. E. C. Gardner contributes an amusing article, illustrated by some remarkable specimens of the ridiculous stuff built under the name of Architecture. There are a number of illustrations showing how natural forms can be utilised in design, a subject often treated on.

Architecture (New York).—The May number of this magazine has the following note which is exactly applicable to our own contentions for the registration of architects:—"One of the strongest arguments in support of the licensing of architects is the reaffirmation by the Appellate Division of the New York Supreme Court of the principle of the owner's liability if he fails to select a competent architect. Attention was called to this interpretation of the law at the meeting of the Architectural League held on March 6th, at which the licensing question was discussed, and since that date the court has again ruled along the same lines. What guarantee has the owner now that he is selecting a competent architect?" The best illustration in this number is of the Memorial

Building, Princeton, N. J., Messrs. Parish and Schroeder, architects—a simple little Gothic-spired structure, which is entirely satisfactory. There are also several small houses on the right lines, and also several atrocious specimens of the modern French and German schools.

The Brickbuilder (Boston, Mass.) for April contains well-illustrated articles on the brickwork of Southern France, and in the Royal chateaux of France; and an article on church architecture in materials of clay, which is certainly not enhanced by the illustrations of churches in this material. The designs in the competition for the Carnegie Library, Atlanta, Ga., are all of considerable merit. The winning design by Messrs. Ackerman and Ross has a good plan and a simple Classic elevation, and is certainly superior to the others in every respect. The Law School at Pennsylvania University is an extremely ugly jumble of Classic styles, with senseless decoration.

The Scientific American, Building Edition.—What a blessing is the necessity for economy. This reflection seems always to be called to one's mind when looking through the pages of this magazine. The exteriors of the small houses erected by the everyday American architect seem often quite respectable and passable, and if just a little proportion were observed, would be quite pleasing. But what a contrast is the interior, where the rigid economy exercised on the front has given the chance for a little lavishment inside. Then we have examples of all the modern American want of taste and refinement. This present number contains nothing of especial interest.

Carpentry and Building (New York) for June has articles on trusses for flat roofs, the art of wood turning, estimating for stone-work, notes on the Paris Exhibition, and notes on practical work of various kinds, with numerous illustrations. A number of designs of shops, small houses, &c., with details, are also given.

La Revue de l'Art Ancien et Moderne for May contains illustrated articles on the decoration of the prayer book of the Constable Montmorency in the Condé Museum; on the work of that remarkable and gifted artist, Alphonse Legros; on metal-work and the historical exhibition of French Art at the Paris Exhibition; and Rosa Bonheur and her art.

The Journal of the Royal Institute of British Architects.—In the issue for May 12th an illustrated paper on ornamental lead and lead-casting is contributed by Mr. F. W. Troup, who has for the past five or six years devoted considerable time to the study of the methods of using and working in lead, giving his attention more to the ornamental side of its employment than to the practical side in water and sanitary work. Mr. Troup ends his paper with the following excellent advice: "I would venture to say to all students of our traditional crafts: Study the old, but do not blindly copy it. First master the meaning of the methods employed. Not till then can you with certainty solve modern problems nor adapt the old methods to meet modern conditions." In the issue for May 26th the paper read by Mr. J. M. Brydon on "The Work of Professor Cockerell, R.A.," is given in full, with illustrations, and Mr. W. Dunn contributes an article on the bending stresses in flat rectangular concrete floors.

The Antiquary this month contains nothing of special interest. The chief articles are on aboriginal American writing, the ancient Ribbleside crosses, and the Ribchester excavations last year.

The Birmingham Magazine of Arts and Industries for May is called an electrical number. We presume the editor meant that the number deals with articles and plant used in connection with electricity. Articles on the electricity supply of Birmingham and on the Edison and Swan United Electric Light Company, Limited, and its work are given, with shorter ones on Pitmaston, the home of Sir John Holder, Bart.; the Birmingham Photographic Exhibition, 1900; and the new Union Mill, Birmingham.

Die Kunst.—The first place in the May number of this magazine is given to an illustrated description of the Munich "Künstlerhaus"—the new club and assembly rooms which have recently been built for the artists of that city. The illustrations of the interior decorations, of which a number are given, show that the work has been carried out on a scale of lavish magnificence worthy of an English hotel or the mansion of an American millionaire. But from an artistic point of view the result is deplorable; every square foot of wall and ceiling seems to be covered with ornament, often of the vulgar kind, as though the artists thought there would be something indecent in leaving any part of the surface uncovered. The extravagance of this "Künstlerhaus" is, however, as nothing compared with the details of some other recent buildings in Munich, of which illustrations are given in the same number. The entrance gate to the "Elvira" studio—a riotous orgy of writhing metal—and the façade of the same building with its blotches of meaningless and shapeless plaster ornament, must be seen to be believed. If such examples were really typical of modern German decorative work, one would be forced to the conclusion that German artists have lost all sense of artistic restraint, and in their frantic efforts after novelty have become quite indifferent to considerations of beauty. Several accounts of spring picture shows are included in this number, and an appreciative article on the Polish artist, Peter Stachiewicz, is illustrated with some excellent reproductions of the artist's drawings.

Architekturwelt has a coloured frontispiece illustrating the entrance hall of a hunting lodge. The article on "The New High Buildings in Berlin," is concluded in this number. A recently opened national school in Berlin is fully illustrated with plans and details which should be interesting to architects who work for English school boards. The Paris Exhibition again occupies a prominent place in the magazine, a fully illustrated article being devoted to the sculptures on the façade of the German house. Several examples of recent domestic architecture are illustrated; and the number contains as usual several illustrations of modern German furniture, some of which—notably a sideboard by Fried. Thierichens—being comparatively simple and unaffected, is much more pleasing than are many of the products which editors of German art magazines seem to take delight in illustrating.

The Writings of John Ruskin in their entirety are about to be published in French.

National Library at Florence.—A site for this building has at last been chosen; it is 10,000 square metres in area, and is near the Church of Santa Croa. The cost of the library will be between £80,000 and £100,000.

Court of Common Council: the new Sessions House.—At last Thursday's meeting of this Council a report was brought up from the City Lands Committee on the new sessions house in the Old Bailey. The Committee had six designs under their consideration and recommended the adoption of one of them. The Court originally had fixed the price to be expended on the building at £225,000, but Mr. Pryke said that they would have to spend the sum of £265,000 owing to the increased price of material. Mr. Morton pointed out that the stipulated expenditure should not be exceeded, and moved the adjournment for the consideration of the report; after some further discussion this was agreed to. The portion of the prison of Newgate which the Government are to hand over for the enlargement of the site of the sessions house will not be vacant before September in next year. It was decided to refer to the Streets Committee to consider the desirability of constructing subways for pedestrians at the junction of Newgate Street and Cheapside. It was also decided to inform the London County Council that the Corporation was not prepared to give its consent for the introduction of a Bill for the construction of tramways in the City.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Iron and Wooden Bungalows.

POST BRIDGE, DEVON.—T. L. writes: "Could you tell me the name of a firm who make bungalows of wood and iron construction complete and ready for fixing?"

Messrs. Isaac Dixon and Co., Windsor Iron Works, Liverpool; W. Harbrow, South Bermondsey Station, London, S.E.

Extracting Oil from Stone.

SEAFORTH.—PRETORIA writes: "What will extract engine-oil from dressed Runcorn stone? Pearl ash and whiting have been tried, but without success."

I do not think it possible to remove the oil stains without destroying the face of the stone. Spirit of salt poured on the stain and rinsed off with clear water may partly remove it.

G. H. J.

Municipal and County Engineers' Examination.

LLWYNTPFA.—ALPHA writes: "I shall feel obliged if you will kindly give me a list of books (not too expensive) suitable to study for the above examination, particularly those dealing with the engineering and municipal work."

This examination is not one that can readily be prepared for from books. What is needed is a practical acquaintance with the various subjects. In the branches named, "Law's Civil Engineering" (Crosby Lockwood, 7s. 6d.) and "Boulnois' Municipal and Sanitary Engineer's Handbook" (Spon, 15s.) are the most suitable.

HENRY ADAMS.

Tours in Belgium.

BRIXTON, S.W.—A. C. L. writes: "I and a friend wish to spend a week in Belgium, and we should be obliged if you would let us have a list of the best places to visit during that short period; also any particulars as to hotel accommodation would be acceptable."

Much depends on whether your chief object is to study architecture or to enjoy natural scenery. If the former, you could very profitably confine your attention to the cities of Flanders—Ghent, Bruges, Liege, Ypres, Malines—all of which are very quaint and interesting; if the latter, you should make for the Ardennes, visiting Dinant, Rochefort (for the wonderful grottoes of Han), La Roche and—if time allowed—Echternach and Diekirch in the Luxembourg Ardennes. A good way to see a little of both the cities and the country would be to take some such itinerary as this: Harwich, Antwerp, Malines (don't omit to break the journey at this quaint old town), Brussels, Namur, Dinant, Rochefort. Several tourist agents, like Cook, Gaze, or Lunn, will supply full particulars about the hotels, which are good and very cheap.

Books on Monastic Buildings.

DONCASTER.—MOSS writes:—"As a constant reader of your interesting paper, may I venture to ask if you could kindly give me the name of any book (not too costly) setting forth the architectural and structural peculiarities of the various monastic orders, the ruins of whose buildings are still to be found in this country. I believe there are certain well-defined differentia by which the buildings of one order can be distinguished from another, but I have hitherto failed to discover what they are."

The best books our correspondent can study are Prior's "History of Gothic Art in Eng-

land," with 340 illustrations, price 31s. 6d. net; "English Church Architecture," by George Gilbert Scott, F.S.A., price 26s. post free; and Walcott's "Church and Conventual Arrangement," price 9s. 6d. post free. The last is illustrated by a series of ground plans and plates of arrangements of churches in different countries and at successive periods, and of the conventual plans adopted by the various orders. Mr. B. T. Batsford, 94, High Holborn, W.C., will supply the books.

Property Sales.

LONDON, S.E.—R. A. C. writes: "Three years ago I instructed a firm of auctioneers to sell a house, gave them full particulars, and arranged with them as to the reserve price. They submitted a draft of the sale which I approved with one or two minor alterations. They also wrote to know who should represent me at the sale and I gave a solicitor's name who had acted previously for me. The property did not reach the reserve and was withdrawn. A few days ago I received an account from the solicitor to which I replied. In reply I received a letter from them, of which I enclose extract (not reproduced). I should be very much obliged if you would inform me if they are right in their contention, and if their claim, taking into consideration what I have done in the matter, is correct. Taking into further consideration that within eighteen months of the sale the same firm had prepared the title to the property (which is a freehold one), the claim seems out of all reason. With the exception of their writing to me to know the reserve, no other communication passed between us, and this enquiry was absolutely unnecessary, as I had previously arranged with the auctioneer as to the amount. If I have no case, of course their account will be paid, but I should like to know just how I stand as regards legal position."

The charges do not seem to be recoverable. In order to sustain their claim, the solicitors must show that they were retained to do the work, and that they did it. It would not appear that they could show either the one or the other. They are not correct in saying that they have only charged one half of the amount allowed by the scale in the Solicitors' Remuneration Act, which is "For conducting a sale of property by public auction, including the conditions of sale, when the property is not sold, then on the reserved price 10s. per cent." This in the present case would come to £1 19s., but there is a minimum of £5 allowed in all cases. If the solicitors, therefore, claim only one half of the scale charges, they should be satisfied with £2 10s., instead of £3 15s.

H. P. B.

LONDON'S LATEST HOTEL.

FOR some time past many persons have been watching the completion of that great new building in Russell Square, the Hôtel Russell. The Bedford Estate, of which this square is a part, has never been disfigured by careless management. The original houses, it is true, have but little architectural pretension; they are plain, drab-looking buildings, with an air of solidity and comfort rather than of refinement. Now the architect has been abroad in Bloomsbury, and old houses are being rebuilt, remodelled, or modernised with new ornamental fronts. The Hôtel Russell comes to complete the transformation. The site extends from Guilford Street to Bernard Street, and, as it has an angle, presented some difficulties which have been satisfactorily overcome by the architect, Mr. Fitzroy Doll, F.R.I.B.A. The design is after the German Renaissance style, light red brick and terra-cotta having been used, and a variety of soft yellow tints introduced. A striking feature of the main elevation is an arch which is run up to the fifth floor over the doorway, while immediately above the entrance are sculptured figures, by Mr. W. H. Fehr, of England's great Queens, Elizabeth, Anne, Mary and Victoria. At the top of the colonnade, which runs round the building, are medallions with the arms of the chief countries of the world picked out in

various colours, while sculptured heads of leading English statesmen are placed in niches between the principal windows on the Guilford Street frontage. On passing the doorway you find yourself in a magnificent marble hall, which commands a view through the glass-covered palm house and winter garden that forms the centre of the building to the banquetting hall beyond. A broad staircase rises from the hall, with marble arcaded columns leading to a gallery on the first floor, where the spandrels are panelled over arches and ornamented with figures in bas-relief.

To the right the whole frontage between the main entrance and the Guilford Street corner is occupied by a reception and reading room, which is broken up by a large recessed fireplace with projecting seats and large columns, round which writing tables are placed. This room is wainscotted in oak with high panelling. Above the upper frieze, on a dark background, are portraits by Reynolds, Lawrence, and other well-known painters, while over the mantelpiece is a large painting by Hayden. There are book cases under the panelling to the left of the fireplace, and the large bay windows which look out on the gardens in Russell Square contain writing tables. The main frontage to the left of the entrance on the ground floor is taken up by a smoking room, a billiard room, and a business room for business men—a feature which will be welcomed. The smoking room has panelled oak wainscoting, and is arcaded on one side and broken up by screened seats.

Turning now to the opposite or Guilford Street frontage of the hotel, it is found to be occupied chiefly with a handsome dining room. The lower part of the walls are lined with warm-coloured marbles, above which is a panelled frieze. The room is divided by two rows of marble columns of the same warm tone, while the upper parts of the columns contain niches with sculptured figures. Between the dining room and the reading room is a small room, with separate entrance and vestibule, for the use of private dining parties.

Forming the back part of the building on this floor is the great banquetting hall, which is in the French Renaissance style, with large, well-proportioned piers on each side, surmounted by caryatides supporting beams which stretch across the ceiling. At one end of this spacious and gorgeous hall is an arcaded gallery, with wrought-iron balustrading, which may be used for the orchestra. Adding further to the decoration is a raised alcove at the back of the room filled with plants and flowers, and a frieze of large mirrors. At the north end of the banquetting hall there is still another dining room. The importance of the social side of hotel life has been recognised and provided for in the central winter garden, a kind of lounge or foyer. It is a few feet lower than the surrounding rooms, and round it are flights of stairs—of a few steps—leading to and from the entrance hall, smoking and billiard rooms, dining room, &c. The floor is laid with red and white marble, covered here and there with rich Turkey carpets. Terraces under the same glass roof are at each end, and a wrought-iron balcony runs along by the corridor which separates the winter garden from the entrance hall.

On the first floor of the building are a beautiful lounge and a number of suites of rooms, in most cases with bathrooms attached. There are similar suites on the second floor. There is a great variety of single and double bedrooms, furnished in the most comfortable style, the bedrooms in the corners of the building having a bath very neatly tucked away in the alcoves formed by the turrets. The hotel contains altogether about 700 rooms. There are four sets of lavatories on each floor, one on each side of the building, and all the sanitary fittings are of the latest pattern. The whole building is well ventilated and its situation and construction provide that all rooms are remarkably well lighted. A most perfect system of fire-preventive appliances has been installed in the hotel by Messrs. Merryweather and Sons, engineers, of Greenwich, and all the furnishings have been supplied by Messrs. Maple and Co.

Correspondence.

The Southampton Disaster.

To the Editor of THE BUILDERS' JOURNAL.

HOLBORN, E.C.

SIR,—Many of the newspaper reports of the accident at the new cold storage premises at Southampton, which took place on May 28th, have given the impression that the permanent buildings collapsed. As the agent for the Hennebique patent, according to which the building is being constructed, I trust that you will allow me space in which to contradict this wrong impression. The true facts of the case are as follows:—The contractors had erected a large timber workshop to contain the vertical moulds in which the ferro-concrete piles are cast. At the time of the accident there were about three hundred finished piles, 43ft. long, in the moulds, weighing about 1,200 tons. Just as the men had left the works at dinner-time the workshop collapsed, carrying with it the ferro-concrete piles which it contained. Most of the piles were still green and were consequently broken by their fall. The accident occurred about 200yds. from the permanent building now in course of construction, which is not injured in any way. The workshop had been erected on made ground principally composed of chalk, and the accident is attributed to a sudden subsidence of the ground. The workshop had been in use for about twelve months.—Yours faithfully,

L. G. MOUCHEL,

General Agent for the Hennebique,
Patents in the United Kingdom.

Public Health (London) Act, 1891.

To the Editor of THE BUILDERS' JOURNAL.

LONDON, E.C.

SIR,—May I draw your attention to Ch. 76, Sec. 5, of the above Act which appears to require radical alteration in some of its subsections. An owner of a number of well-built cottages in the Ladywell district, finding his property being damaged by undesirable tenants, and experiencing difficulty in evicting them, unwisely applied to the local authorities to issue a closing order. The tenants under this were duly ejected, and the owner then consulted me with the result that the property was thoroughly restrained and put into substantial and decorative repair at a large expense, making it approximately in accordance with the requirements of the London Building Act, 1894. On application to the magistrate for a decision order he refused to act without the consent of the local authorities.

There is no word in the Act permitting him to take this stand, but simply an inference that he judge the case sitting as a Petty Sessional Court, and my client, being a poor man, shrinks from facing the expenses of a mandamus to compel him. The local authorities refuse their consent, and give no reason for their action. The Act permits them to decline giving any specification or information as to what they consider necessary to render the premises habitable, thus making them masters of a situation frequently created to further their own ends, which are not always above reproach.

It would appear, therefore, that the following amendments are urgently needed:—(1) That there should be served with the closing order a specification of what the local authorities consider necessary to put the property into habitable repair; (2) that if they consider it impossible to make the property habitable, the magistrate should be compelled to judge the case on its merits without previous reference to them.—Yours obediently,

JOHN W. RHODES.

The Late Sir Gilbert Scott, R.A.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—In reference to Mr. Hems' letter on page 309 of your last issue, it matters little or nothing whether or not I am old enough to remember the late Sir Gilbert Scott personally. If Mr. Hems is curious on that point he can

consult the oracles—that is to say, the books of reference—which contain biographical particulars of the eminent men of the time! That, at any rate, I had not what would have been the critical disadvantage of Scott's acquaintance, either as a friend or in the way of business, is quite certain; and right glad am I that this is the case, for, as Mr. Hems ingenuously and unconsciously shows, the smoothly-running business arrangements of Scott's office, with its staff of "thirty-six assistants," could, in the eyes of a business man, whose time, like that of Mr. Hems, is valuable, do much to condone a certain artlessness and mechanical style. I have no quarrel with Mr. Hems in his estimate of Sir Gilbert Scott's business habits, and he should have none with me on the score of Scott's artistic endowments. It is only in point of view that we are at variance; but then, as we see, point of view is everything. Had I been placed in business relations with Scott, I also—Saul among the prophets—should doubtless have had occasion to thank Scott for time saved and favours conferred, to the damnation of my own artistic perceptions.

Here we have explained much of the well-meaning but misleading log-rolling that characterises this era. Everyone knows everyone else, and each owes the other something. Mr. Hems must owe Scott's memory much, for he goes the whole way, I observe, and tickets the arch-restorer "the greatest architect of the nineteenth century." Now I submit in fear and trembling that if we drop one little word in between "greatest" and "architect"—the word "commercial"—we shall have a better definition, while at the same time, in relegating Sedding and Street to their purely artistic domain, we shall be placing them where they would be, and doing no one any harm.

Scott was really great in two things, besides in the rapacity for which, as Mr. Hems acknowledges, "nothing was too little—nothing too big." He was great in organisation, by which, as shown by Mr. Hems, his bald and unconvincing designs were repeated by a staff of ghosts large enough for a railway company's drawing-office, while those brilliant but unbusinesslike men, Sedding and Street, mostly did their own drawings; and he was really great as an engineer. He could manipulate a hydraulic ram with the greatest of discretion and effect, which those other fellows could perhaps not do; but he could not, and did not, work as they did, greatly to the delight of the appreciative, and the dismay of the merely businesslike.—Yours sincerely,

CHARLES G. HARPER.

Builders' Notes.

Roof-stripping at Hounslow.—For stripping the lead off the roof of Whitton Park Towers, at Hounslow, and doing damage to the extent of £100, four men were recently sent to prison, two for twelve months and two for eighteen months; all with hard labour.

Machine Carving.—The chief object of interest in the exhibit at the Paris Exhibition of Messrs. A. Ransome and Co., Ltd., Stanley Works, King's Road, Chelsea, is the "Marbut" Rapid Moulding Carver, which produces perfectly finished carved mouldings with incredible rapidity. The machine will carve mouldings up to 8in. wide in any kind of wood, and of various patterns. All the refuse made by the machines of various kinds exhibited (which number seventeen) is automatically drawn away by Messrs. Ransome's pneumatic conductor.

Reduction in Prices in the Slate Trade.

—At a meeting of quarry proprietors, held at Portmadoc last week, considerable discussion took place upon the question of how best to cope with the competition in the slate market caused by the importation of French and American slate. Some employers advocated a reduction in wages, but considerable opposition was offered to this, and the idea was dropped. It was reported that slates had been stocked at Portmadoc for some time past, and that the

competition was felt more keenly at that part than at Carnarvon and Bangor. It was eventually resolved to knock off the five per cent. premium on all sizes and qualities, and to make a further reduction of five per cent. in mediums, 24 by 14 and 22 by 11, and in all seconds. It is not at present proposed to make any alteration in the price of Carnarvon slates.

Fire Tests with Partitions and Doors.

We have received publications numbered 37 and 49 from the British Fire Prevention Committee. The former deals with a test made with a partition erected by the "Gypsin" Brick Co., Ltd., of London and Paris. The partition was 7ft. 9in. high and 10ft. wide, and was laid on a single course of stock bricks bedded in cement on the floor. The following is a summary of the effect:—A portion of the coating of fireclay on the fire side of the partition fell during the application of heat. A further portion fell off on the application of water, as also most of fireclay pointings to the joints. In no place had the fire passed through the partition. The bricks were sodden with water and easily impressed, although no effects of the fire were apparent except for some hair cracks on the fire side. The temperature of the outside face of the partition was at no time sufficient to ignite a match.—The latter of the two publications mentioned deals with a fire test made with a 2½in. door of Archangel deal, constructed in three thicknesses, and a similar door of Quebec pine. The result was as follows:—In thirty-nine minutes flame appeared over the top of the deal door intermittently. In forty-two minutes flame about 12in. long appeared down the west side of the same door. In fifty-two minutes no flame had come through the pine door, although much smoke came from the joints, and the wood around all the bolts and nails was much scorched. In fifty-five minutes flame came continuously through the upper portion of the deal door. In sixty minutes flame came over the top and through the upper part of the pine door. In sixty-five minutes the upper portion of the deal door was considerably burnt, and flame was seen through several small holes burnt in the lower portion of the door. In seventy minutes, after water had been applied, the two inner thicknesses of the pine door were found to be practically burnt away and the outer thickness (which was for the most part in position) much damaged.

London County Council.—At last week's meeting of the Council the Water Committee recommended that a Bill be promoted by the Council in the next Session of Parliament to provide that in the event of a Bill being passed for the purchase of the water companies' undertakings the clauses in the several Acts known as the "sterilisation" clauses be deemed to be in operation up to 1908. They also advised that they be authorised to recommend applications to Parliament in regard to water supply, if thought necessary, at any time not later than November 13th next. After discussion this was agreed to.—The Improvements Committee reported that the Southampton Row improvement was being undertaken without any contribution from the local authority. Having regard to the fact that the widening of High Holborn was necessitated entirely by the requirements of the heavy general through traffic in London, they did not think that it would be reasonable, in the case of this improvement, to expect any such contribution. When the new street from Holborn to the Strand, 100ft. wide, was completed, and when the widening of Southampton Row to 80ft. was carried out, the part of High Holborn affected by the present proposal would adjoin one of the most important crossings in London. A width of less than 70ft. was inadequate for the needs of the traffic in that part of High Holborn, having regard to the frequent stoppage of the east and west traffic in order to accommodate the north and south traffic passing along Little Queen Street and Southampton Row. In those circumstances they had no hesitation in recommending the Council to take advantage of the present opportunity for carrying out the improvement by continuing the widening of High Holborn to 70ft. between Nos. 107 to

113, both inclusive. The report was approved. The Council approved estimates amounting to £53,000 for the equipment of the new lunatic asylum at Horton. This sum includes £35,094 for furniture and fittings.—Upon the recommendation of the Highways Committee, it was decided to apply to Parliament for powers for the Council to double the tramway lines in Battersea Park Road, Bermondsey New Road, York Road, Battersea, Albert Embankment, Wandsworth Road, and the new street from Bermondsey New Road to Tooley Street, authorised by the Tower Bridge Approach Act of 1895. The estimated cost was stated to be £43,200. Subject to the necessary Parliamentary powers being obtained, the Council decided to pay half the cost of acquiring 42½ acres of land for the extension of Brockwell Park.

Derby Municipal Buildings: A Sub-Contract Dispute.—On Wednesday last the matter of an arbitration between George Wallis and Henry Vernon came before Mr. Justice Darling and Mr. Justice Bucknill, sitting as a Divisional Court in the Queen's Bench Division of the High Court. Mr. McCaigie said the dispute between the parties arose under these circumstances:—In 1894 Vernon entered into a contract of an important character with the Derby Corporation to carry out certain large extensions of certain municipal buildings—a technical college. The contract was in writing, and had a large number of elaborate provisions, but the only point he thought it necessary to mention was that the contract, which amounted to nearly £20,000, was a lump sum contract. Vernon undertook to perform all the work which was specified for a lump gross sum. After he had made that contract he entered into a sub-contract with Wallis relating to the whole of the stonework, which was to be supplied in connection with this extension (dated November 26th, 1894), for £3,500, subject to measurement. Mr. Wallis claimed that sum, but Mr. Vernon was only willing to pay by piece for the work actually done. The matter was referred to arbitration, and Mr. Vernon's counsel raised two points which the arbitrator had submitted to the Court in the form of a special case. The first point was, that before Wallis could require Vernon to pay him the balance he (Vernon) had a right to require Wallis to show that the whole of the work had been measured up, and that the payments made had, *prima facie*, only been payments on account. The second point was that there were two conditions precedent with regard to any deviation from the drawings or any extras—namely, that they must be ordered in writing and taken account of at the time the work was executed, and that plaintiff must show that had been done before he could recover. After hearing all the arguments, their lordships gave judgment. Mr. Justice Darling said the arbitrator had asked the Court for answers to three questions. To the question whether on the true construction of the agreement Wallis was entitled to recover the net sum, subject only to deduction for authorised omissions, in his opinion the answer was, Yes. In the question whether Vernon was entitled to require the whole work to be measured and to pay Wallis only on the result of the measurement, the answer was, No. To the question whether Vernon was entitled to resist payment of the amount of Wallis's claim for extra work, on the ground of non-compliance with the alleged conditions precedent in the agreement, the answer was, No. Mr. Justice Bucknill agreed.

The Geological Survey.—The President of the Board of Education has approved of a committee to enquire into the organisation and staff of the Geological Survey and Museum of Practical Geology; to report on the progress of the survey since 1881; to suggest the changes in staff and arrangements necessary for bringing the survey in its more general features to a speedy and satisfactory termination, having regard especially to its economic importance; and, further, to report on the desirability or otherwise of transferring the survey to another public department.

Surveying and Sanitary Notes.

Mr. J. E. Sharp, of Keighley, has been appointed surveyor to the Otley District Council at a commencing salary of £150 a year.

The late Mr. Peter Lawrence.—The announcement of the death of Mr. Peter Lawrence, surveyor, will come as a surprise to his friends in Edinburgh. He received his professional training in a Glasgow office, and then joined his father, who was in the same business.

Leicester Sewage Disposal.—At last week's meeting of the Leicester Town Council it was decided to open negotiations for the purchase of the Beaumont Leys Sewage Farm, and to carry out a sewerage and sewage disposal scheme for the district of Belgrave at a cost of £85,840.

Holborn Board of Works.—Three tenders were received for the repaving of certain portions of the footways in Chancery Lane, Red Lion Street, Charles Street, and Hatton Garden. The surveyor said, at last week's meeting of this Board of Works, that the lowest tender was £1,428 in excess of the estimate, which was prepared eighteen months ago. It was decided to reject the tenders and readvertise.

Landslip at Delabole: Fall of 70,000 Tons.—At the Delabole Slate Quarries a landslip recently occurred, when, it is estimated, about 70,000 tons of solid rock and "harder" came away. Only three years ago there was a similar fall in another part of the quarry, and 120,000 tons of material then came down. On the present occasion the precautions taken were happily successful in averting loss of life and minimising the damage.

Euston Station Extension.—At last week's meeting of the St. Pancras Vestry the chairman of the Parliamentary Committee (Mr. W. H. Matthews) said, with regard to the proposed extension of Euston Station, that the company asked, and the Council was apparently prepared to agree, that the former should be allowed to build upon the eastern inclosure of Euston Square, conditionally that 10ft. along the entire line of open space should be added to the width of Euston Road, and the western inclosure, thus shorn, should still be preserved as an open space, and also be available for the public use. On the other hand, the Vestry took their stand upon a private Act of Lord Southampton, which required both inclosures to be maintained as open spaces, although barred to public access; in fact, the Vestry adhered to the status quo. The Committee of the House of Commons were with the Vestry in its contentions, and hence there was every likelihood of Euston Square remaining fully open as at present.

Surveyors' Institution.—At the annual general meeting of this institution held last week, the president, Mr. T. M. Rickman, in the chair, it was announced that Mr. John Shaw had been elected as president for the ensuing year. The thirty-second annual report of the Council stated that the Institution had at no previous period been more prosperous than now. The number of members on the roll was 3,098, and there had been a net increase during the past year of 103, of whom 71 were in the class of Professional Associates. The receipts for the year amounted to £18,695, as against an expenditure of £18,316. Dividends showed a reduction, owing to the realisation of investments to meet the outlay on the new premises, the sale of stocks for this purpose having amounted to £9,000. The number of candidates for the Professional Examinations of 1900 was 325, and of these 193 had been successful, showing a percentage of passes of 59.38; but 56 others had satisfied the examiners in their work as a whole, though they had failed to pass in their "typical" subjects, and were eligible for re-examination.

Bricks and Mortar.

APHORISM FOR THE WEEK.

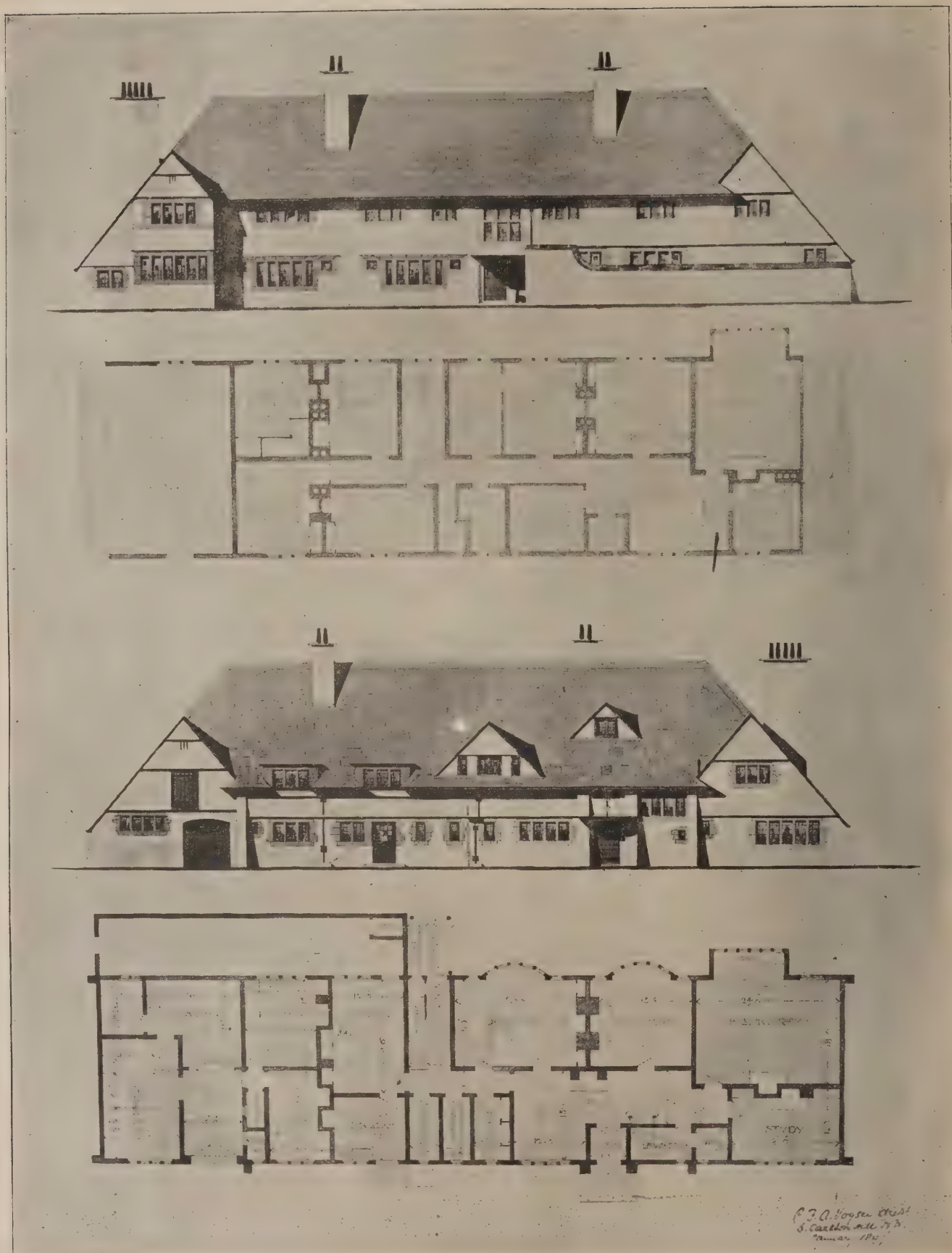
"Architecture, again, though it has its own laws—laws esoteric enough, as the true architect knows only too well—yet sometimes aims at fulfilling the conditions of a picture, as in the Arena chapel; or of sculpture, as in the fluted less unity of Giotto's Tower, at Florence; and often finds a true poetry, as in those strangely twisted staircases of the chateaux of the country of the Loire, as if it were intended that among their odd turnings the actors in a theatrical mode of life might pass each other unseen; there being a poetry also of memory, and of the mere effect of time, by which architecture often profits greatly."—W. PATER.

Our Inset Sheets.

The new church of St. John the Baptist at Newport, Mon., was recently consecrated by the Bishop of Llandaff. The illustration shows it from the north-east side. The tower is not built, but the foundations are laid for it. The church has nave, with aisles, and chancel with aisles, of which the one on the south side is fitted as a chapel. There is a sacristy on the north aisle of the chancel. The organ is in the north side of the chancel. The church has two entrances on the south and one on the west, and there is a large vestry in the basement. The church accommodates 700 persons. The material used is a red walling stone, with Bath stone for the windows, &c. The roofs are covered with stone grey-slates, and the timbers inside are painted. The chapel roof is much carved and illuminated in colour and gold. The floor of the chancel is in marble mosaic, and the font is richly sculptured. The remainder of the fittings are for the most part temporary. Heating is by hot water and lighting by electricity. The work has been carried out by Mr. W. A. Linton, of Chepstow Road, Newport, builder, from designs by Mr. F. R. Kempson, of Hereford and Cardiff. The cost up to the present has been £8,000.—The house proposed to be built on Tooting Beck Common, S.W., was abandoned because the architect, Mr. C. F. A. Voysey, would not increase the height (9ft.) of the rooms without entirely altering the character of the building. Brick, cement rough-cast, was to be used for economy, and the roof was to be of green Westmorland slate.—The "gesso" panel by Mr. F. Hamilton Jackson is an illustration to his article on page 319.—The house at Storrs, Windermere, has been designed in the spirit of the old Westmorland work, and is constructed of native stone walling, cement dashed externally, and with roofs of green local slates and stone ridges. The entrance is framed in oak, with side lights and swelled pillars under a plain frieze and cornice. The position of the lake, which is overlooked by the principal rooms, has largely influenced the design, and the angle windows are arranged primarily with the object of obtaining a more extended view. The work is being carried out by local tradesmen under the supervision of the architect, Mr. Joseph Pattinson, of Windermere.

Italian Restorations. On page 234 of our issue for May 2nd last we printed an extract from a letter written by Mr. Charles L. Eastlake to the "Times" newspaper with reference to architectural restorations in Italy. Mr. Sydney C. Cockerell, in a letter to the same newspaper, now comes forward with a reply, consisting mainly of an extract from "Fors Clavigera," in which Ruskin deals with the chapel of Santa Maria della Spina at Pisa. In 1872 he wrote: "It was some comfort to me, that second of May last, at Pisa, to watch the workman's ashamed face as he struck the old marble cross to pieces. Stolidly and languidly he dealt the blows, down-looking—so far as in any wise sensitive, ashamed—and well he might be. It was a wonderful thing to see done. This Pisan

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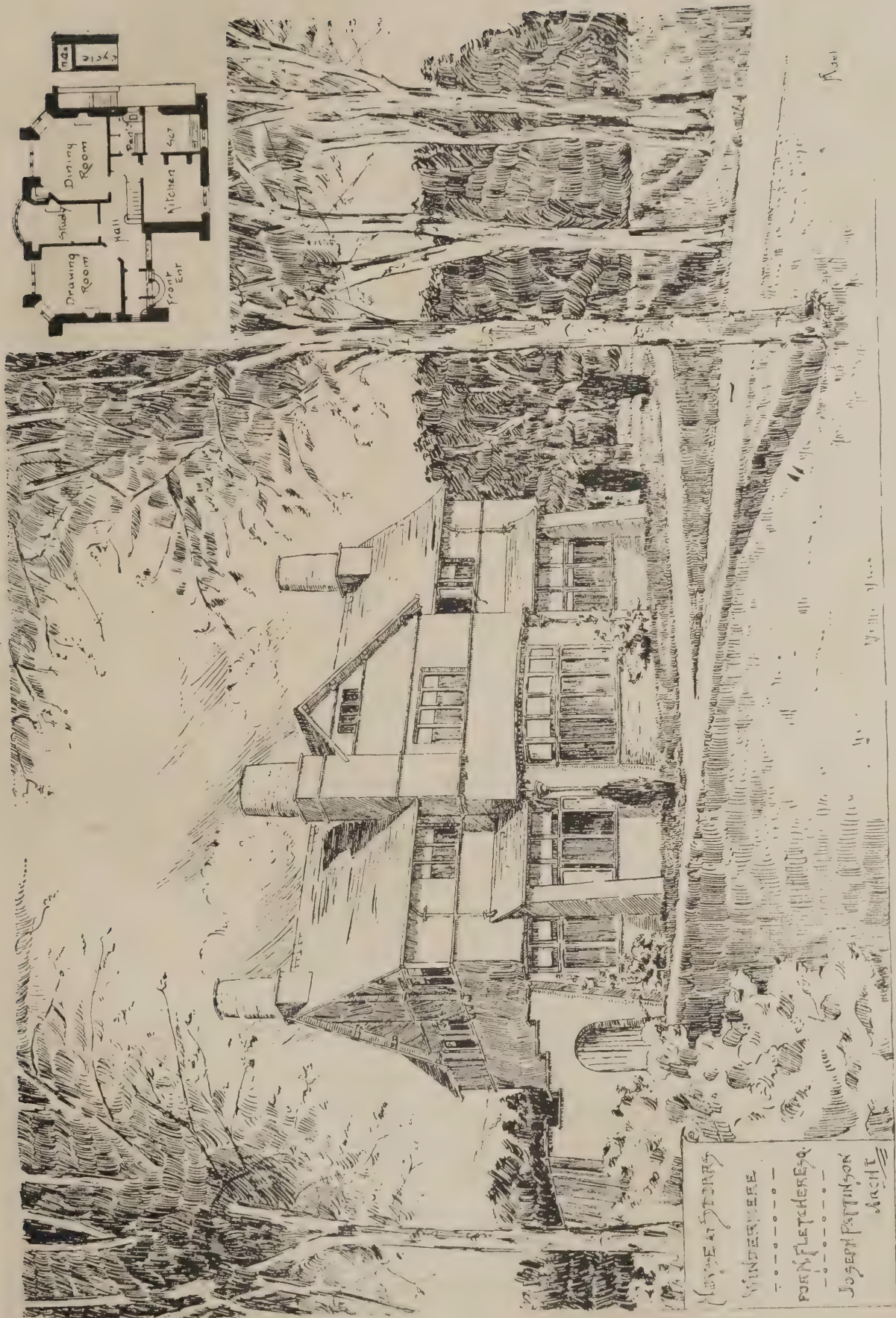
HOUSE PROPOSED TO BE BUILT ON TOOTING BEC COMMON, S.W. C. F. A. VOYSEY, ARCHITECT.

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St John Baptist Church Newport: Mon.



C.H.S.



HOUSE AT STORRES, WINDERMERE. JOSEPH PATTINSON, ARCHITECT.

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FIG. 7.—DECORATIVE PANEL IN GESSO. BY F. HAMILTON JACKSON, R.B.A. (*See p. 319.*)

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chapel, first built in 1230 was a shrine like that of ours on the Bridge of Wakefield. In the year 1840 I first drew it, then as perfect as when it was built. Six hundred and ten years had only given the marble of it a tempered glow, or touched its sculpture here and there with softer shade. But the last quarter of a century has brought changes and made the Italians wiser. British Protestant missionaries explained to them that they had only got a piece of blackberry stem in their ultramarine box. German philosophical missionaries explained to them that the Crown of Thorns itself was only a graceful metaphor. French Republican missionaries explained to them that chapels were inconsistent with liberty on the quay; and their own engineering missionaries of civilisation explained to them that steam-power was independent of the Madonna. And now in 1872 rowing by steam, digging by steam, driving by steam, here, behold, are a troublesome pair of human arms out of employ. So the engineering missionaries fit them with hammer and chisel, and set them to break up the Spina Chapel. A costly kind of stone-breaking, this, for parishes to set paupers on! Are there not rocks enough of Apennine, think you, they could break down instead? For truly, the God of their Fathers, and of their land, would rather see them mar His own work than His children's."

A.A. Summer Visits.

THE Summer Visits Committee of the Architectural Association have arranged for the on-

coming session the usual series of six visits to places of architectural and archaeological interest, within an accessible distance of the Metropolis. During the course of the session the list of visits, as proposed, touches a series of edifices of very considerable merits. The following *résumé* will show, with the date of each, the places it is proposed to inspect:—June 16th, The Deepdene, Dorking; June 30th, Christ's Hospital, Horsham, an immense set of buildings of very great architectural and constructive interest by Mr. Aston Webb, A.R.A.; July 14th, an all-day visit, Mr. C. Eames Rempes' house, Hayward's Heath, and Cuckfield Place; July 28th, Stowe House, Buckingham, a magnificent seventeenth and eighteenth century mansion, possessing a very grand interior, and with fine old gardens of great size; the church will also be inspected; this will be an all-day visit; August 18th, Mere-worth House, Kent, an enlarged copy of the celebrated villa at Vicenza by Palladio. On September 1st it is proposed to visit either Hatfield House, Tring House—one of Wren's mansions—or the Chequer's Court, near Ward-over. This visit, however, has not yet been definitely arranged. As these visits and the places visited are extremely pleasant and interesting, we hope to publish an account of each in due course, supplemented by some sketches, or photographs, where possible.

The War Office Barracks.

THE War Office has decided to hasten the erection of the new barracks on Salisbury Plain, so that the 19,000 troops who will

go under canvas during the summer will be housed in temporary corrugated iron buildings by next September. Already thousands of tons of materials are on their way to the site. The walls will be of corrugated iron, which lends itself to rapid construction, but they will be raised upon substantial brick bases, and the floorings will in every case be of 4in. concrete on 6in. hard core, the concrete being covered with 1½in. wood floors. The iron will be covered internally with match-boarding, with felt lining between. These buildings will be of every size, and will serve many uses, ranging from commanding officers' quarters down to the ever-necessary guardhouse. Mr. John McManus, of 237, Hammersmith Road, has secured the contract. Works of a similar magnitude are about to be contracted for to be erected at Aldershot.

A Liverpool Churchyard.

A matter which will very shortly have to be decided by the Corporation of Liverpool is that of improving St. John's Churchyard.

The city surveyor, Mr. T. Shelmerdine, has prepared a model of the ground. The centre is occupied by the proposed Rathbone statue, while William Brown Street is shown widened from the present 60ft. to 90ft., and St. John's Lane from its 50ft. to 70ft., the churchyard being reduced in area. Considerable changes are shown in the garden frontages to the public buildings in William Brown Street. A model dealing only (but elaborately) with the churchyard, has been prepared by Messrs. C. O. Ellison and Son. This model, which preserves direct paths in all directions across the churchyard, has as its centre a clock tower, while a band stand and a western entrance to St. George's Hall form other special features. Between six and a dozen statues are provided for in the central garden and at the proposed

virgin and foundress of the Abbey of Ely. Ely Palace, besides being a Liberty, was also a sanctuary where persons pursued by the law for certain offences could not be arrested by the civil authorities. The late Sir Gilbert Scott's opinion was that the chapel was erected between 1290 and 1299, and coeval with the monument to the bishop in Ely Cathedral, a work clearly by the same hand, John of Guant, Duke of Lancaster, and father of King Edward the Fourth, took refuge here after his palace had been burnt down, and remained there until his death. King Henry the Eighth is said to have first met Cranmer in the cloisters. During the time of the imprisonment of Matthew Wren, Bishop of Ely and Uncle of Sir Christopher, the greatest and best part of Ely Place was pulled down.



PART OF CHANCEL, CHAPEL OF ST. ETHELDREDA, ELY PLACE, HOLBORN, E.C.
DRAWN BY ALFRED J. RODDIS.

western entrance to the hall, the door shown being a counterpart of the eastern doors. Both models convey far more than words or drawings can do, and will command the close attention of the public.

St. Etheldreda's, Ely Place, Holborn.

NEARLY six hundred years have passed since the history of Ely Place began as the London palace and chapel of the Bishops of Ely, a time when most of the bishops had seats, or, as they were then commonly called, places in or near London in which to reside during their attendance on Parliament. Every vestige of the Episcopal Palace has long since disappeared, and the only relic of antiquity now remaining is the chapel of St. Etheldreda, queen and

It was converted into a prison by order of Parliament in 1642; it was used as a hospital in the times of trouble that followed. It was sold to the Crown in 1772, afterwards purchased by Charles Cole, an architect, who built the houses, but preserved the chapel. It was then purchased by the Fathers of Charity, who restored the church and crypt, which occupied nearly five years, and was reopened for Catholic worship on June 23rd, 1879, on which day the Feast of St. Etheldreda, its titular patroness, is annually kept in the Roman calendar. The night watchman remains and calls the hour from ten o'clock at night until six o'clock in the morning. The illustration of part of the chancel chapel shown on this page is from a drawing by Mr. Alfred J. Roddis.

New Patents.

These patents are open to opposition until July 9th.

1899.—Paint Removers.—9,337. R. H. MERCER, London, S.W. The composition consists of hydrate of calcium, 1 part; caustic soda (98 per cent.), 1 part; and water, 4 parts. This mixture is allowed to settle and cool, when to it is added: water, 4 parts, and dextrine or starch, 1 part.

Moulds for Brick-making.—11,142. H. ALEXANDER, Leeds, and J. HOLDING, Sheffield. The mould or liner is composed of wrought iron and hard steel, so arranged that a hard face is formed by the steel on that part of the sides of the mould where the wear is greatest.

Artificial Stone.—11,536. J. H. McLEAN, London, W. Burnt clay or burnt ballast is ground to the fineness of sea sand, and to it is added Portland cement well wetted, so as to produce a thick slurry. This mixture is placed in suitable moulds and is submitted to considerable pressure, which consolidates the mass into slabs or bricks for paving or other purposes.

Planing, Shaping and other Machines.—12,935. J. E. MATHEWSON, Broadheath, Chester. In order to provide these machines with reversing motion, the shipper rod is given an axial movement while moving endways, and the stops are so arranged that the contact between the stop and the lug or bracket is broken by the axial motion given to the rod, thus allowing the arm to over-run without danger of breaking the parts.

Drawing Pens.—13,634. F. GAUFROY, l'Isle-sur-le-Doubs, France. The handle of the pen consists of two metal strips fulcrumed near the nib end, and having at the other a regulating screw and a spring that tends to press the strips apart. If the pen is held lightly a thin line is drawn; if the back end is pressed upon the line becomes thicker. A different thickness of line is therefore obtainable without altering the regulating screw in the usual way.

1900.—Woodworking Machines.—4,554. T. BARNARD, Portslade, Sussex. This invention relates to a machine for the production of irregular, straight, circular or curvilinear mouldings, and for cutting out the pocket pieces of pulley stiles in sliding sash frames. There is a suspended horizontal rotary cutter spindle, movable towards or away from the work, and below is a table or bed which has a revolving motion and an independent parallel sliding motion. The pocket cutting is accomplished by mounting on the sliding frame a small circular saw, driven from a pulley on the horizontal spindle.

The following specifications were published on Saturday last, and are open to opposition until July 16th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—10,029, DOUGLAS, controlling of shop window illuminating electric lamps. 10,073, PATERSON AND DICKSON, method of decorating metal. 10,241, IMRAY (*Oesterreichische Gasglühlicht und elektricitäts-Gesellschaft*), electrical incandescent lamps with osmium filaments. 10,518, TANNETT-WALKER, travelling cranes. 10,710, ALLEN, method of securing an automatically-controlled supply of water to the carbide of calcium in acetylene gas generators. 11,448, RICHARDY, sanitary flushing apparatus. 11,825, DEAS, hydraulic hoisting or elevating apparatus. 12,949, ANDREWS AND GLASS, connection of house-service or branch conductors to electric mains. 12,966, WORMALD PATENT LOCKS CO., LTD., and TURNER, locks operated by keys. 13,239, DAVIES AND JONES, cranes. 13,323, UEHLING, casting moulds. 13,660, THOMPSON AND THOMPSON, grip for rope haulage. 14,010, SWINBURNE AND STEARN, means for use in the production of radiation and light by electricity. 14,038, SMETHEURST, material to be used as a

waterproof covering for roofs or as a substitute for glass. 14,067, DAY AND MURCH, moulds. 14,072, ELWORTHY (*Zuberbühler*), automatic generator and storage vessel for acetylene gas. 14,231, SHEPPARD, fireproof windows. 14,379, GOODWIN, composition for purifying acetylene gas. 14,433, DARNLEY, WALLIS AND CARTMEL, glazing bars and method of glazing roofs. 14,462, HADDAN (*Arnold*), separators for screening or separating the fine material from the coarser argillaceous earth, mineral-bearing earth, &c. 14,740, BUTTERFIELD, construction of sheet metal cisterns. 15,080, SALAMON, manufacture of refractory materials for building purposes. 15,140, BOURRY, drying ovens. 15,387, MCLAY, heat non-conducting coverings. 16,732, ABEL (*firm of Berliner Holzcomptoir*), process for the preservation of wood. 16,856, SAMPSON AND ATTWATER, casement stays. 17,220, MARSHALL, windows. 20,013, PALAZZI, PALLAZZI AND PIVETTA, soldering lamp or burner. 21,432, KOCH, appliance for decorating wood, leather or cardboard by burning.

1900.—1,219, IMRAY (*McDowell*), dies for punching sheet metal. 2,661, PARKS, acetylene lamps. 3,925, HELMECKE, manufacture of mantles for incandescent gas lighting. 4,422, SHORE AND WALKER, pumping engines. 4,539, SCHUSTER, devise for testing gas pipe systems. 4,992, ADAMS, slop sinks. 5,026, CLARE, radiators for heating buildings. 6,037, BECK (*McClure*), hot blast stoves. 6,062, POSNO, incandescent vapour lamps. 6,189, OTTESON, pipe wrenches. 6,308, FESSENDEN, electric incandescent lamps. 6,311, FULLER, value-indicating weighing apparatus. 6,524, JOHNSTON, wall ties. 6,737, RIDDLF, fence posts. 6,882, BRAY, gas burners.

Masters and Men.

The Macclesfield Building Trade wages dispute has been settled by the men accepting an increase of $\frac{1}{4}$ d. per hour.

The Peterhead Master Masons, owing to the depression in the building trade, have expressed their intention of lowering wages from 7 $\frac{1}{2}$ d. to 7d. per hour. The men threaten to strike if the intention is carried out.

The Potteries and Newcastle District Bricklayers' Strike has been settled by the men accepting the offer of the employers of an advance from 8 $\frac{1}{4}$ d. to 8 $\frac{3}{4}$ d. per hour in place of the $\frac{3}{4}$ d. demanded, the agreement to be binding for three years.

Edinburgh Masons' Dispute.—The Edinburgh and Leith Operative Masons decided at a meeting last week not to agree to the masters' proposals to revert to a three-months' agreement and a reduction of wages to 9d. per hour, to take effect to-day. The present conditions are 9 $\frac{1}{2}$ d. per hour and a twelve-months' agreement. Unless some arrangement is come to by the masters and men, it was agreed to strike work to-day.

East Riding Antiquarian Society.—The members of this society held their first summer meeting last week, when Selby and Brayton were visited. Mr. W. N. Cheesman, of Selby, remarked that part of the first church, as built by Abbot Hugh, was not altogether destroyed, but was to be found in the north transept, the nave, and triforium. As regards the resemblance of Selby Abbey to the Cathedral at Durham, he found that the same workmen who worked at Durham finished the work at Selby, or vice versa. Some of the men worked at both places. Subsequently, the party journeyed to Brayton, and inspected the church there with its many interesting features, the chief of which is a D'Arcy monument, rich in masonry, and bearing the recumbent figures of Lord D'Arcy and his wife. This dates back to 1558. The lantern tower and Norman arches were also features of interest. The vicar of Brayton explained that, on the restoration of the church, the sedilia were discovered in the south wall of the chancel perfectly intact.

Keystones.

St. George's Church, Botolph Lane, E.C., is to be demolished.

A new Organ at St. Faith's Church, Lincoln, has been erected at a cost of £550 by Messrs. Wordsworth and Co., of Leeds.

New Technical Schools at Barrow are being built by the Corporation at a cost of between £10,000 and £12,000. The schools are situated in Abbey Road.

At Carnalway Parish Church, Dublin, a new three-light window has been erected. Messrs. Comber and Bucknell, of London, furnished the designs, and Mr. Anderson, of Dublin, executed the contract.

New Leicester Church.—The foundation-stone was recently laid of the new church, dedicated to St. Augustine, which is being built at Newfoundpool at an estimated cost of £4,750. Accommodation will be provided for 740 worshippers.

British Institute of Certified Carpenters.—The members of this Institute visited Westminster Abbey on Saturday, May 26th, accompanied by the president, Prof. T. Roger Smith, F.R.I.B.A., and the vice-president, Prof. R. Elsey Smith, A.R.I.B.A.

St. Martin's Church, Norris Bank, Stockport, of which the foundation-stone was recently laid, is being erected from designs by Mr. R. B. Preston, architect, of Manchester. Accommodation will be provided for 650 persons in the completed building, the estimated cost of which is about £8,000.

New Roman Catholic Cathedral, Westminster.—The opening of this building has been postponed from the date originally decided upon, September 29th of this year, to June 29th of next year. The postponement has been made in the hope that two or more of the side chapels may, by then, be fully decorated with their mosaics.

Site for Dunfermline's New Baths.—The Dunfermline Town Council have agreed to purchase some old properties in Pilmuir Street at a cost of about £4,000 as a site for the new baths and gymnasium which Mr. Andrew Carnegie has offered to provide at a cost of £20,000. The old baths, which were given by Mr. Carnegie in 1877, are to be sold.

Art for Schools.—At the annual general meeting of the Art for Schools Association held at 29, Queen Square, Bloomsbury, on May 28th, the Bishop of London presiding, Mr. Lionel Cust said it had been hoped that Mr. G. F. Watts would have filled the vacant post of president created by the death of Mr. Ruskin, but owing to advancing years and weak health he was unable to do so. The Earl of Carlisle had, however, accepted their invitation.

Barston Church, near Knowle, has been reopened after having been closed for ten months for renovation. The church dates back to the thirteenth century, and, after being burnt down in 1721, the present brick structure was erected. The work includes a new organ chamber and vestry and a new porch, while the old plastered ceiling has been removed and the roof opened out, the old oak being retained and the ceiling made of pitch-pine. The cost has been £700, towards which £650 has been subscribed. The architect was Mr. Barker, of Hereford.

Lewisham Church Extension.—A new temporary church, dedicated to St. Hilda, has been opened in the Crofton Park district of Lewisham. This is the third additional church which the rapid increase of population in the old parish has rendered necessary. The other two are St. Andrew's, Catford, and St. Cyprian's, Brockley, the memorial stone of which was laid the other day by the Lord Mayor. St. Hilda's temporary building has cost about £2,200, but no doubt it will serve some suitable purpose after a permanent church has been built. A site has been acquired at a cost of £1,000. Mr. John E. Newbury will furnish designs for the new church.

St. Paul's Free Church, Perth.—The present building is to be taken down, and a new church erected on the same site.

A new Baptist Chapel at Killay, Swansea, has been built from designs by Mr. W. Williams. The contractors were Messrs. Walters and John, of Morriston.

Gray's Inn Road Workhouse.—The new casual wards to be erected on the site of this workhouse will be built from the designs of Mr. A. Saxon Snell, architect, of 22, Southampton Buildings, W.C.

At St. Andrew's Church, Fulham, S.W., a new altar and reredos have been erected by Messrs. Harry Hems and Sons, of Exeter. The altar is 9ft. long, 3ft. 4in. high, and 3ft. wide, and the reredos is of Caen stone, with lapis-lazuli mosaic as a background for the sculpture.

Stephs Established Church, Glasgow, which was recently opened, accommodates 400 persons, and consists of a nave, side aisle, transept and a chancel, with vestry attached. Mr. P. MacGregor Chalmers, of Glasgow, was the architect. The cost of the church has been £2,500.

Additions to Clayton Hospital, Wakefield.—Messrs. Simpson and Richardson, architects, of Wakefield, have just prepared plans for another addition to this hospital, and at the opposite, or Northgate, end of the extensive block. The proposed addition will be a Nurses' Home, and will be practically a detached building, with nineteen bedrooms, dining hall, pantry, &c. The operating theatre of the hospital is also to be altered and improved. The additions and alterations to be made shortly will cost nearly £3,000.

Cottage Hospital for Corbridge, Newcastle.—A new building at Corbridge designated "The District Nurses' Home and Harry S. Edwards's Wards," which will be opened this month, has been erected from designs by Messrs. Armstrong and Wright, of Newcastle. It comprises on the ground floor two wards for two patients each of both sexes, together with bathroom, offices, dispensary, matron's sitting room, kitchen, larder, and large store, with spacious entrance and passages; and on the first floor large storeroom and three bedrooms, one of which can be used as a private ward.

Sanitary Institute Congress.—With a view to advancing the consideration of the problem of the Housing of the Working Class population in London and other large towns, which presents so many difficulties in its solution, the Council of the Sanitary Institute have arranged to hold in the Parkes Museum, Margaret Street, W., a conference on the subject, in connection with which will be an exhibition of plans and models. Local authorities in London and the provinces have been invited to send delegates. The date of the conference (July 30th and 31st) is in the week preceding the visit of the Institute to Paris and the International Congress of Hygiene and Demography. The full arrangements have not yet been completed, but the following particulars may be given. On Monday, July 30th, from 10 a.m. to 1.30 p.m., the subject for discussion will be "Unhealthy Areas and Displacement of Town Populations," and from 3 p.m. on the same day visits will be made. On Tuesday, July 31st, the subjects for discussion will be "Improved Houses for Town Dwellers" and "Improved Means of Communications." Visits will also take place in the afternoon. Plans and models coming under any of the following heads will be accepted for exhibition:—Unhealthy areas and improved areas; urban dwellings on the systems of self-contained flats, associated flats, family houses, poor men's hotels, common lodging-houses, shelters; suburban dwellings; rural dwellings; hop and fruit pickers' temporary dwellings; model estates, villages, &c.; models and plans illustrating the application of building Acts and regulations. Drawings may be sent strained or in frames. If unmounted plans are sent the greatest care will be taken of them, but the Institute cannot be responsible for accidental damage.

New Co-operative Buildings at New Hirst, Newcastle, have been built by Messrs. Cocks Brothers, of Blyth, at a cost of £2,000.

New Railway Mission Hall at Bury.—The new mission hall at Northgate Street Station, Bury St. Edmund's, has been erected by Mr. W. Harbrow, of London, S.E.

The Ancient Church near Sockburn Hall, Darlington, which dates from the early part of the thirteenth century, is being restored by Sir Edward Blackett, who also intends to rebuild the Conyers Chapel, in which will be placed the whole of the Conyers relics.

North-Eastern Hospital for Children.—Considerable inconvenience is experienced by the inadequacy of the present premises, and it has been decided to erect extensions at an estimated cost of £40,000. The first part of the scheme, which will cost £25,000, is to be begun as soon as possible.

Orpington Priory, so well-known to antiquarians, is in the market. It is a fine gabled mansion with mullioned windows of the Tudor period. The oldest part of the building, which is well preserved, is a stone-buttressed annexe, erected in 1393. The hall and principal rooms date from 1471, and are panelled with oak.

G.W.R. Extensions at Cardiff.—The Great Western Railway Company have acquired a considerable portion of land in Newtown, Cardiff, for the purpose of extending their goods and storage yards and considerably adding to the siding accommodation just outside their Cardiff station. The area is now a thickly-populated residential quarter, and it lies between Adam Street and the present lines, being nearly opposite to the gaol.

Suggested New Station for Birkenhead, Bradford.—The Great Northern Railway Company have under consideration a scheme for the erection of a new station for Birkenhead. In view of the proposed tramway through the village, it is suggested that if the station were removed to near the railway bridge at the top of East Brierley, close to where the trams will pass, it would be much more convenient. The site suggested is also within easy reach of the population of Hunsworth and Westgate Hill.

Sewage Purification.—In the course of a lecture on "The Bacteriological Purification of Sewage," delivered before a recent meeting of the Yorkshire section of the Society of Chemical Industry, Mr. W. H. Harrison, B.Sc., chemist at the Leeds Sewage Works, described the treatment of sewage by septic tanks—sending the sewage slowly through a large cesspool—and showed that about 50 per cent. of purification was effected, and, as far as could be ascertained at present, about 50 per cent. of the total suspended solids in the sewage was destroyed. The process was essentially one of anaerobic fermentation. He next dealt with the filtration of screened sewage through contact beds—tanks filled with coke, clinker, or other material as the filtering body. The beds are filled with sewage, which is allowed to stand for a certain period, and then they are emptied. With screened sewage this process was repeated through two beds, one composed of rough material and the other of very fine material, and the effluent was fit to turn into a river. Accumulations occurred in the rough bed, and these gradually decreased the amount of sewage which could be treated by a particular bed in twenty-four hours. From this double filtration process a good effluent could be obtained, but the sludging-up of the rough bed was the chief difficulty, great expense in cleaning the filtering material being involved. He next referred to continuous filters made of very rough material, such as coke or clinker. These, he said, gave a good effluent, though it was very turbid on account of the great amount, comparatively speaking, of solid matter which they contained. This solid matter was easily removed by sedimentation, producing an effluent which was quite satisfactory. The sludge produced was non-putrescent.

Engineering Notes.

Change of Address.—Mr. David Home Morton, M.Inst.C.E., has removed to 130, Bath Street, Glasgow.

Institution of Electrical Engineers.—At the recent annual meeting of this institution it was announced that Professor John Perry, D.Sc., F.R.S., had been elected president, and that M. E. Mascart, president of the International Electrical Congress in Paris, had been elected a vice-president.

Todmorden Water Supply.—The first sod of the borough new waterworks at Todmorden was cut on Thursday last. The borough works are estimated to cost £50,000. The reservoir covers 700 acres, its holding capacity being 130,000,000 gallons, with a yield of 700,000 gallons daily. The work is to be completed in four and a half years.

The Water-supply of Newcastle.—The City Engineer (Mr. Laws), who keeps an eye on the water-supply of Newcastle on behalf of the Corporation, reports that the past year has been a good one. The reservoirs were filled in May, 1899, and the water in them never fell during the remainder of the year below 933,000,000 gallons. The reservoirs are full now, and there does not seem to be any reason to be anxious for the coming summer. The new works of the water company in Redewater are making good progress. Four years more should see them practically completed, and 2,000,000,000 gallons added to the storage. The daily consumption for all purposes is about 22,000,000 gallons.

Electric Light at Buxton.—The Buxton Electricity Works, for which the Local Government Board sanctioned the borrowing of £24,769, have been opened. The principal streets are now lighted by arc lamps, and a large number of private consumers have had the current laid on. The matter was placed in the hands of Professor Kennedy, who has advised the District Council. A continuous-current, three-wire system, with lamps running at 230 volts, has been adopted. The station is situated adjoining the gas works in Ashwood Dale, and has cost £5,000. Mr. Edward Calvert is the chief engineer appointed by the District Council, and Mr. Kenneth Watson represents Professor Kennedy. About £22,000 has been expended up to the present.

Mr. William Lindley, a well-known engineer, died at his residence in Blackheath on May 22nd, at the age of ninety-two. A great fire broke out in Hamburg in May, 1842. It lasted three days and nights and destroyed a considerable portion of the town. Mr. Lindley was asked by the city authorities to help in checking the outbreak. He suggested the blowing up of a number of buildings with gunpowder in order to stop the further progress of the flames. The work was carried out under his personal direction, but owing to rumours spreading among the populace that Mr. Lindley was the chief agent of a plot among the English to blow up and destroy the port of Hamburg his life was endangered. The Senate entrusted him with the work of preparing the designs for the rebuilding of the city. He carried out the drainage of the Hammerbrook, a low marshy district lying below the flood level of the Elbe, and was responsible for the extension of the Hamburg-Berlin railway terminus and the harbour, with its good-sheds. From 1844 to 1849 he was occupied building the new Hamburg waterworks, one of the first undertakings in which the system of constant supply was adopted. The Hamburg gas works was also a work which was committed to Mr. Lindley, as well as the large public baths and wash-houses for the poor. The British Government entrusted him with various works on Heligoland, especially with the construction of the great retaining wall, and the city of Frankfurt invited him, with other experts, to report on the drainage of the city. He retired from the active duties of his profession in 1879.

Professional Practice.

Bath.—The new Victoria Art Gallery, which constitutes Bath's permanent memorial of the Queen's Diamond Jubilee, was opened last week. The new Gallery forms a portion of an imposing pile of buildings having for its centre the old Guildhall, with two fine wings, the one comprising the new municipal buildings and the other the new Gallery and technical schools. The Art Gallery, which completes the northern wing, extends down Bridge Street to the corner of Newmarket Row, and the general lines of the elevation of the technical schools are continued. The design is in complete harmony with the remainder of the buildings which form this block, both wings having been erected from the plans of the same architect, Mr. J. M. Brydon, of London. The Gallery proper, with the reference library, &c., on the ground floor, forms the main elevation towards Bridge Street. At the corner of Newmarket Row is the principal doorway, leading to the entrance hall on the ground floor and the vestibule on the first floor, with the staircase on the left and the entrance to the Gallery and library on the right. The angle formed by the two streets is rounded off, so that the entrance hall becomes hexagonal on plan, the corresponding vestibule above being somewhat similar, but adorned externally with Ionic columns and covered by a dome, thus investing the angle with much importance architecturally. A separate entrance to the reference library is provided in the centre of the Bridge Street front; above this is provided a niche for a statue of her Majesty the Queen, with the Royal arms above, and on each side are four other niches in the wall of the Gallery for the reception of statues. The front is surmounted by a balustrade corresponding to that of the technical schools. Internally, the entrance hall and vestibule on the first floor are decorated with columns round the walls, and are paved with black and white marble. The vestibule is ceiled with a dome in enriched plasterwork. From the entrance hall on the right is the print room, 38ft. by 32ft., and from that again opens the reference library, 50ft. by 32ft., the remainder of the ground floor being occupied by a new Board room and a master's room for the technical schools. The vestibule on the first floor is reached by the staircase to the left of the entrance hall; and immediately facing the archway, by which it is entered from the stair, is the door to the Art Gallery, a fine apartment, 89ft. long by 32ft. wide and 25ft. high, lighted entirely from the roof. It occupies nearly the whole of the first floor, the remaining portion being given up to two additional rooms for the schools. There are also a porter's room on the ground floor and a curator's room on the first floor, and through communication is provided between the Art Gallery, the library and the technical schools for the use of students and others. In the basement, with a separate entrance from Newmarket Row, is the receiving and unpacking room, with a lift for hoisting pictures to the Gallery above. The builders were Messrs. Jacob Long and Sons, of Bath.

Bristol.—Two schools, which will afford accommodation for 900 children, are now being built at Dean Lane, Lawrence Hill, by the Bristol School Board. The architect is Mr. John Mackay, of Kingswood. The site, which is near the Great Western Station at Lawrence Hill, measures 400ft. by 116ft., and in addition to the main entrance from Dean Lane an additional entrance will be made from Beacon Street, and a caretaker's house erected on the present site of two cottages. In extent the large school is 170ft., and there is a depth of 60ft. This building has a southern aspect, and is entered from a well-lighted hall, whence a corridor leads into the central hall, which measures 66ft. by 29ft. Around this hall are grouped six classrooms, so arranged that the head-master or mistress obtains an uninterrupted view of all the scholars when at their various class duties. At each end of the central hall are the teachers' rooms, cloak-

rooms, and lavatories. Such is the arrangement of the ground floor, and the first floor is identical, the only variation being that the main hall is more lofty than the one below. Both floors are fireproof. The schools are built of pennant stone, with Bath stone dressings, and Mr. A. J. Beavan, of Westminster, is the builder.

Eccleston.—The new church of St. Mary the Virgin at Eccleston, which was briefly referred to on page 315 of last week's issue, has cost between £30,000 and £40,000, and has been erected from the designs of Mr. G. F. Bodley, A.R.E.A. It was the gift of the late Duke of Westminster. The new church is designed in the style of the fourteenth century, and is strictly English in character. It has naves and aisles, and a chancel formed by open screens of carved oak; it is lofty in proportions, and entirely vaulted with stone; and it is lighted with many traceried windows, of which those of the clerestory are perhaps the most beautiful. Treated with much breadth of effect the fabric is of one continuous width, including the tower, broken only by rich screen work across the entire width of the interior. The tower at the west end is a massive composition, with deeply set double belfry windows and gabled buttresses. The church is groined throughout with red stone vaulting having

and the legal church ornaments of cross and candlesticks were all designed by the architect and approved by the late Duke, who took great interest in all the work connected with the church. The contractor was Mr. Franklin, of Deddington, Oxon; the stained glass was carried out by Messrs. Burlison and Grylls; and the chancel reredos and figures on porch and side chapel reredos were executed by Messrs. Farmer and Brindley; the oak figures on the font cover and screen are by Mr. Bridgeman; Messrs. Elsley and Co. executed the lectern, ironwork, and gas fittings; Messrs. Starkie Gardner the pulpit rail; and Messrs. Barkentin and Krall the memorial brasses.

Hull.—The architect of the new Sunday schools in connection with St. Augustine's Church, illustrated on this page, is Mr. John M. Dossor, A.R.I.B.A., of Hull. Arrangements are being made to proceed with the work at once. The building is of two storeys. On the ground floor is placed the boys' school, consisting of a large central hall and two classrooms, with necessary sanitary arrangements, and at the end of the central hall is placed the infants' schoolroom. The upper floor is occupied by the girls' school, which consists of a hall 65ft. long, and having a platform which is separated from the hall by folding shutters, and when not in use for



NEW SUNDAY SCHOOLS AND RECREATION HALL TO THE CHURCH OF ST. AUGUSTINE, HULL.
JOHN M. DOSSOR, A.R.I.B.A., ARCHITECT.

carved bosses and well-moulded ribs, and the whole of the interior is of wrought stone ashlar. All the windows, which are of varied and elegant traceries, are filled with stained glass. The reredos in the chancel is of red stone, richly carved and elaborated with gilding; the reredos in the side chapel is of subordinate character. Screens surround the chancel, beautifully wrought with tracery and carving. There is a "hang-over" towards the nave, which gives shadow and dignity. The oak work is as yet left in its natural crude yellow colour, but it is the wish of the architect to bring it into harmony with the red stone by staining. The church is fully furnished. The font is of marble, with rosso antipuo columns, and is surmounted by an oak cover, enriched with figures of the Evangelists and other saints. There are open oak seats in the nave and aisles, while space is left for some chairs. A sedilia of carved oak is provided for the chancel, and credence tables for the chancel and chapel. The belfry contains eight bells by Messrs. Taylor, of Loughborough. The organ is placed over the tower arch, as high up as possible. This arrangement prevents the floor space being encumbered. Altar frontals are provided for the different Church seasons,

entertainments can be used as a classroom. The usual sanitary arrangements are also provided on this floor. Access to the large hall is obtained by two wide stone staircases, one at each end of the building. The roof is of hammer-beam construction, ceiled at the collar. Underneath the platform, on a mezzanine floor, two small dressing-rooms are provided for use when the hall is used for the purposes of entertainments. These dressing-rooms can both be entered from the staircase, or from the platform itself. At the opposite end of the hall, on a mezzanine floor, over one of the ground floor classrooms, a cloakroom is provided, with access from the other staircase. Separate entrances are arranged for the girls', boys' and infants' schools, and all classrooms are so arranged that they can be entered or emptied without passing through either of the central halls or through any other classroom. It is intended to erect the building with red Lincolnshire bricks and Ancaster stone, with tiled roof.

Liverpool.—A new Roman Catholic church, dedicated to St. Charles, has been erected in Aigburth Road, Liverpool, from the designs of Messrs. Pugin and Pugin, of London and Liverpool. The structure consists of a nave,

with a tower at the west end facing the road, and a chancel flanked by two chapels; the sacristies and confessionals being on the Gospel side. The tower, 95ft. high, is in three storeys, the storey over the porch being utilised for the organ, on a level with the choir gallery; above this is the belfry, with double windows on each side, and accommodation for a peal of bells. There are three niches in the lower portion of the tower, placed in this position so that the figures which will be put in them may be more easily seen. The tower is crowned with a corbelled and embattled parapet, with the angles emphasised by means of crocketed octagonal pinnacles. The outer material of the church is Yorkshire pierpoints, with red Runcorn stone dressings. Inside, however, white Stourton stone has been used instead of red stone, so as to harmonise better with the furniture of the church. The builder was Mr. Kirkbride, of Fleetwood.

London.—The new premises for the postal authorities at Mount Pleasant, which have cost about £113,000, are virtually an extension of the parcel post premises, the main floors of the two departments being separated internally by a glass partition. The main floor has an undivided area of 57,600ft., being 360ft. long and 160ft. wide. It is laid with blocks of maple, the walls are of white glazed brick, and the room is well lighted with arc lamps. There is a basement floor of a similar extent, and above is a floor of half the extent. One practical advantage to the public afforded by the new premises will be that newspapers and letters will be all treated together, instead of being taken to different parts of the building, and treated separately as heretofore. A letter and a newspaper simultaneously posted will therefore travel together, and should be delivered together, instead of the newspaper lagging behind as often happens. On the floors above there are all sorts of accommodation for the 1500 hands of one kind and another, constituting the provincial staff at headquarters. There are dining rooms and tea rooms, kitchens and sculleries, and pantries and reading rooms for those who are temporarily off duty. In these upper regions there are also several comfortable little bedrooms for superintending officers whose hours of duty render it convenient to sleep on the premises. There is an excellent bathroom for their convenience, and on all the floors there is the amplest provision of lavatory accommodation. Electric lifts at different points about the building run from top to bottom, and every floor has its great clock, all of them—with one exception—being electrically driven and regulated. In every respect this probably is by far the finest post office establishment in the world. The premises have been erected by Messrs. Lorden, of Upper Tooting, the clerk of the works being Mr. T. Leake.

Wellington (Salop).—A new Congregational church has been erected at Wellington. The design is wholly Gothic, and has been carried out in red brick, with Bath stone dressings to doors, windows, buttresses, &c. The entrance doorway is central to the main front gable, and over it is a large tracery window. To the right of the entrance, leading out of the central lobby, is a tower connecting the steps to the gallery, which it is hoped some time to complete by the addition of a spire. Spacious lobbies are provided on each side of the entrance porch, with double spring-doors to check the draught. The seats are of pitch-pine, stained and varnished, and provide sitting accommodation for about 300 worshippers, while another eighty or ninety can be accommodated in the gallery, which is situated over the entrance lobby. There is an open-timbered roof, carried on pitch-pine principals, and the ceiling is boarded. The chapel is well lighted. The whole of the work has been carried out by Mr. E. H. Nicholas, of Shrewsbury, at a cost of £23,000. The handsome pulpit has been erected by Messrs. Addison and Co., Waterloo Works, Wellington. The heating apparatus, which is on the low-pressure system, has been put in by Messrs. G. H.

York and Co., and the gas pipes and fittings by Messrs. Kynaston and Jarvis, of Wellington. The whole work has been carried out from designs and under the superintendence of Messrs. Ingall and Sons, architects, of Temple Row West, Birmingham. The completed scheme will provide for a schoolroom at the rear of the church, the present building having been designed with this object in view.

Trade and Craft.

Luminous Electric Radiators.

The problem of heating is one that has been tackled with varying success from all quarters, but the radiators which we now wish to refer to have a merit which most appliances of this kind do not possess, namely, that they supply light as well as heat and so make a room look cheerful and bright while at the same time warming it. This two-fold accomplishment is, of course, most meritorious, approaching more nearly to natural conditions, which are in all cases the best to accept as a standard of attainment. The Dowsing radiator consists of a certain number of long electric lamps, mounted within an enamelled frame and backed by copper reflectors. The heaters produce a considerable current of heated air besides radiating heat into the room, and they usually last much longer than ordinary incandescent electric lamps. The current can, of course, be turned on or off as desired, and there is practically no heat lost in warming up or cooling down, which means economy. In addition to being used as heat diffusers, the radiators may be used for such domestic purposes as toasting, roasting, airing, heating irons or warming food, a feature which makes them specially attractive. The proprietors claim for these radiators that in all applications where radiant heat is required they attain a far higher efficiency than is attained by any other forms. Ordinary electric radiators are air warmers, with little radiation; the Dowsing radiators both warm and radiate, and as they are instantaneously heated they can be used efficiently for a few minutes at a time. The current consumption is one-quarter unit for each heater per hour, so that a radiator with four heaters will consume one unit of electricity in the hour. The cost for one of these radiators with four heaters is about five guineas, but full particulars can be obtained by applying to the Dowsing Radiant Heat Co., Ltd., of 24, Budge Row, Cannon Street, E.C.

"Brickwood."

Most persons know what "iron-stone" and "iron-wood" mean, but they are only beginning to know and to appreciate "Brickwood." For a full, perhaps an etymological, explanation of this word we would refer our readers to Mr. Jabez Thompson, who has a terra-cotta works at Northwich, Cheshire, for it is he who is the patentee of this new building material. In appearance it is like a very porous firebrick, of a light red-brown colour. It is light (only half the weight of brick), fireproof and soundproof, durable (as permanent as a well-made brick), easy to fix (it can be either set in mortar like brickwork or nailed like wood), and easy to fit. It has no grain like wood, and is readily sawn or cut. A slab of it 1½in. thick may be heated to a full red heat on one side without scorching wood or setting fire to paper touching the other side, which is a good recommendation for its use in fireproof partitions, as a piece of brick of the same thickness will crack before it reaches the same heat. If "Brickwood" is impregnated with asphaltum it becomes waterproof, and can then be employed for underground building work, while, on account of its porous nature, mortar and plaster adhere to it most firmly. A partition wall 4½in. thick built with this material is as soundproof as a 9in. common brick wall, so that only half the quantity of bricks are needed, there is a saving of three-quarters in weight, and the labour of setting is lessened by one half. The patentee says:—"It is the only known fireproofing that will

stand the joint assault of fire and water. A block red hot may be plunged into water without injury." Its average weight per cubic foot is about 50lbs. (or 1,000 bricks 9in. by 4½in. by 3in. weigh about 1 ton 14cwt.). From tests made by Messrs. Kirkaldy and Son, of London, it has been ascertained that the crushing strain on six ordinary "Brickwood" blocks 9in. by 4½in. by 3in. is 1,526lbs. per sq. in., or 100 tons per sq. ft. A nail can be driven into the wall anywhere, the work dries quickly, and is vermin-proof, freezing or thawing do not disintegrate or affect the material, and it can be easily worked with edged tools. "Brickwood" is also very useful for filling in between the timbers of half-timbered work, because it is light, easily cut, and affords an excellent key for cement or stucco. The price of these bricks, 9in. by 4½in. by 3in., is now 65s. per 1,000 net on rails at Northwich. Samples can be had on application to Mr. W. H. Harvey, of 17, Old Queen Street, Westminster, S.W., who has recently been appointed sole agent in the London district for this material.

Preserving Wood.

Xylosote, or Hasselmann's Patent Wood Preserving Process, has been in full use for the last three years by the Imperial and Royal Government railways of Germany, who have erected imposing and extensive works at Kirscheen and Haar, Bavaria. The process is not a mechanical one, and, in the words of all the great experts and scientists of Germany who have examined and expressed themselves on the subject, is "the only one based on well-known scientific laws and principles." It has always been a great difficulty to thoroughly and evenly penetrate every part—the very heart of the wood—with the preserving agents, to keep them there, and then to render them indissoluble by atmospheric or other causes. Hasselmann's process claims to have overcome all these difficulties. The chemical substances not only penetrate the cellular tissue, but also chemically combine with the fibres or membranes of the wood. The chemical combination, being indissoluble, protects the woody fibres, and from the fact that these chemical matters are antiseptic and poisonous to all micro-organisms, prevents the decay and putrefaction of the fibres themselves. It not only acts by endowing the fibres of the wood with a lasting external protection in the inter-cellular channels, but much more, for by the internal process just explained it leaves these inter-cellular channels perfectly empty, preserving therefore that important desideratum, the elasticity of the wood. It is a well-known chemical fact that oils, gums, &c., cannot penetrate the fibres of wood, while solutions of the salts of heavy metals, such as sulphate of iron or copper, penetrate not only through the parenchyma, but also under certain influence will combine with the fibres in an insoluble manner. The differences between Hasselmann's system and all others can easily be proved by the simple process of boiling. With a piece of wood treated by any of the other processes, in a few minutes the impregnating fluid will be seen leaving the wood and floating on the water in the shape of oil or crystals; but hours of steady boiling will leave the wood treated by this new process perfectly intact, thus proving its power of resistance to all damp fungi and atmospheric influences. The sap having been previously entirely extracted from the wood, and before the impregnating liquid is forced into it, all future shrinkage, warping and "dry rot" are no longer possible. The capital sunk in the necessary seasoning of timber is therefore entirely saved; in fact, it appears that the greener the timber the more complete the impregnation. Secondly, it completely reduces or destroys the inflammability of the wood. Thirdly, the wood in no way loses its colour or appearance, but being perfectly dry, and in consequence of the chemical combination with the metallic molecules closely grained, takes an unusually brilliant polish. The wood can also be given any desired tint to penetrate and

go through the very heart of the wood. But perhaps the most important result claimed for the process is that it renders lasting and valuable, for all ordinary purposes, the commonest kinds of woods, making pine, poplar, &c., as hard and lasting as oak or ash. Another important item is that it is believed railway sleepers impregnated by this process will be proof against the attacks of the white ant. The cost of impregnating by this process is stated to be less than any other. We learn that the patent rights for Germany, Austria, Russia, and the United States have already been disposed of, while negotiations are pending for other countries. The patent has been acquired by Mr. Anthony Mähler and Mr. Robert H. Measures, the managing director of Measures Bros., Ltd., of London, S.E.

New Companies.

Gildenburgh Brick Company, Limited.

This company was registered on May 21st with a capital of £30,000 in 15,000 "A" shares of £1 each and 300,000 "B" shares of 1s. each to carry on the business of brick, tile and artificial stone manufacturers, builders' merchants, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

Home Counties Potteries and Brickworks, Limited.

This company was registered on May 21st with a capital of £15,000 in £1 shares to carry on the business of manufacturers of and dealers in bricks, tiles, pipes, terra-cotta, pottery, earthenware, glazed goods, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers. Registered office: 6, Great Winchester Street, E.C.

British and General Public Works Construction Company, Limited.

This company was registered on May 21st with a capital of £1,000 in £1 shares to construct, equip, maintain and work railways, roads, docks, piers, bridges, electrical and other works, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

Wilkinson and Leng, Limited.

This company was registered on May 22nd with a capital of £10,000 in £5 shares (500 5½ per cent. cumulative preference) to carry on the business of slate and marble merchants, brick, tile and pottery manufacturers, cement merchants, and dealers in building materials. The first directors (to number not less than two nor more than five) are T. Wilkinson and W. L. Leng (managing directors).

Highley Land and Building Company, Limited.

This company was registered on May 25th with a capital of £3,500 in £5 shares to carry on at Highley and Kinlet, Salop, the business of house and property owners and managers, and in particular to build certain dwelling houses, and lease the same to the Highley Mining Company, Limited. The first directors (to number not less than four nor more than five) are R. Brinton, H. Stonehouse and J. Williamson. H. Stonehouse is nominated by the Highley Mining Company, Limited, who may appoint one director while holding £1,000 shares. Registered office: Bank Buildings, Kidderminster.

James Woodward, Limited.

This company was registered on May 19th with a capital of £100,000 in £100 shares to acquire the business of brick and tile manufacturers now carried on by James Woodward at Swadlincote, Derby, and, generally, to carry on in all or any of their respective branches the businesses of brick, pottery, and tile manufacturers, makers of and dealers in every descrip-

tion of earthenware, china, terra-cotta, and ceramic ware; as manufacturing chemists, &c. The first directors (of whom there shall be not less than three nor more than seven) are J. R. W. Woodward (governor director), W. P. W. Woodward, H. W. Woodward, H. W. Woodward, H. W. Woodward and R. Ewing (all permanent). Registered office: Coppice Side, Swadlincote, Derby.

CURRENT PRICES.

FORAGE.

		£ s. d.	£ s. d.
Hay, best ...	per load	3 10 0	4 0 0
Sainfoin mixture ...	do.	3 15 0	4 5 0
Clover, best ...	do.	4 5 0	5 0 0
Beans ...	per qr.	1 6 0	—
Straw ...	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French ...	per cwt.	1 8 0	1 11 6
Colza Oil, English ...	per cwt.	1 11 0	—
Copperas ...	per ton	2 0 0	—
Lard Oil ...	per cwt.	1 18 6	—
Lead, white, ground, carbonate per cwt.	1 2 10	—	—
Do. red ...	per cwt.	1 0 4	—
Linseed Oil ...	per cwt.	1 13 6	—
Petroleum, American ...	per gal.	0 0 6½	0 0 7
Do., Russian ...	per gal.	0 0 6½	0 0 6½
Pitch ...	per barrel	0 8 6	0 9 0
Shellac, orange ...	per cwt.	3 1 0	—
Soda crystals ...	per ton	2 17 6	3 0 0
Tallow, Town ...	per cwt.	1 5 0	1 8 6
Tar, Stockholm ...	per barrel	1 6 0	—
Turpentine ...	per cwt.	2 3 0	—

METALS.

		£ s. d.	£ s. d.
Copper, sheet, strong ...	per ton	85 0 0	—
Iron, Staffs., bar ...	do.	10 15 0	11 10 0
Do. Galvanised Corrugated sheet ...	do.	15 0 0	—
Lead, pig, Spanish ...	do.	17 5 0	—
Do. do. English common brands ...	do.	17 10 0	17 12 6
Do. sheet, English, 3lb. persq.ft. and upwards ...	do.	20 0 0	21 0 0
Do. pipe ...	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in. ...	do.	12 0 0	13 0 0
Do. floor brads ...	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles ...	do.	8 15 0	9 5 0
Do. Mild Bars ...	do.	9 12 6	10 0 0
Tin, Foreign ...	do.	136 5 0	136 15 0
Do. English ingots ...	do.	141 0 0	—
Zinc, sheets, English ...	do.	27 10 0	28 10 0
Do. do. Veille Montaigne ...	do.	27 7 6	—
Do. Spelter ...	do.	21 5 0	22 15 0

TIMBER.

Soft Woods.			
Fir, Dantzic and Memel ...	per load.	3 0 0	4 0 0
Pine, Quebec Yellow ...	per load	4 7 6	6 0 0
Do. Pitch ...	do.	3 16 0	4 0 0
Laths, log, Dantzic ...	per fath.	4 10 0	5 10 0
Do. Petersburg ...	per bundle.	0 1 4½	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	19 10 0	—
Do. do. 4th & 3rd. do.	12 15 0	14 10 0	—
Do. do. unsorted do.	12 5 0	12 10 0	—
Do. Riga ...	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow do.	14 0 0	16 10 0	—
Do. do. 2nd do.	8 15 0	14 11 0	—
Do. do. unsorted do.	14 5 0	—	—
Do. do. White do.	11 5 0	—	—
Do. Swedish ...	per P. Std.	12 0 0	14 0 0
Do. White Sea ...	do.	14 10 0	20 10 0
Do. Quebec Pine, 1st do.	13 15 0	23 15 0	—
Do. do. 2nd do.	8 15 0	—	—
Do. do. 3rd & 4th do.	9 0 0	9 15 0	—
Do. Canadian Spruce, 1st per P. Std.	10 10 0	11 15 0	—
Do. do. 3rd & 2nd do.	9 10 0	12 10 0	—
Do. New Brunswick do.	7 5 0	8 0 0	—
Battens, all kinds ...	do.	8 0 0	10 15 0
Flooring Boards, 1 in.			
Do. prepared, 1st ...	per square	0 10 6	0 10 9
Do. 2nd ...	do.	0 9	—
Do. 3rd & 4th ...	do.	0 8	9 9

HARD WOODS.

Ash, Quebec ...	per load	3 17 6	4 10 0
Birch, Quebec ...	do.	3 12 6	3 17 6
Box, Turkey ...	per ton	7 0 0	15 0 0
Cedar, Lin., Cuba ...	per ft. sup.	0 0 4½	—
Do. Honduras ...	do.	0 8 15/16	—
Do. Tobasco ...	do.	0 8 7/16	—
Elm, Quebec ...	per load	0 12 6	5 10 0
Mahogany, Average Price			
for Cargo, Honduras ...	per ft. sup.	0 0 4 9/16	— 1/16
Do. African ...	do.	0 0 3 13/32	—
Do. St. Domingo ...	do.	0 0 6 7/32	—
Do. Tobasco ...	do.	0 0 5½	—
Do. Cuba ...	do.	0 0 6 27/32	—
Oak, Dantzic and Memel ...	per load	3 15 0	5 7 6
Do. Quebec ...	do.	4 12 6	5 0 0
Teak, Rangoon, planks ...	do.	3 10 0	14 10 0
Wainscot, Riga (Bauk) ...	do.	3 15 0	5 15 0
Do. Odessa Crown ...	do.	3 15 0	5 15 0
Walnut, American ...	per cub. ft.	0 2 7	0 8 5

COMING EVENTS.

Wednesday, June 6.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 3.30 p.m., of Election Committee at 5 p.m., and the half-yearly General Meeting at 7 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.—Ordinary Meeting. 8 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.—Meeting. 4 p.m.

Thursday, June 7.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Mr. J. Derry, M.I.C.E., on "Bicycle Construction, Drivings, Gear, and Appliances." 8 p.m.

INCORPORATED INSTITUTE OF BRITISH DECORATORS.—Mr. J. D. Crace on "Colour Decoration." 8 p.m.

Friday, June 8.

ROYAL INSTITUTION.—Dr. Allan Macfadyen on "The Effect of Physical Agents on Bacterial Life." 9 p.m.

Saturday, June 9.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to Jarrow Church and Tynemouth.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-ON-TYNE.—Council Meeting, 1.30 p.m. General Meeting, 2 p.m.

Monday, June 11.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—General Business Meeting. 8 p.m.

SOCIETY OF ENGINEERS.—Meeting. 7.30 p.m.

ROYAL INSTITUTION.—General Monthly Meeting 5 p.m.

Tuesday, June 12.

SURVEYORS' INSTITUTION.—Special Certificate Examination in Forestry and Sanitary Science. First Day.

Wednesday, June 13.

SURVEYORS' INSTITUTION.—Special Certificate Examination in Forestry and Sanitary Science. Second Day.

Thursday, June 14.

SURVEYORS' INSTITUTION.—Special Certificate Examination in Forestry and Sanitary Science. Third and Last Day.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting 8.30 p.m.

Friday, June 15.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XX 11.30 a.m.

Saturday, June 16.

ARCHITECTURAL ASSOCIATION.—First Summer Visit to Deepdene, Dorking.

A Picture Exhibition in Bermondsey has been opened at the Bermondsey Settlement, Farncombe Street. It comprises pictures by many leading artists.

Boy's School, Morgan Street, Tredegar Square, E.—Alterations and renovations are being carried out at this building under the direction of Mr. G. Elkington, architect, 95, Cannon Street, E.C.

Acetylene for Benares.—The railway station of the ancient and holy Indian city of Benares is to be lighted by the newest form of illumination—acetylene gas. The contract has been given to Messrs. Lockerbie, of Birmingham.

Board School Extension at Bradford.—At a meeting of the Bradford School Board held on Wednesday last it was decided to spend £1,175 on the purchase of the additional site for the proposed Grange Higher Grade Board School. It was also decided, subject to the consent of the Board of Education, to purchase 11,281 sq. yds. of land at 3s. 3d. per yard in Lapage Street, as a site for a new school for the Bradford Moor district. A proposal to accept tenders for the erection of the Green Lane School, amounting to £28,647, was referred back.

Bristol Society of Architects: Presentation.—At a meeting of this society held on Monday in last week Mr. Frank Wills, the president, in the chair, a presentation of a very handsome silver salver was made to the hon. secretary (Mr. H. Dare Bryan), who is shortly to be married. Mr. Mowbray Green A.R.I.B.A., of Bath, then read a paper on "The Renaissance Architecture of Bath and Neighbourhood." The work of the middle of the last century done by the Woods, father and son, Baldwin, and others was described and the great improvement in the laying-out and enlargement of the city, due almost entirely to the artistic and business ability of the elder Wood, was clearly shown by means of maps and drawings.

COMPLETE LIST OF CONTRACTS OPEN.

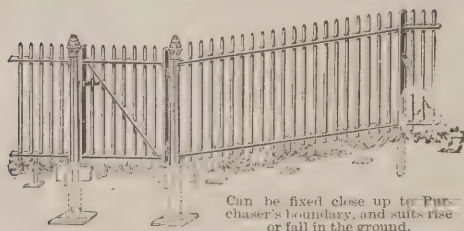
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
June 8	Lannacombe, Devon—Coastguard Buildings	Admiralty	Director of Works, 21, Northumberland-av., London, W.C.
" 8	Leeds Alterations and Additions to Inn	J. R. Heaton	F. Mitchell, 9, Upper Fountain-street, Leeds.
" 8	Dowlais, Wales—Schoolroom		J. G. Jones, 24, Mary-street, Dowlais.
" 8	Hamilton—Post Office	Commissioners of H.M. Works	Clerk of Works' Office, G.P.O., Glasgow.
" 8	St. Germans, King's Lynn—Church		Caretaker, Old Schoolroom, Tower-street Chapel, St. Germans.
" 8	Aberdeen—Dwelling House		Jenkins and Marr, 16, Bridge-street, Aberdeen.
" 9	Croydon—Alterations and Additions	School Board	R. Ridge, School Board Offices, Croydon.
" 9	Markethill, Ireland—Renovating Church		J. Brown, 41, Kilmorey-street, Newry.
" 9	Weston-super-Mare—Pavilion	Urban District Council	Surveyor, Town Hall, Weston-super-Mare.
" 9	Altrincham—Chimney Shaft	Electric Supply Co. Ltd.	J. T. Ashton, 7, Market-street, Altrincham.
" 9	Ellesmere Port, Chester—Mortuary	Wirral Rural District Council	The Clerk, Council Offices, 54, Hamilton-st., Birkenhead.
" 9	Sowerby Bridge—Additions		W. C. Williams, 29, Southgate, Halifax.
" 9	Swaffham, Norfolk—Alterations	Co-operative Society	The Secretary, Co-operative Stores, Swaffham.
" 10	Enniskillen—House		R. M. Canley, Darling-street, Enniskillen.
" 11	Castletownbere, co. Cork—Coastguard Station		H. Williams, Secretary, Office of Public Works, Dublin.
" 11	Leavesden, Herts.—Storey	Metropolitan Asylums Board	T. D. Mann, Board Offices, Carmelite-st., Embankment, E.C.
" 11	Newcastle-upon-Tyne—School	School Board	C. S. Errington, Grainger-street West, Newcastle-on-Tyne.
" 11	Ramsgate—Refectory House	Gas and Water Committee	W. M. Valon, Gas Offices, Ramsgate.
" 11	Crewes—Wall	Markets Committee	G. E. Shore, Earle-street, Crewes.
" 11	Dublin—Church		G. Beckett, 97, Stephen's-green, Dublin.
" 11	Long Eaton—Factory	Trustees of the late J. C. Willatt	J. Sheldon, Darley House, Long Eaton.
" 11	Old Hill, Staffs.—Converting	Rowley Regis School Board	Meredith and Pritchard, Architects, Kidderminster.
" 11	Pentre, Wales—School Extensions	Ystradgynodwg School Board	J. Rees, Hillside Cottage, Pentre.
" 12	Londonderry—Belfry, &c.	Rev. J. K. O'Doherty	G. C. Ashlin and E. J. Toye, 7, Dawson-street, Dublin.
" 12	London, N.—Disinfecting Station, Shelters, &c.	Hackney Vestry	Gordon and Gunton, Architects, Finsbury House, E.C.
" 12	Brighton—Alterations	Town Council	F. J. C. May, Town Hall, Brighton.
" 12	London, N.E.—Buildings	Hackney Vestry	Gordon and Gunton, Finsbury House, E.C.
" 12	Erith—School	School Board	Ford, Son, and Burrows, 21, Aldermanbury, E.C.
" 12	Hastings—Cottages	Corporation	P. H. Palmer, Town Hall, Hastings.
" 12	London, W.—Block	St. Marylebone Guardians	A. S. Snell, 22, Southampton-bldgs, Chancery-lane, W.C.
" 12	Longtown, Carlisle—Houses	Industrial Co-operative Society	H. H. Hodgkinson, Architect, Scotch-street, Carlisle.
" 13	Warrington—Turkish Bath	Council	T. Longdin, Town Hall, Warrington.
" 14	Barra, Scotland—School	School Board	A. H. Hill, Banker, Lochboisdale.
" 14	Gt. Yarmouth—Home	Guardians	A. S. Hewitt, King-street, Gt. Yarmouth.
" 15	Cromer, Norfolk—Coastguard Buildings	Admiralty	Director of Works, Admiralty, Northumberland-av., E.C.
" 16	Abergorllech, Wales—Bridge	County Council	D. Phillips, County Surveyor, Carmarthen.
" 16	Carmarthen—Arch	County Council	D. Phillips, County Surveyor, Carmarthen.
" 16	Driffield and Holme-on-Spalding, Yorks.—House	Standing Joint Committee of the East Riding	A. Beaumont, County Hall, Beverley.
" 16	Horley—Alterations	London County Council	Architect, Council Offices, Spring-gardens, S.W.
" 16	Edenderry, Ireland—Cottages	District Council	T. H. F. Bor, Clerk, Edenberry.
" 18	Luton—Engine-house, Boiler-house, &c.	Town Council	Borough Engineer, Town Hall, Luton.
" 18	Scarborough—Roof	Gas Co.	W. J. Holliday, Gas Offices, 32, Westborough, Scarborough.
" 18	Holywell—Chapel		Mr. Williams, 3, Cable-street, Liverpool.
" 19	Fleetwood, Lancs.—Engine Shed	Urban District Council	E. Frohisher, Town Hall, Fleetwood.
" 19	Oven, Yorks.—Classrooms		M. Hall, 29, Northgate, Halifax.
" 19	South Shields—Newsroom	Corporation	T. E. Burgess, Engineer & Surveyor, Chapter-row, S. Shields.
" 19	Yealand Conyers, near Carnforth—Police Station	Standing Joint Committee	H. Littler, County Offices, Preston.
" 20	Plumstead—Building	Paddington Guardians	E. H. Sim, 8, Craig's-court, Charing Cross, S.W.
" 20	Preston—Constabulary Headquarters	Vestry	F. Summer, Vestry Offices, Maxey-road, Plumstead.
" 20	Aldershot—Buildings	Standing Joint Committee	H. Littler, County Offices, Preston.
" 21	Huddersfield—Hospital	Urban District Council	Council Surveyor, Victoria-road, Aldershot.
" 22	West Hartlepool—Church		Room 54, County Hall, Wakefield.
" 25	Wolverhampton—Shops	Markets Committee	E. and W. Richardson, Park-road, West Hartlepool.
" 25	London, N.—Public Offices	Hedon Urban District Council	J. W. Bradley, Town Hall, Wolverhampton.
" 26	Sutton Coldfield—Electricity Buildings	Corporation	T. H. Watson, 9, Nottingham-place, W.
ENGINEERING—			
June 8	Partick, Scotland—Dust Destructor	Provost, Magistrates, & Commissioners	J. Donaldson, 97, West Regent-street, Glasgow.
" 8	Hoylake, Cheshire—Footbridge	Urban District Council	T. Foster, Council Offices, Hoylake, Cheshire.
" 9	Leominster—Valves	Corporation	J. Budd, Town Hall, Leominster.
" 9	Leominster—Tank	Corporation	J. Budd, Town Hall, Leominster.
" 9	Manchester—Equipment of Electrical Tram-lins	Corporation	J. M. M'Elroy, Tramways Dept., Town Hall, Manchester.
" 9	Bolsover, near Chesterfield—Sewers	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
" 9	Milford Haven—Road Roller	Urban District Council	T. H. Lewis, Council Offices, Milford Haven.
" 11	Crewes—Electric Wiring	Town Council	F. Cooke, Municipal Offices, Crewes.
" 11	Bromyard—Waterworks	Urban District Council	A. H. Parker, 5, Foregate-street, Worcester.
" 11	Glasgow—Railway	Glasgow & South-Western Railway Co.	The Engineer, St. Enoch Station, Glasgow.
" 11	Derby—Filter Tunnels	Corporation	Borough Surveyor, Babington-lane, Derby.
" 12	Glasgow—Switchboards	Corporation	W. A. Chamen, 75, Waterloo-street, Glasgow.
" 12	Dover—Boilers	Town Council	H. E. Stilgoe, Town Hall, Dover.
" 12	India Office—Locomotives	Secretary of State for India	Director-General of Stores, India Office, Whitehall, S.W.
" 12	Egremont, Cheshire—Maintenance of Electric Installation	Wallasey Urban District Council	Captain H. E. Martin, Egremont Ferry, Cheshire.
" 12	Sligo—Laundry Machinery		Clerk of Works, District Asylum, Sligo.
" 12	York—Widening Railway	North-Eastern Railway Co.	W. J. Cudworth, Engineer, York.
" 14	Much Wenlock, Salop—Waterworks	Sanitary Committee	G. C. Cooper, Town Clerk, Much Wenlock.
" 15	Newcastle-Emlyn, Wales—Reservoir	Urban District Council	T. Thomas, Terra-Cotta-buildings, Newcastle-Emlyn.
" 15	Wells, Somerset—Sewage Purification	City Council	Cameron, Commin, and Martin, 7, Bedford circus, Exeter.
" 15	Grimsby—Refuse Destructor	Corporation	Town Clerk, St. Mary's-gate, Great Grimsby.
" 15	Grimsby—Lighting	Urban Sanitary Authority	Borough Surveyor, Town Hall, Grimsby.
" 16	Bacup—Reservoir	Corporation	J. Diggle, 3, Longford-street, Heywood, Lancs.
" 16	Middlesbrough—Crane	Ferry Committee	F. Baker, Municipal-buildings, Middlesbrough.
" 16	Horton, near Epsom—Electric Lighting	London County Council	R. W. Partridge, 6, Waterloo-place, S.W.
" 16	Bootle, Lancs.—Cables	Corporation	A. B. Wright, Electric Light Station, Pine-grove, Bootle.
" 18	Larne, Ireland—Lighting	Urban District Council	W. C. Younge, Town Hall, Larne.
" 18	Croydon—Engines and Pumps	Council	Borough Engineer, Town Hall, Croydon.
" 21	Sutton Coldfield—Electric Lighting Plant	Corporation	T. V. Holbeche, Town Clerk, Sutton Coldfield.
" 22	Uxbridge—Filters	Rural District Council	Bailey, Denton and Co., Palace-chambers, Westminster, S.W.
" 25	Wolverhampton—Abattoir Fittings	Markets Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 26	Wolverhampton—Tramway Track	Tramways Committee	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
" 29	Hartlepool—Reservoir		Martin and Fenwick, 1, Park-place, Leeds.
July 7	Madrid—Electric Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
" 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5, East India-avenue, Leadenhall-street, E.C.
" 23	Kolbergmunde, Germany—Dredger	Harbour Superintendent	Der Hafenbauinspektor, Harbour Works, Kolbergmunde, Germany.
IRON AND STEEL—			
June 9	Leominster—Water Mains	Corporation	J. Budd, Town Hall, Leominster.
" 13	Tredegar, Mon.—Pipes	Urban District Council	H. F. Wells, Gasworks, Tredegar.
" 18	Manchester—Iron and Steel Work	Ship Canal Warehousing Co., Ltd.	W. H. Hunter, 41, Spring-gardens, Manchester.
PAINTING AND PLUMBING—			
June 8	London, E.—Painting	St. George-in-the-East Guardians	G. A. Wilson, Vestry Hall, Cable-street, E.
" 11	Wanstead—Painting and Repairs	School Board	J. T. Bressey, 70, Bishopsgate-street Within, E.C.
" 11	Aberdeen—Limewashing	Town Council	Sanitary Inspector, City Buildings, Aberdeen.
" 11	Kingston-on-Thames—Painting		W. H. Hope, Union Offices, Portsmouth-road, Kingston-on-Thames.
" 11	Swindon—Painting	School Board	W. Seaton, Public Offices, Swindon.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
PAINTING—Continued.			
June 12	London, W.—Painting...	Vestry of St. Mary Abbott's, Kensington	W. Weaver, Town Hall, Kensington High-street, W.
" 13	Isleworth—Painting...	Brentford Guardians	W. Stevens, Union Offices, Isleworth.
" 13	Leeds—Painting...	Corporation	City Engineer, Municipal Buildings, Leeds.
" 13	Lambeth, S.E.—Painting	Guardians	W. Thurnall, Guardian Offices, Brook-st., Kennington-rd., S.E.
ROADS AND CARTAGE—			
June 8	Brighton—Granite Spalls	Town Council	F. J. C. May, Town Hall, Brighton.
" 8	Elland—Streets	W. Holmes, Harrogate	W. J. Beall, 23, Bank-street, Bradford.
" 9	Bolsover, near Chesterfield—Road	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
" 9	Romsey, Hants.—Flints	Rural District Council	J. Jenvey, District Surveyor, Romsey.
" 11	Crewe—Street	Town Council	G. E. Shore, Borough Surveyor, Crewe.
" 11	Leavesden, Herts.—Paths	Metropolitan Asylums Board	T. D. Mann, Board Offices, Carmelite-st., Embankment, E.C.
" 11	Warrington—Forming	Paving and Sewerage Committee	T. Longdin, Town Hall, Warrington.
" 11	Enfield—Granite	Urban District Council	R. Collins, Court House, Enfield.
" 11	Quarry Bank, Staffs.—Levelling	Urban District Council	District Surveyor, High-street, Quarry Bank.
" 11	Sunbury-on-Thames—Flints	Urban District Council	H. F. Coales, Surveyor to Council, Sunbury-on-Thames.
" 11	Walton-on-Thames—Forming	Urban District Council	R. F. Hankins, Stormfield Lodge, Walton-on-Thames.
" 11	Whitwood Mere, Castleford—Street Work	Urban District Council	A. Hartley, Carlton-chambers, Castleford.
" 12	London, N.—Paving	Tottenham Urban District Council	P. E. Murphy, 712, High-road, Tottenham.
" 13	Limerick—Streets	Council	J. J. Peacocks, Town Hall, Limerick.
" 13	Middleton, Lancs.—Street Works	Corporation	W. Welburn, Town Hall, Middleton.
" 13	Stretford, Manchester—	District Council	Mr. Royle, Surveyor, Stretford.
" 19	Acton—Making-up	Urban District Council	D. J. Ebbetts, 242, High-street, Acton.
" 19	London—Stone Paving (Three Years)	Corporation	The Engineer, Guildhall, E.C.
SANITARY—			
June 9	Bolsover, nr. Chesterfield—Sewers, Tanks, Beds, &c.	Urban District Council	W. H. Wagstaff, 57, Saltergate, Chesterfield.
" 9	Houghton-le-Spring—Sewerage Works	Urban District Council	V. Smith, Newbottle-street, Houghton-le-Spring.
" 11	Bingley, Yorks.—Sewerage Works	Urban District Council	R. Armistead, 8, Charles-street, Bradford.
" 11	Ripley, Derby—Sewerage Works	Urban District Council	R. Argile, Engineer, Ripley, Derby.
" 11	Woolston, near Southampton—Sewerage Works	Itchen Urban District Council	F. W. Shields, 1, Cranbury-road, Southampton.
" 11	Ball's Bridge, Dublin—Sewer	Pembroke Urban Sanitary Authority	J. C. Manly, Town Hall, Ball's Bridge.
" 11	Halifax—Sewer	Highways Committee	J. Lord, Town Hall, Halifax.
" 11	Hastings—Sewers	Corporation	P. H. Palmer, Town Hall, Hastings.
" 11	Rayleigh, Essex—Sewers	Rochford Rural District Council	F. Gregson, Clerk, Southend-on-Sea.
" 13	Denby Dale, near Huddersfield—Sewers	Urban District Council	S. Shaw, Union-street, Dewsbury.
" 13	London, E.—Sanitary Work	Shoreditch Guardians	F. J. Smith, Parliament Mansions, Victoria-street, S.W.
" 16	Bakewell—Drainage Works	Rural District Council	Sterling and Swann, Town Hall, Chapel-en-le-Frith.
" 18	Croydon—Sewers	Urban District Council	Engineer, Town Hall, Croydon.
" 18	Thame, Oxon—Sewers	Urban District Council	Taylor, Sons, and Crimp, 27, Great George-street, S.W.
" 19	London—Reparation for Sewers (Three Years)	Corporation	The Engineer, Guildhall, E.C.
" 22	Uxbridge—Sewerage Works	Rural District Council	Denton and Co., Palace Chambers, Westminster.
" 25	Newmarket—Sewerage Works	Urban District Council	S. J. Ennion, Deva Chambers, High-street, Newmarket.
TIMBER—			
June 11	South Hetton, Durham—Colliery Timber	Coal Company Limited	J. R. Lambert, South Hetton, Sunderland.
" 11	Genoa—Pinewood and Firwood	Italian Navy	Commercial Department, Foreign Office, London, S.W.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
June 16	Berkhamsted—Girls' Grammar School	£50, £35, £15	A. W. Vaisey, Solicitor, Berkhamsted.
" 30	Baviers—Villa for Sir William Ingram	£75 15s., £26 5s., £5 5s.	" Architectural Review."
July 16	Falmouth—Sewerage Scheme	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.
Aug. 1	Sunderland—Church		William Wilson, 7 Azalea-terrace, South Sunderland.



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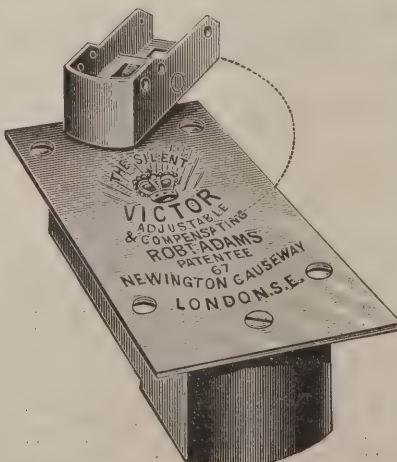
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TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRIXHAM (Devon).—For the erection of club building. Mr. E. Richards, architect, 7, Strand, Torquay. Quantities by the architect:—
 R. F. Yeo ... £1,399 0 | S. Blatchford ... £1,198 10
 W. Wyatt ... 1,340 0 | Geo. Cookesley ... 1,489 0
 E. P. Boyce ... 1,230 0 | Hazlewood Bros., ...
 Messrs. Watson } 1,210 0 | Brixham* ... 1,137 0
 W. A. Goss } * Accepted.
HARROW.—For the erection of a pair of houses for Mrs. P. A. Hyett. Mr. Vernon Marsh, architect, Hindes-road, Harrow:—
 W. H. Ford ... £2,750 0 | C. H. Strowbridge ... £2,350 0
 M. Dymock ... 2,713 10 | Tilbury Bros. ... 1,954 0
 Olley and Co. ... 2,550 0 | W. W. Robinson, ...
 H. Martin ... 2,430 0 | Harrow* ... 1,900 0
 H. W. Dunmore } 2,385 0 | * Accepted.
HOLMWOOD (Surrey).—For alterations and additions to Holly Lodge, for Mr. F. S. Phillips. Mr. W. Tillott Barlow, architect, 23, Finsbury-circus, E.C.:—
 Bulled and Co. ... £2,350 | Rowlands ... £1,890
 Cropley Bros. ... 2,275 | Gathercole ... 1,800
 J. Cropley ... 2,055 | W. Nash, New Cross* ... 1,789
 * Accepted.

HIGHAM FERRERS.—For the erection of new club premises, for the Town Band Working Men's Club and Institute. Messrs. Mosley and Scrivener, architects, Fish-street, Northampton:—
 G. Henson ... £1,418 | T. and C. Berril, ...
 Hackley Bros. ... 1,293 | Irchester* ... £1,253
 T. Willmott ... 1,287 | R. Marriott ... 1,250
 W. Beardsmore ... 1,286 | R. Marriott ... 1,239
 H. Sparrow ... 1,279 | * Accepted.

LONDON.—For sanitary and drainage works at New-road School, Wandsworth-road, for the London School Board. Mr. T. J. Bailey, architect:—
 Martin, Wells, and Co. ... £3,190 0 | G. Parker ... £3,017 0 0
 Godson and Sons ... 3,139 0 | Johnson and Co., Ltd. ... 2,839 4 7
 Falkner and Sons ... 3,083 0 | J. & C. Bowyer ... 2,887 0 0
 E. Triggs ... 3,020 0 | Lathey Bros.* ... 2,790 0 0
 * Accepted.

LONDON.—For the erection of halls and other improvements at Canal-road School, Hoxton, for the London School Board. Mr. T. J. Bailey, architect:—
 Treasure and Son ... £15,513 | Lawrance and Sons ... £14,370
 T. L. Green ... 15,445 | Simpson and Co. ... 14,340
 Johnson & Co., Ltd. ... 14,823 | Miskin and Sons ... 14,165
 Longley and Co. ... 14,795 | C. Cox ... 14,040
 Grover and Son ... 14,737 | Chessum and Sons* ... 14,756
 * Accepted.

LONDON.—For re-building seven houses and workshops in Rutland-street, Mile-end, E., for Mr. Charles Martin. Mr. Ernest H. Abbott, architect, 6, Warwick-court, Gray's

Inn, W.C. Quantities by Mr. Alfred Johnson, surveyor, 34, Imperial-buildings, Ludgate-circus, E.C.:—
 F. and F. Wood ... £7,231 | Wall and Co. ... £6,297
 Albert E. Symes ... 7,155 | R. and E. Evans ... 6,085
 G. J. Hosking ... 6,957 | George Barker ... 5,790
 Balaam Bros. ... 6,899

LONDON.—For enlargement, &c., at Mulgrave-place School, Woolwich, for the London School Board. Mr. T. J. Bailey, architect:—
 F. and H. F. Higge ... £3,115 | Lawrance and Sons ... £-853
 Johnson and Co., Ltd. ... 3,270 | Thomas and Edge ... 8,767
 Edwards and Medway ... 3,230 | Smith and Sons, Ltd. ... 8,614
 Holliday and Green-wood ... 8,993 | Kirk and Randall* ... 8,395
 * Accepted.

NELSON.—For the erection of Congregational Chapel, Brunswick-street. Mr. H. Whitaker, architect, 21, Market-square, Nelson:—

Masonry.
 Robinson ... £2,129 | Metcalf* ... £1,914
 Dent ... 1,998 | Dearden ... 1,867
Joinery.
 Boothman and Sons ... £1,350 | Walton ... £962
 Pollard* ... 1,100

[All of Nelson.] * Accepted.
STIFFKEY (Norfolk).—For the erection of a new Primitive Methodist Chapel, at Stiffkey, Norfolk. Mr. H. Winkworth, A.M.S.I., architect and surveyor, Ipswich:—
 Hin-on ... £155 | Grange, Binham* ... £2-7
 Towler ... 330 | * Accepted.

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CONTRACTS OPEN.**BOROUGH of SUTTON COLDFIELD.**

TO BUILDERS and CONTRACTORS.

The Corporation of Sutton Coldfield are prepared to receive TENDERS for the ERECTION of the NEW BUILDINGS in connection with the Electricity Supply Station on the old Gas Works site, Riland-road.

Plans, sections, and detail may be seen, and any further information given upon application to the undersigned.

Copies of the form of Tender, general conditions, specification and bills of quantities, may be obtained upon payment of a sum of One Guinea, which sum will be returned on receipt of a bona-fide Tender, and the return of all such documents.

Tenders, sealed and endorsed "Tender for Electricity Buildings," to be addressed to T. V. HOLBECHE, Esq., Town Clerk, Sutton Coldfield, and to be delivered on or before TWELVE o'clock noon, JUNE 26th, 1900.

The Corporation do not bind themselves to accept the lowest or any Tender.

Signed,
Town Hall, W. A. H. CLARRY,
Sutton Coldfield, Borough Surveyor.
May, 1900.

ASYLUMS COMMITTEE of the LONDON COUNTY COUNCIL.

TO BUILDERS and CONTRACTORS.

The Asylums Committee are prepared to receive TENDERS for the ERECTION of FARM BUILDINGS at the Heath Asylum, Bexley, Kent.

Instructions for Tender, form of Tender, and contract, with specification and bills of quantities, can be obtained from the Clerk to the Committee, 6, Waterloo-place, S.W., on payment of £5 for each copy, for which payment a receipt will be given, and the drawings can then be inspected at the Office of the Architect, Mr. G. T. HINE, 35, Parliament-street, S.W., between the hours of TEN and FIVE.

The amount deposited will, after the Committee have come to a decision upon the Tenders received, but not before, be returned to the Tenderer, providing he shall have sent in a bona-fide Tender, and shall not have withdrawn the same.

Tenders must be on the printed form, and be accompanied by the form of contract and schedules thereto and form of bond.

The Tenderer must also deliver with his Tender, but in a separate sealed envelope, a set of the bills fully priced out and moneyed in detail and signed. The bills so delivered will be returned unopened to unsuccessful Tenderers. Those delivered by the Tenderer whose Tender may be accepted will have to be approved by the Architect.

The Tender and accompanying documents, completed in accordance with the instructions attached to the form of Tender, must be enclosed in the authorised sealed cover, endorsed "Tender for Erection of Farm Buildings at the Heath Asylum, Bexley," and be delivered at the Office of the Committee, 6, Waterloo-place, S.W., not later than TWELVE o'clock noon on MONDAY, JULY 9th, 1900, after which time no Tender will be received.

Any Tender not made on the printed form, or not filed up and complete in every particular, in accordance with the instructions, will be rejected.

The Committee do not bind themselves to accept the lowest or any Tender.

The contractor will have to enter into a bond in the penal sum of £250 with two approved sureties, each in the sum of £125 as security, for the performance of the contract.

R. W. PARTRIDGE,
Clerk of the Committee.
London Asylums Committee Office,
No. 6, Waterloo-place, S.W.,
May, 1900.

COMPETITION.**COUNTY BOROUGH of CARDIFF.**
TO ARCHITECTS.

The Corporation of Cardiff invite COMPETITIVE DESIGNS for their proposed NEW ASYLUM for 1,250 patients at Whitechurch, near Cardiff.

The Competition will be in two stages.

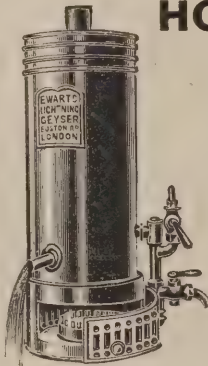
The first stage will be open to all architects, and the drawings therefore must be to a small scale in pencil. From the designs submitted in that stage the authors of six will be selected to enter the second stage of the Competition, the drawings to be in ink according to the requirements of the Lunacy Commissioners. A premium of One Hundred Guineas will be paid to each competitor in the second stage who complies with the conditions, and the successful competitor placed first will be employed to carry out the buildings on the terms stated in the conditions.

Printed conditions and instructions can be obtained on application to the Borough Engineer, Town Hall, Cardiff, on payment of One Guinea, which will be returned on receipt of a bona-fide design, or if the conditions are returned by JUNE 30th. In the selection of the designs the Corporation will be advised by Mr. G. T. HINE, Architect to the Commissioners in Lunacy, as Professional Assessor, whose decision shall govern the selection of the designs and be final and binding in all stages of the Competition.

Designs in the preliminary stage of the Competition, sealed and endorsed "Design for New Asylum," must be delivered to the Borough Engineer not later than TWELVE o'clock noon, on SATURDAY, AUGUST 25th, 1900.

By order,
J. L. WHEATLEY,
Town Clerk.

Town Hall, Cardiff,
May 30th, 1900.

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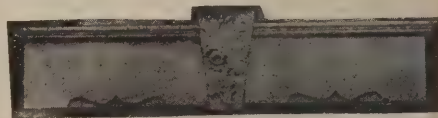
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JUNE 13, 1900.
No. CCLXXXIX.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

Utilitarian Art.

It has been pointed out with considerable reiteration in the pages of the art reviews,

that the activity of the allied or subsidiary arts is on the increase, as well as in the full lusty vigour of creative youth. Few who follow in a more or less sedulous degree the artistic progress of to-day will care to dispute the first part of this statement, but the second will at least repay a little enquiry into its reality and truth before its final acceptance. The allied, the subsidiary, or the secondary arts, as they are designated in turn, are all bad titles—obviously bad, and, to start with, it would be a real service if someone would invent a more fitting and expressive title with which to name the numerous Art streams, all more or less tributary to the great river of Architecture.

The exhibitions conducted by the committee of the Arts and Crafts Society will be taken by all, I should think, as the material expression of the arts whose character is in question, and anyone familiar with these recurring exhibitions will be able, I hope, to follow the line of my argument. Let me quote the views as to the aims and work of the Society as expressed by one of its members—a man of real live enthusiasms, and of considerable ability in the artistic world. Their mission, he has told me, was to cement the growing union between the craftsman and the designer, to unite them if possible, and make them one; a good aim it will be said, worthy of all praise and success. The Arts and the Crafts, he continued, have the same ideal at heart as was the reality with the mediæval Italian workmen of the early Renaissance, the same as was the germ idea of the northern Gothic builder of the thirteenth and fourteenth centuries. "Art for Art's sake" is a cry which has brought down Nemesis—a rather just Nemesis—upon those who used it ill-advisedly; but I gathered that this also is part of the art creed of the committee. Their creed is really very embracing if somewhat paradoxical, and among other extremely high idealistic hopes were the social regeneration of the worker through his art, the formation of art guilds on the model of the workers' guild of mediæval Nuremberg, and the advancement of utilitarian Art, of Art for the people, an Art practicable and applicable to the common everyday middle-class life, an Art even which should touch the "masses," to use an odious term.

Now this last idea really did strike home in me, rousing a strong desire to refute such faulty reasoning, and in my attack on it chance favoured me with good fortune. It so happened that this very man who was so quick as we have seen with eloquent definitions of his ideals as a member of the Arts and Crafts Committee, was himself an exhibitor—an exhibitor of most choice jewellery

and silver work exquisite in design, and equal in all respects in workmanship. It is needless to mention the prices that were asked: they were beyond the dreams of avarice of even the most imaginative member of the middle-class. Where, I asked, was the vaunted practicability, the Art for the Million cry now? "You would not debar me," he returned, "from seeking a more wealthy and remunerative public," and my answer was, "No; but do not speak too much of the practicability and the utilitarian side of

onlooker at his meal, like the brooding spirit of indigestion hanging over him in primary colours. In the exhibition of last year there were cabinets of most original design, but of really doubtful utility; in one case the doubtful part showed its weakness in the exhibition itself. There were door-knockers, handles, bell pushes, showing a charming faculty of originality and execution, yet who but a connoisseur with a golden pocket could procure them for the adornment of his panels? No! the fault is almost unquestion-



TOWER OF S. JEAN, CAEN. DRAWN BY ARNOLD MITCHELL.

your Art." I have seen work by this man, jewelled silver salt-collars of enchanting shape and execution, but who but a Croesus would care to spend twenty guineas on such an addition to his dining-table equipment? I have seen chairs, high-backed and angular, with dainty Tudor roses carved in the seats, but what most enthusiastic artist would care to take his dinner seated upon a dainty Tudor rose carved in relief upon his chair seat? I know of dinner knives, green-handled, enchanting to the vision, with a shape like a miniature Moorish scimitar with its edge on the wrong side, but alas for their practicability. Conventional frieze decoration I have seen that painfully warns the startled

able; the tendency of the allied Arts undoubtedly is to lose its way among the back waters of aestheticism and diseased imagination. They are unattainable and unreal to the multitude, and above all they are not utilitarian. Neither are they flourishing in their creative youth, for if it were so they would not tread the path of crude conventionalism to such an extent, or cater so largely for the wealthy class, whose artistic partialities and sympathies have something of the nature of a fashion or hobby rather than that real appreciation given by the working middle-class.

The impossible logic contained in the first "ideal" given me will follow on naturally from the above. It was said that the mission

of the Arts and Crafts was to cement the growing union between craftsman and designer—to make them one. If this tendency, however, had any appreciable result, it would show itself by the work of the craftsman-designer himself, who would naturally work for his own class to a large extent—his own class, which is entirely alien to the wealthy nondescript collection of artistic buyers which is now being most catered for. The craftsman-designer will never come to stay until the National Art Education is more practical in its scope, and until it allows the practice of craft-work in its schools, which it practically does not at present. I, myself, know of cases of the craftsman-designer when he was a real accomplished fact, no thanks, however, to the system under which he worked, but his rare individuality was swallowed up and hidden beneath the iron system of commercial guilds. It is painfully apparent that the time is not yet for the omnipotence of the handicraftsman, but so surely as we wish for supremacy in our Art, so surely must it come, and he must take his rightful position above the artist who is designer alone. The art designer will never give us utilitarian art which every English home is crying out for, but in the artist-craftsman, the workman and designer and artist in one, we shall, it is hoped, finally reach perfection. F. B.

Journalistic Architecture.

JOURNALISM, nourished on the railroad and telegraph, has imbibed somewhat of their mechanism. It might be called the poor relation of the Arts, since it claims a kinship with them which is rarely acknowledged. The term journalism carries one's thoughts to the daily paper, but though the Press claims the title for her own, the other Arts—music, painting, and architecture—have each a special form of journalism adapted to their separate use. The popular and passing song is heard daily in our streets, though efforts have been made to suppress its principal organ. The painter and draughtsmen swell our papers and magazines with sketches whose term of life is generally on a par with their period of gestation. But with the architect it is different. He, carried away with a necessity for popularity, and a need for the easy methods of attaining it, fills our streets with buildings we may not fire, erections that on the morrow he, no less than we, would willingly be without; more unsatisfactory are they than a yearly edition of a daily paper. William Morris, it is said, was troubled with the thought as to what should be done with the bricks, when the time came for acknowledging the folly of attempting journalism in architecture. Every year adds to the perplexity of that problem. The populace still goes into bathetic rapture over each new patchwork edifice, suitable, perhaps, in design for cardboard, absurd in brick or stone, and is as equally ready to condemn the same after a few years' standing. But whereas loud praise bears much fruit, condemnation is generally silent, and sows but little seed. Not only do we erect shallow and flashy new buildings, but are not content unless we turn our old buildings to ridicule, and in so doing emulate the modern saints who press the music-hall song into their daily services. In every street rise creations oozy with midnight oil, written over with worn colloquialisms and abraded forms of speech. We get visions of the tired worker on the drawing board, striving with a limited vocabulary to express the unlimited aspirations of his mind and the limited needs of his century. K.

On Reflection.

Cleanliness. To erect a railway station capable of being kept clean, and possessing a scheme of colour decoration, would, twenty years ago, have seemed an impossibility. Yet the new Central Station at Nottingham possesses both these features. So much is due to the use of glazed bricks and glazed ware. The colours employed are cream, light brown and a soft sage green, and the effect is very good. These colours extend even to the signboards, ironwork, and the luggage trolleys. We might here point out that the polished pitch-pine for the doors, window frames, panelling, &c., is an atrocity, and absurd in a station where hard wear may be expected, also that brass toe and protection plates do not go well with it. Moreover, the whole of the pitch-pine work is badly wrought. Our object in mentioning this station, however, was not to enumerate its defects, but to show how, in a place so essentially liable to soot and grime, dirt is successfully combatted by the use of suitable materials. And how much more glazed work might be used in our domestic building, and with advantage. What material is so suitable for kitchen, scullery and pantry walls? In the nursery, and in the living rooms of artisans dwellings, wherever there are many children, what dirt and squalor might be avoided by the use of a glazed dado. Go into such rooms or passages, and see how easily the greasy marks on the walls might be avoided by the use of a glazed material. The wealth of tints in which glazed work is now turned out precludes any objection on the score of colour. Ah, but the expense! Yes, probably a little expensive; but there are many necessary things in building for which money is always forthcoming. Make this a necessity. Possibly some gim-crack exterior ornament will have to go; but its loss will be a gain to your house and to the community at large.

Architects and the Public.

THE "Daily Chronicle" feels that "architects are, in a measure, responsible for the indifference of the public to the Architectural Room" at the Royal Academy, and our contemporary gives as the reason that architects in their "finished designs are as entirely formal and technical as in their plans and elevations. The plans and elevations, of course, are all-important and indispensable, but there is no logical objection to the finished design looking like a real house, or church, or public building." Now while we agree with the first part of the statement, we by no means concur in the reason following. There probably has never been such a year when so many objections have been launched against the architectural exhibits on the ground that the majority are more notable as pictures than as architectural drawings. We make no apology for quoting further from our contemporary, because the writer—evidently a layman in matters architectural—unconsciously gives the true reason between his lines. Only a few works in the architectural room are noticed, but the lay mind, selecting the works it likes, finds Mr. Macartney's houses are "simple and stately and spacious." Mr. Reginald Blomfield's house in New York is evidently *harmonious* in its proportions, and *sober* in its ornament. The halls and public buildings of Mr. Belcher and Mr. Brydon have a feeling of *bigness*; so, too, have the municipal buildings of Messrs. Russell, Mallows and Grocock. Pick out the adjectives and you have at once the qualities the lay mind looks for in architecture. Buildings to please the public must be dignified, symmetrical, and big. The people who, like the writer in the May issue of the A.A. notes, affect to believe that public

appreciation of a building is its artistic condemnation, and that the public should be regarded as "a hulking mongrel cur gorging with concentrated attentiveness the offal in the gutter" (pretty simile, this) will hardly agree with this conclusion; but they may be safely left to the contents of the gutter with which they are so well acquainted. We make as our point the fact that a building showing an earnest attempt to embody the three qualities given above has never been condemned by the public. After all, it is perfectly natural. We are attracted by opposite qualities, and the rush, bustle, and indignity of life in the present age engenders a love of symmetry and repose in our buildings. If the placid, artistic Greeks (who, by the way, did not disdain public applause) found stately and symmetrical buildings a necessity, how much more should we desire them? But the keynote of the present day is "conglomeration." We have no system of planning, and there is no attempt to keep void over void and wall upon wall. The rooms are planned anyhow and without regard to a symmetrical elevation. The result is a maddening confusion of bays, windows, roofs, turrets, and gables, bewildering and irritating to the eye. Look at the Royal Academy drawings, or the Soane medalion drawing this year, where the architect, forced to the unusual work of a symmetrical exterior, was absolutely lost as to his interior arrangement. So long as our architects disdain Architecture and design conglomerations of rooms, so long will the public be indifferent to the claims of their art.

The Vestryman.

WHEN one vestryman suggests that an esteemed confrère was not in "a proper condition" at the last meeting, and the individual indicated retorts that his equally esteemed brother vestryman is "a dirty little squirt," ditto "hound," also "a filthy little humbug," asks why he has not paid his milk bill, and refers in a general way to the speeches of his fellow members as "cackle," there is liable to be trouble. One's thoughts naturally revert to the legend of Truthful James and the Society of the Stanislaus in reading the report of of the Newington Vestry from which these classic phrases have been extracted. The Spirit of Disorder is a fairly regular attendant at our London Vestry meetings, notably at Fulham, Battersea, Bromley, and also at the West Ham Council. At Bromley the members refuse to elect a chairman, and spend their time "Pretoriating," as a contemporary has it. A fortnight ago they appealed to the police to keep the peace, and an inspector sat down in their midst, to lecture them on their behaviour, and the sin of idle laughter which is as the crackling of thorns under the pot. We have a grievance against that inspector. He may be an excellent man in many respects, a model officer, a strict disciplinarian, and a credit to the force; but as a diplomat he lacks that tact, that cold purpose, that iron resolution, which effects great enterprises. His duty was plain. He should have gone out and locked the door and kept it locked for a week, and if the building was then still standing he could have gone in and kept the pieces, and Bromley would now be in a position to elect a board that would attend strictly to business. At the last Bromley meeting a Mr. Bird was nominated for the chairmanship, but he positively refused to accept the honour, in spite of the entreating strains of "Come, Birdie, Come!" Seriously speaking, these scenes are a disgrace to civilisation; but the remedy is in the hands of the ratepayers, and if they won't exert themselves they must continue to suffer.

THE LATE MR. CHARLES BARRY.

By R. STEPHEN AYLING, A.R.I.B.A.

THERE has just passed away at the age of seventy-seven one of the most prominent members of the architectural profession. Mr. Charles Barry, past president R.I.B.A., F.S.I., F.S.A., was the eldest son of the late Sir Charles Barry, R.A., and was educated at Sevenoaks Grammar School. On leaving there, he was articled to his father, whom he assisted for some years, notably during the latter part of the time whilst the Houses of Parliament were being built. Some few years back, Mr. Barry prepared a scheme for the completion of the Houses of Parliament, modified from the plan left by the late Sir Charles Barry, but the work was unfortunately not carried out. He started practice on his own account in 1849, and shortly afterwards took into partnership the late Mr. Robert R. Banks, who had been his father's chief assistant. Mr. Banks died in 1872. Mr. Barry then continued the practice alone until about three years ago, when he took into partnership his eldest son, Mr. Charles Edward Barry. During a period of more than fifty years Mr. Barry executed commissions for nearly every kind of building, ecclesiastical, civil and domestic. To mention one tithe of them would occupy a large space, but among the most important may be enumerated the following:—

Mansions.—Bridgewater House (1848); Bylaugh Hall, Norfolk (1849); "Dornden" (1850); "Highgrounds" (1850); Duncombe Park (1851); Preston Hall (1863); Bramley House (1867); "Stevenstone" (1869); and the rebuilding of "Clumber," after it was destroyed by fire, for the Duke of Newcastle.

Churches.—Bilsdale Church (1851); Hurstpierpoint Church (1857); Harum Chapel (1861); Holy Trinity Church, Barking (1865); Helmsley Church (1866); St. Stephen's Church, Dulwich (1867); All Saints' Church, Whitstable (1874); St. Peter's Church, Dulwich (1873); Christ Church, North Dulwich; and quite recently the new Mission Hall at Herne Hill, being part of a large scheme to include also a church and parsonage.

Schools.—Infant Schools, Stepney (1856); Girls' School, Dulwich (1865); Schools at Bolney (1869); Winchester Street Schools for the London School Board (1873); Bedfont Industrial Schools (1880).

Baths.—Preston (1850); Bermondsey (1853); Alleyn College, Dulwich, with gymnasium (1887).

Mr. Barry was for many years the architect to the London Hospital, and during that time erected the new Grocers' and Alexandra wings, mortuaries, stables, workshops, &c. In 1890 he carried out the new Jubilee wing at the Hospital for Sick Children, Great Ormond Street. Among other buildings may be mentioned Westminster Chambers (1863), Burlington House (1868), and the metropolitan artisans' dwellings at Battersea and Islington (1876-9). A few years ago Mr. Barry carried out the work of roofing in the area of the Royal Exchange, which commission he won in competition with seven other architects. Among the most recent commissions were the Passmore Edwards Library at Dulwich and the Institution of Civil Engineers in Great George Street, Westminster, shortly to be demolished to make room for the new Government buildings. Since 1858 Mr. Barry held the post of architect and surveyor to the Dulwich Estate, and during that time designed the New College and about thirty houses and other buildings on the property.

Having been elected president of the R.I.B.A., in 1876, he held that office for three years, and was chosen to receive the Queen's gold medal in 1877, this being the only case in which that honour has been conferred on father and son. Mr. Barry was appointed by H.R.H. the Prince of Wales as sole Commissioner for England and the Colonies for Architecture in the Fine Art Section of the Paris Exhibition (1878), and at its conclusion was made an "Officer of the Legion of Honour" of France.

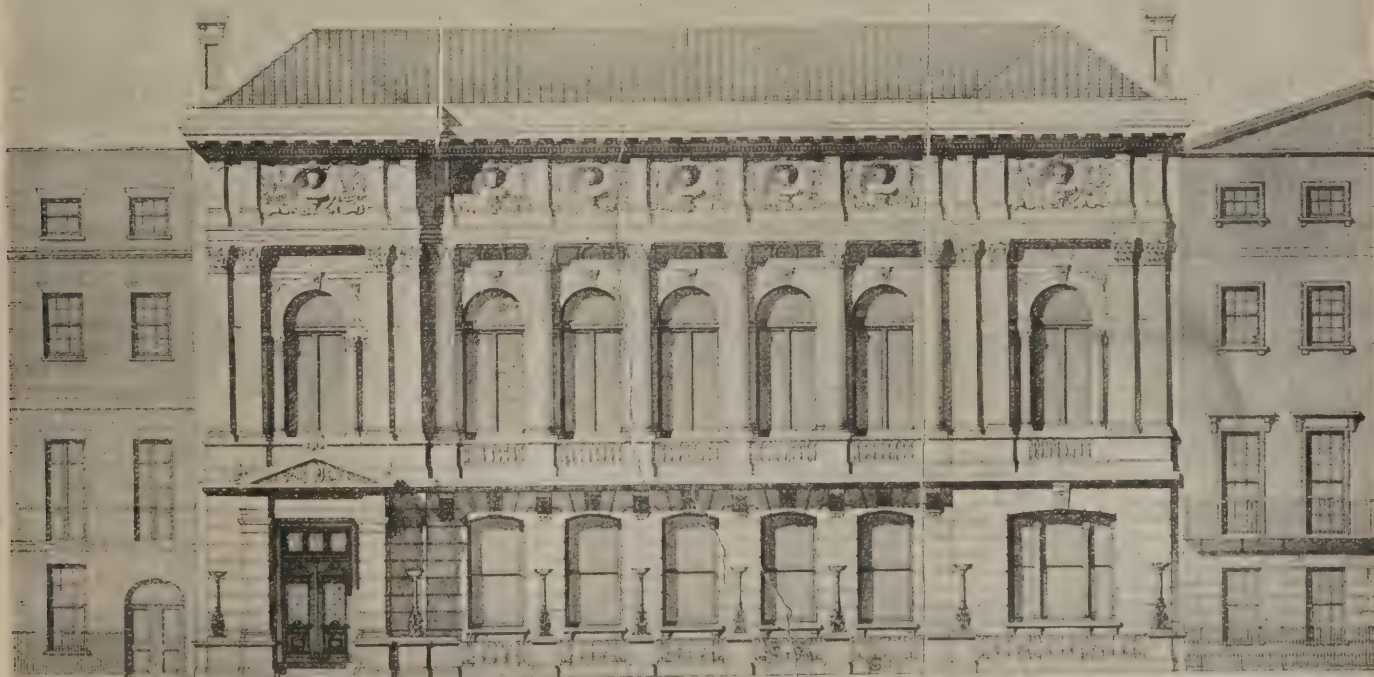
Mr. Barry was frequently appointed as assessor in competitions, and but few knew the infinite amount of trouble he took before making his award. Every detail was studied, and marks given under different heads. I remember in one instance local influence was strongly in favour of the competitor he had



THE LATE MR. CHARLES BARRY, F.R.I.B.A.,
F.S.I., F.S.A.

placed third, and the Committee wished to put the work in his hands. The assessor took the matter up most warmly, and after great trouble succeeded in obtaining the commission for the gentleman who had honestly won the competition. Mr. Barry himself, always enthusiastic, seemed to infuse enthusiasm into those around him, and it would be easy to mention many of his pupils who are now eminent in the profession. Invariably courteous and genial, he was respected by those who only

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ELEVATION TOWARDS GREAT GEORGE ST



BRISTOL TO SOUTH WALES DIRECT LINE. DOTTED LINES SHOW NEW WORK; BLACK LINE SHOWS EXISTING MAIN LINE.

knew him slightly, whilst those who were privileged to enjoy his friendship regarded him with a feeling akin to affection.

An honourable, kindly gentleman has passed away, and one whose loss will be keenly felt.

THE WAKENING OF THE GREAT WESTERN RAILWAY.

NEWSPAPER readers diligent in the reading of railway paragraphs have been familiar during these last few years with items of news detailing, more or less correctly, the different accelerations of West of England traffic and the several minor extensions of the Great Western system in Devon and Cornwall. Not, however, for several years past has the Great Western Railway had so many important schemes on hand as now. Indeed, until 1891, or thereabouts, the Great Western, it is safe to say, was the least progressive line in England—an inert corporation superior alike to criticism or the pricks and goads of competition. It had, in fact, well earned the name of the “sleepy giant,” and no new thing was to be looked for from the offices at Paddington or from the works at Swindon. Enginemen, guards, and porters had grown grey in the service of the line, and the identical trains that ran in their youth were yet running in their old age. Suddenly, however, the repose of these venerable servitors was rudely shaken, and the time-tables that had remained so many years unaltered became entirely changed. Old trains that had outworn their popularity or had survived the needs that had called them into existence were taken off and replaced by new and quicker ones at different hours; regulations framed in days when railways were yet on their trial were relaxed, and the stations began to be rebuilt.

The men who had made the Great Western had by this time passed away; Brunel many years previously, and Saunders, the secretary, some five years later; to be followed, within recent years, by Mr. Grierson and Sir Daniel Gooch. They had clung to the broad gauge, and found no need for revision of train services; but no sooner had the last of them disappeared from the councils of the line than the broad gauge was doomed, and the time-tables began their long career of revision which is by no means done yet.

How important the policy of the Great Western management is to the travelling public of this country can be no better shown than by a comparison of it with the London and North-Western Railway, which is often cited as the premier railway of England. The Great Western has the advantage in mere mileage, working as it does 2,599 miles, as against the North-Western's 1,892 miles. It is in capital and revenue that it comes second, with a capital of £83,563,000 and a revenue of £9,878,465, as against the North-Western's figures, respectively, of £117,269,000 and £13,155,925.

It is, of course, chiefly by reason of its splendid carrying trade in coals and minerals that the North-Western bulks so largely, penetrating as it does by a direct route from London into the very heart of the colliery and manufacturing districts, while the Great Western is pre-eminently the tourist's line, and one practically undeveloped. It has become a truism among railway men that it is not by passenger traffic that big dividends are earned, and this has evidently been taken to heart by the Great Western directorate, who have a scheme formulating by which the rich collecting grounds of goods and manufacturers may be reached by a shorter route than that at present taken. But more of this presently.

That the Great Western has splendid opportunities for development must be evident to any who take up the map of that great system, whose two great arms, branching out from Reading, clasp severally the tourist's paradise of the south-west, and the rich and varied interests that are comprised within the manufacturing West Midlands and the busy coalfields and clanging workshops of South Wales. For, despite all its splendid engineering achievements in the peculiarly difficult districts through which it runs, and notwithstanding the historical change of gauge close upon five years ago, the Great Western is still largely an undeveloped line, and the present directorate seem to be alive to this fact and to the necessity of altering it.

The Great Western has ever been a line to gain the affections of travellers. Whether this is due to the courtesy that has always distinguished its officials above those of other great railways, or whether it is due partly to

the picturesque districts it traverses, and in degree to the sentimental regard frequenters of the line had for the old Broad Gauge, who shall say? Probably it was owing equally to all three causes. Certainly when the 7ft. gauge disappeared in May, 1892, to give place to the narrow gauge of 4ft. 8½in., there was a break with the old traditions which was bitterly regretted by West Country folk; and now that the line has been remodelled throughout Cornwall, and the many old timber viaducts, so characteristic of the Great Western and its leased lines in that county, have been rebuilt in more enduring but less picturesque granite, everything seems strange to those who knew the Great Western of old. But railways, like everything else, must move with the times, and the Great Western has an alert rival in the South-Western. It matters little, however, on the main line that the South-Western has penetrated beyond Exeter, through Devon into the far west of Cornwall; for who, having once tried the South-Western route, would elect to travel by it again? But, with the works now in progress, which will give the Great Western a new and shorter main line to all stations beyond Taunton, competition by the rival for swift and easy transit to the West will be quite out of the question.

A glance at the accompanying sketch map will show how many and important are the changes to come over the Great Western's system in the near future. The old main line to the West, still in use, passing through Reading, Didcot, Swindon, Bath, and Bristol, is to be supplanted by a new and shorter route diverging from the old one at Reading and



GREAT WESTERN RAILWAY: NEW LINES AND CONNECTIONS.

going by way of Newbury and Westbury, re-joining the old main line at Durston Junction, just short of Taunton. The greater part of this newer route has been in existence for many years past as the "Hants and Berks" branch to Newbury, Hungerford and Devizes, and in the shape of other short lines in mid-Somerset. For at least twenty-five years past those who have been familiar with Great Western maps of these districts have noticed two short connecting links of railway on this route marked as "lines authorised and in progress." These are those which, when completed, will give a short and level road to the West, saving nineteen miles in distance and much more in the avoidance of the heavy gradients on the existing route. The links in question are those between Stert and Westbury, and between Castle Cary and Langport, and have been under construction during the last three years. The country traversed is an easy one, lying as it does in the valleys of the Kennet and the Frome, and thence along the almost dead levels of the southern border of Sedgemoor and through the Isle of Athelney. Widenings of the existing branches and relaying, to fit them for the needs of an express route, are also in progress, so that in the near future we shall see the West of England expresses altogether deserting the historic way, through Swindon and Bristol.



OLD ATMOSPHERIC ENGINE-HOUSE, TOTNES.

The opening of the Severn Tunnel in 1886, giving a more direct access to the South Wales coal-fields and seaports, brought a great increase of every description of traffic over the main line, and congestion has almost ever since been its normal condition. Even the great station at Bristol, once thought large enough for all time, is too small for present needs; and the relief afforded by sending the Devon and Cornwall traffic another way will be welcomed.

But even the present route to South Wales is shortly to be modified and Bristol further relieved by the huge coal traffic that now passes through it being diverted over the "Bristol and South Wales Direct" line under construction by the Great Western since 1897, and shortly to be opened. This railway, designed almost wholly for the coal traffic, will bring the products of the South Wales coal-fields through the Severn Tunnel without touching Bristol. The line is thirty-three and a half miles in length, and will save eleven miles over the old route. A spur line conducting into Bristol between Winterbourne and Filton will save four miles over the route from London to Bristol now in use. Branching off from Wootton Bassett, the "Bristol and South Wales Direct" goes through some very heavy country, entailing many engineering works of importance. The Cotswold Hills have been pierced by three tunnels, and four long viaducts have been made. The longest tunnel, between Badminton and Chipping Sodbury, is two and a half miles; the longest viaduct, that of Huckford, 230yds. The cost of this line is put at a little over £1,000,000. In spite of the difficulties of the country, the line has been engineered with the easy ruling gradient of 1 in 300, and with a minimum curve of one mile radius. With a road thus practically level and straight, quick running will be easily made.

The projected short cut from Newnham-on-Severn, or Awre, to Stonehouse, in Gloucestershire, is apparently not yet to be put in hand.



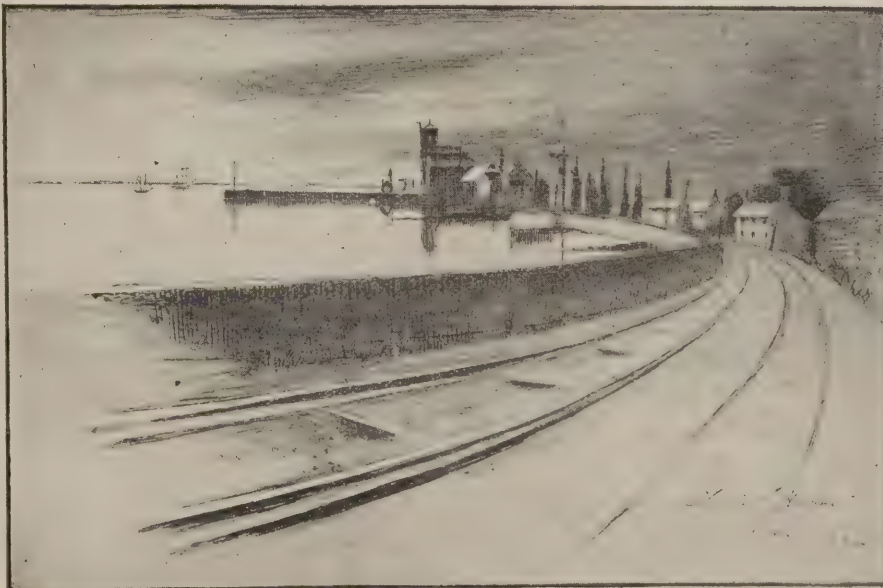
PARSON TUNNEL.

When constructed it will do for Hereford and places beyond, although on a smaller scale, exactly what the Severn Tunnel is now doing for South Wales, cutting off as it will the detour by Gloucester.

Some interesting changes are about to take place on the Exeter to Totnes section, once the South Devon Railway, and worked in the old days by the atmospheric system instead of with locomotives. Great advances have already been made towards rendering this section and those beyond it worthy of being portions of the main line of a progressive railway, but more remains to be done, particularly between Dawlish and Teignmouth, where the line runs on the sea shore and for more than a mile through a series of five tunnels cut through the red sandstone cliffs. Constructed originally with only one track through these tunnels, the traffic has grown until the delay caused by working every description of train through from Dawlish Station to the signal box at the Teignmouth end of the Parson Tunnel, and *vice-versa*, by the aid of the staff system, can no longer be endured. It is, indeed, an anachronism that a stretch of single line should survive to this day on the main line of one of our foremost railways; but it is an anachronism shortly to disappear, now that these tunnels are to be doubled. It is a picturesque portion of the railway, between this point and Starcross, and on again westwards to Newton

Abbot and Totnes, and few natural compositions for a picture are so pleasing as that afforded by a view down the estuary of the Exe, near Starcross station, where the red sandstone tower of the obsolete old engine-house of the atmospheric railway stands out boldly against the sky, by the dingy sheds of the station. There is talk of rebuilding the station, but if this is done the old tower might be spared again, as it was on another occasion, when it was allowed to remain at the request of the late Earl of Devon, whose seat Powderham Castle, adjoins. Another of these old engine-houses remains, outside Totnes station, and a portion of one at Newton Abbot.

Coming near London, we find some highly interesting works, which, in themselves and in their relation with works jointly undertaken by the Great Western and the Great Central Railways, will have an important bearing upon railway communication with the Midlands. A Bill was introduced into Parliament in 1897, and passed, for the making of a railway to branch from the Great Western system at Old Oak Common, on the borders of Wormwood Scrubbs, and to continue through Middlesex and Buckinghamshire to form a junction with the High Wycombe branch on the east side of High Wycombe station; opening up a new suburban district on the way, with stations at Twyford Abbey, Northolt, Ruislip, Denham, Gerrard's Cross, and Beaconsfield. The distance



STARCROSS.

by rail from Paddington to High Wycombe, avoiding the change and circuitous route by way of Maidenhead, will be, by the new line, twenty-six miles, instead of thirty-four, and incidentally the distance to Oxford and places beyond is similarly shortened by this route, preferable over the usual journey, *via* Reading and Didcot. Significant also is the fact that by this line a saving of time and mileage to Warwick and Birmingham will be effected.

The long-developing quarrel between the Metropolitan and the Great Central Railway Companies had unlooked for results in leading to an arrangement between the Great Western and the Great Central by which the G.C.R. will construct a line from its system at Grendon Underwood, a point between Calvert and Quainton Road, to meet a re-modelled and extended Great Western branch from High Wycombe to Prince's Risborough, Great Central trains thus being provided with a through run past High Wycombe on to Northolt, where they will quit the Great Western's new line and proceed by a short Great Central link, authorised from Northolt to Neasden in 1898, and thence over existing Great Central rails from Neasden to

LIVERPOOL'S NEW COUNCIL CHAMBER.

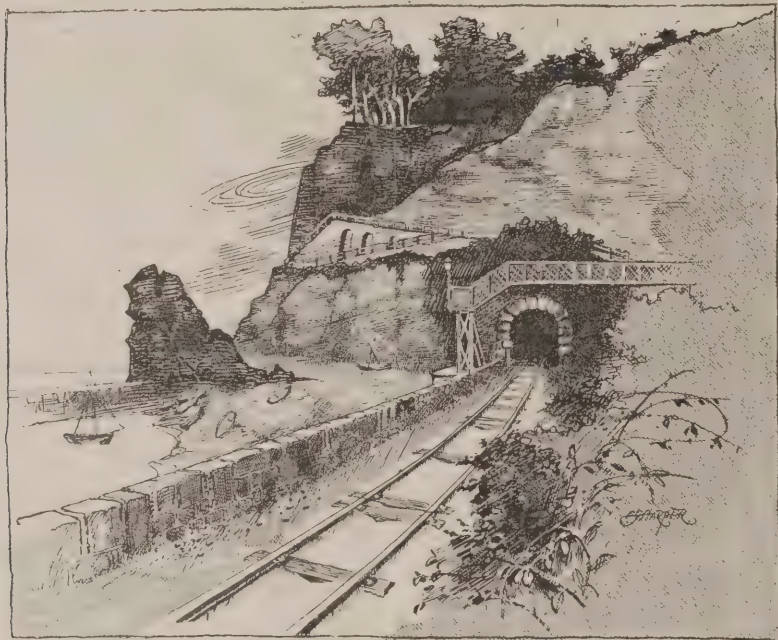
THE alterations to the Council Chamber at the Liverpool Town Hall, which have now been completed, were commenced twelve months ago, and have been carried out according to the designs of the city surveyor, Mr. Sheldermine, who has been assisted by Mr. John H. Dawson. The old floor has been lowered 18in. on the east, west, and south sides, and also at the Lord Mayor's dais and gangways adjoining, whilst the central portion of the floor has been taken 3ft. below the old level. The space between the upper and lower levels is in tiers, elliptical on plan, and on these tiers are the seats for the councillors, each row of seats being 4½in. higher than that immediately in front. The new floor is constructed of concrete and steel joists, on which are laid pitch-pine blocks, the risers to the various tiers being of teak. On taking out the old windows and stripping the walls, a lot of timber-work was found to be built into the

parts being decorated with gold. In extending the building, Darley Dale stone has been used, being made to correspond as far as possible with the old work. The columns and caps facing "the flags" have been rebuilt 7ft. nearer the Exchange, the space thus formed between the external wall of the main building and the front of the new projection making a portico similar to the one facing Castle Street, and taking the place of the "Queen's balcony," which has been removed, whilst the statues that surmounted the entablature have been renovated and placed in new positions. The principal contractors for the work were Messrs. Brown and Backhouse, who did the whole of the structural work, as well as the mahogany work in the dado, windows and doors, Messrs. Waring and Gillow, Ltd., being entrusted with the decorative work, and Messrs. G. H. Morton and Son with the furniture. The heating and ventilation were carried out by Messrs. Dargue, Griffiths and Co., and the electric fittings were supplied by Messrs. Singer and Co., of Frome. Mr. E. Shakespeare acted as clerk of the works.

EXTENSION OF WAKEFIELD CATHEDRAL.

SOME time ago the clergy and laity in the diocese of Wakefield determined to promote a memorial to the late Dr. Walsham How, the first bishop of that diocese, and decided that the memorial should take the form of an enlargement of Wakefield Cathedral, into which should be introduced a recumbent effigy of the late beloved bishop. Early in the present year tenders were invited for the work, and eleven were received. After consideration, the committee accepted the tender of Messrs. Armitage and Hodgson, of Leeds, who erected the County Hall and the new Acute West Riding Asylum at Wakefield; and for some weeks that firm has been carrying out certain preliminaries on the site, which had been cleared of the shops, &c., by Mr. Wilson, contractor, Park Lane, Wakefield. The amount of Messrs. Armitage and Hodgson's contract is £25,100, but the contract has been divided into two, so that the first portion of the work—including a chapter house and two new vestries—will be entirely completed before the second portion of the work is proceeded with.

The plans of the proposed extension have been prepared by Mr. Frank Pearson, of London. They provide for the extension of the chancel eastwards, besides giving increased length to the choir, which, it is said, has long been much needed, and also provide retro-choir, the approach from which, and forming a continuation of it, will be a chapel, which, together with the retro-choir, will give ample accommodation for early and occasional services. The total extension eastwards will be about sixty yards. The chancel aisles are to be extended eastward to the same length as the retro-choir, and this extension will take the form of north and south transepts, with eastern aisles. The transepts, by their spaciousness, will contribute very much to the dignity and cathedral-like aspect of the interior of the fine old church, and they will also form a break in the long horizontal lines of roofs and parapets. By means of this extension there will be ample room beneath for a chapter house and complete vestry accommodation, which, owing to a natural slope, will be well lighted. Access to these vestries will be obtained by a wide staircase on the north side, and there will also be an external entrance to them on the south side. The extension of the chancel will allow the altar to be moved one bay eastward, and behind the altar, and dividing the chapel, will be the altar screen. Under an arch on the north side of the sanctuary it is proposed to place a canopied tomb, with a recumbent effigy of the late bishop. Opposite to this will be the sedilia and credence stool. The position of the choir stalls and the bishop's throne are to be altered, so as to provide for a choir of thirty-four in a block of stalls three deep on each side.



TUNNEL, LEA MOUNT, DAWLISH.

Marylebone, thus rendering it unnecessary to exercise running powers over the Metropolitan extension to Quainton Road, and effectually defeating the Metropolitan's obstructive schemes. The day has not yet arrived when, in pursuance of this compact between the Great Western and the Great Central, the latter's trains will run, unchecked, into or out of Marylebone, but the branches are in progress, and another two years should see their completion.

Enough has now been said to show how extensive and varied are the new interests of the Great Western and to explain the maps illustrating these remarks. C. G. H.

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walls, and this proved to be infected with dry rot; in addition a considerable portion of the brickwork was discovered to be in a very bad state, and the beams supporting the ballroom floor were found to be practically unsafe in parts. These difficulties were successfully overcome by the removal of the old woodwork and the brickwork, and making good and inserting in the ballroom floor steel girders and additional timber beams. In making the new recess on the north side, the old external wall had to be cut away and new steel girders inserted to carry the wall over the ballroom floor. The following dimensions show what a change has been effected:—Old chamber, height 17ft. 6in., length 63ft. 3in., width 38ft.; new chamber, 19ft. and 20ft. 6in. at lowest and highest parts, length 89ft., width 40ft. 6in. The interior of the new room is lined all round with a panelled mahogany dado 12ft. high with entablature, whilst the windows have quarter-circle jambs with columns on square pedestals and are surmounted by segmental pediments with panelled soffits. The ceiling is in fibrous plaster, divided into three parts by a deep and highly enriched entablature extending across the chamber, and resting at each end on Ionic pilasters of mahogany. The walls between the top of the dado and ceiling are hung with Tynecastle canvas decorated in gold and colour, and the ceiling is treated in tones of ivory, buff and cinnamon, the ornamental

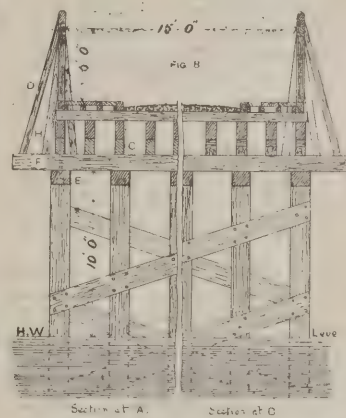
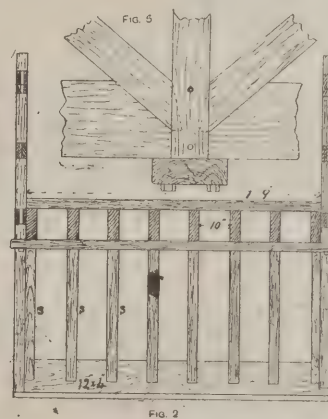
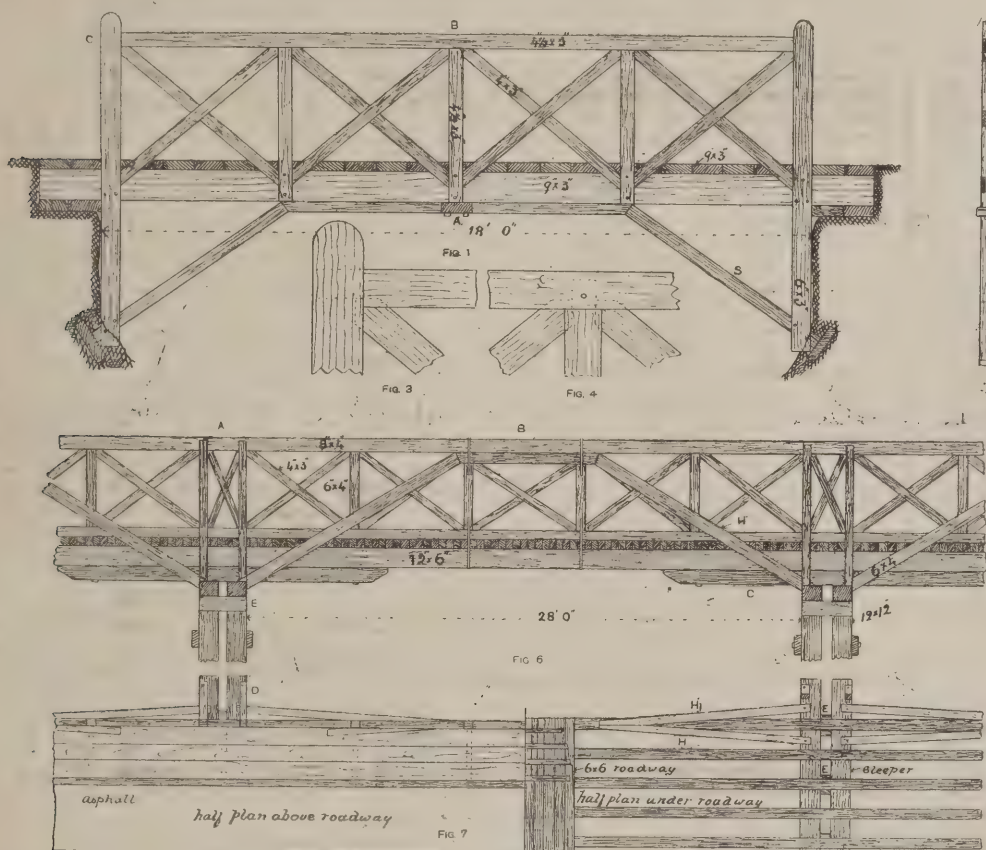
THE CONSTRUCTION OF TEMPORARY BRIDGES.*

By G. ELLIS, A.B.I.C.C.

FIGS. 1 and 2 of the accompanying illustrations show a typical example of a timber footbridge of a temporary character, such as those which are used in spanning excavated roadways during building operations. One of the first requirements that the carpenter has to comply with in work of this description is that the material used in construction shall be cut and otherwise injured as little as possible, in order that it may be subsequently used for other purposes with slight loss. Therefore, in designing these structures, attention should be given to the market sizes of timber, and the parts arranged accordingly. The bridge illustrated is composed of a number of 9in. by 3in. deals laid on edge at short intervals across the opening,

with the braces must be so arranged, that in whatever direction the load may act some of them will be thrown into compression by it. This is one of the most important points to be considered in bridge building, and is equally necessary whether the trussing be constructed above, or below, the roadway. A design for a temporary carriage bridge over a river is shown in Fig. 6, 7 and 8. The construction is again that of converting the parapet frames into trussed girders to support the central parts of the span, and, as struts beneath the bridge would interfere with the navigation of the waterway, cantilever beams C are employed to reduce the effective span between the piers. These piers are formed of double rows of whole-timber piles, driven deep into the river bed, their heads being connected by cap pieces E, of 12in. by 9in. timber, fixed by stub mortice and tenon and pinned; upon these are laid transverse sleepers, F, 12in. by 9in., secured by 1in. wrought-iron bolts. These sleepers run over the piers, at each end about 2ft. to form bases for the ends of the raking

piling at slightly higher levels from the banks to the centre. The chief dangers to be guarded against in this form of construction are, the pressure of the wind on the sides of the bridge, and damage to the piers by drifting craft, &c., on the stream. The first is minimised by the open character of the framing, and counteracted by the raking braces of the parapet and the inclined walings on the piles shown in the section, Fig. 8. Damage to the piers by floating ice or drifting craft can be provided against by driving fender piles at each end, and about 10ft. in front of the piers, in the form of a triangle, with the base towards the bridge. These should rise about 3ft. above high-water level, and should have stout stringers bolted on each side about 1ft. apart, their sharp ends being protected with iron plates. The details of the construction of this bridge are similar to those shown in Figs. 3, 4 and 5. To prevent timber used in bridge construction rotting, it should be coated with Stockholm tar and dusted with fine sand whilst wet; all the under part should be left



resting on a transverse sleeper at each end and being supported in the middle by braces springing from planks embedded in the sides of the excavation. The top ends of these braces abut against straining beams, which in turn abut against the cross-tie A that connects the intermediate beams to the outer ones, and transmits their load to them. These outer beams are formed into trusses by means of the handrails, posts and diagonal braces, and are framed together in the manner shown in the details, Figs. 3, 4 and 5. The end posts are in each case taken down to the foot of the lower bracing, and there bolted. The diagonal bracing adds greatly to the strength of the bridge and is necessary because the load is a varying and moving one, consequently the same brace is, at different times, called upon to bear compressional and tensional stresses. Now wood in the form of a brace or strut acts very effectively when stressed or compressed in the direction of its length, but very indifferently when stretched or stressed tensionally, as practically the whole of the stress has then to be borne by the fastening or joint, which is constructively the weakest part; therefore, when a moving load has to be dealt

struts D and the feet of the central trusses, which, whilst assisting in supporting the weight between the piers, also prevent the parapets overturning. As will be seen by reference to the plan, corresponding members are brought down from the straining piece, inside, to withstand the pressure of the wind. The roadway is formed of 6in. die-square timbers closely laid and spiked to half-timber beams of 12in. by 6in. Memel fir, carried by cantilever beams, 9in. by 6in., to which they are bolted with 1in. bolts, the heads and nuts being bedded on 4in. by 3in. square washers. The carriage-way is covered with asphalted gravel, and the footways constructed of 9in. by 3in. deals resting on longitudinal joists, with short cross-pieces framed between at short intervals. The path is curved with 8ft. lengths of 6ft. by 6in. timber, and a half-round gutter is formed in the asphalt at each edge of the road; holes are bored at short intervals in the footway to let the surface-water escape. In addition to the transverse curvature of the road surface shown in the section, Fig. 8, a slight rise is also given to the bridge longitudinally to assist the escape of rainwater. This is accomplished by keeping the various rows of

open for the access of air; ample provision should be made for the escape of rainwater; and the joints of the flooring should be left slightly open as a provision for expansion. If dry sand is intended to be used to make up the carriage-way, a layer of well-puddled clay should first be laid over the timbers to prevent its escape through the joints.

Blackfriars Priory: Further Discoveries.—In our issues for May 9th and 16th last particulars were given of the discovery of remains of the Dominican Priory at Blackfriars. It is now found that the north wall of the demolished building contains throughout its whole length of about 60ft. remains of the ancient wall of the apartment which has been excavated. On Saturday the base of a column, in a most perfect condition, was unearthed close by the perfect upright column that was lately found, and in a situation from east to west, showing that it was one of many that supported a groined arched roof. More foundations of walls have come to light, and a vault has been discovered beneath what was the floor level. The clearing of the latter, it is thought, may lead to further discoveries.

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Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Surveying with Theodolite.

HALIFAX.—NOVICE writes: "Please give an example of field booking and plotting lines, or name a practical work on trigonometrical surveying for a student."

Obtain Middleton's "Surveying and Surveying Instruments" (Whittaker and Co., Paternoster Square, E.C., price 3s. 9d.).

R. W. C.

Day's Slop-Closets.

RAMSEY, I.M.—J. J. B. writes: "Where can I obtain information respecting Day's slop-closets?"

A patent was taken out on October 19th, 1891, by Mr. John Day (it is numbered 17,863) for a slop-closet, and another on August 17th, 1892 (numbered 14,868). These specifications are obtainable at the Patent Office, Chancery Lane, price 8d. each. As far as we know, Mr. Day's address is 26, Canal Street, Wolverhampton.

Measuring from Plans.

SEAFORTH, LIVERPOOL.—KRUGER writes: "Supposing you had a sketch plan like subjoined (not reproduced), what and how would you measure off from it? Is the difference in the levels feet or inches. Does 21'48 stand for decimals?"

The levels are given in feet and decimal parts of a foot above an assumed plane, known as a datum, evidently taken in this instance 20ft. below a bench mark on curb in "Crescent Road" opposite the end of fence.

G. A. T. M.

Architects' Charges.

CHESTERFIELD.—GOTHIC writes: "Please say where I can obtain a copy of the R.I.B.A. schedule of fees for the remuneration of architects."

A copy of the schedule of architects' charges issued by the Royal Institute of British Architects is obtainable for sixpence. The R.I.B.A. Kalender is only half-a-crown, and contains, amongst other things, all the official publications, including the one mentioned. The Institute's offices are at 9, Conduit Street, W.

Constructing a Skittle-Alley.

CATFORD.—TOWSE writes: "In reference to the paragraph on 'Constructing a Skittle-Alley,' on page 45 of your issue for February 21st last, does the 12ft. 6in. wide include the channel for the return balls to run back in? Also, what is the size of pocket at the end of the alley which receives the balls; is it only a channel?"

The width of 12ft. 6in. should be exclusive of the channel, otherwise the sketch submitted is perfectly correct. The pocket to receive the balls may be of any convenient size.

G. A. T. M.

Reading a Vernier Scale.

HESSLE, HULL.—IGNORAMUS writes: "I shall be glad if you will explain the mode of reading a Vernier scale on a box-sextant. Please also give an example of an angle read and the positions one takes to read it."

The Vernier scale on the box-sextant is read precisely similarly to that on the theodolite. If, for instance, the arrow on the Vernier points between 12deg. 30min. and 13deg. on the main scale, not coinciding with either,

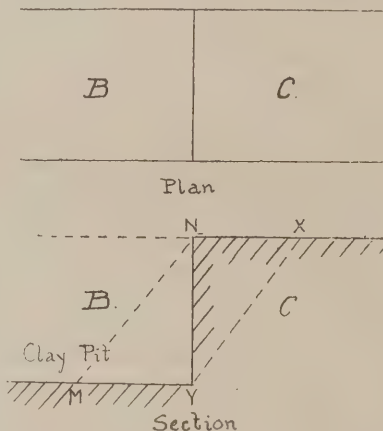
while the line denoting 14min. on the Vernier corresponds with some line (it matters not what line) on the main scale, then the total reading is: 12deg. 30min. + 14min. or 12deg. 44min. For more detailed information it would be well to consult Middleton's "Surveying and Surveying Instruments" (Whittaker and Co.).

G. A. T. M.

Adjoining Owners and Land Support.

PARKSTONE, DORSET.—PRETORIA writes: "A is the owner of the pieces of land marked B and C on the accompanying sketch. He lets the portion marked B to a brick manufacturer to be used for the purpose of excavating clay, and also lets the portion marked C to another person to be used as a building site. Is B therefore at liberty to dig down in a perpendicular direction, so causing a portion of C's land to give way, as shown by dotted lines X-Y; or is he compelled to leave some support, either by leaving a batter as shown by dotted lines N-M, or by building a retaining wall? Or is the lessor to make all provision for this? B's and C's leases do not say anything about any support being left, and B claims the right to dig down in a perpendicular direction, as he says if he left a batter he is not getting his full amount of clay."

Assuming that nothing has been done on the plot marked C to increase the lateral pressure towards the plot marked B, the giving way of the soil of C being thus the natural and necessary effect of the withdrawal of the support afforded by the soil of B, the tenant of



ADJOINING OWNERS AND LAND SUPPORT.

C is entitled to have that support replaced in such a way as to prevent the continuance or recurrence of the injury to the soil of his plot. The law is that each adjoining owner is entitled to the support of his neighbour's soil for the soil of his own land, so long as his own land remains in its natural state and is not so altered as having, for example, buildings erected on it close to the boundary, causing the lateral pressure which the adjacent soil has to bear to be increased. After the lapse of twenty years the right to support from the adjacent soil to a building erected close, or near, to the boundary may be acquired; but, apparently, in the present case, no question of that kind arises. How the support which B is to afford to C's land is provided is immaterial. B may effect it in any way he chooses, provided it is sufficient to replace that which he withdraws.

H. P. B.

Brick Spires with Stone Bands.

NORTHAMPTON.—OBERON writes: "In making a design for a proposed church to be built of brick, with stone dressings and bands, I purpose erecting a tower with a brick spire relieved with stone bands at intervals. Is there any objection to such a spire, either from a practical or artistic point of view? No doubt it will be said that a lead spire would be the correct thing to have, but I should like to have an authoritative opinion as to a brick spire with stone dressings."

Brick spires with stone bands, though rare in this country, are by no means uncommon

in Holland and North Germany. They are a perfectly logical outcome of brick building, to which no reasonable objection could possibly be taken.

G. A. T. M.

Allowances to Builders.

HALIFAX.—FAIRATION writes: "Where a provisional sum for contingencies is included in the quantities, and the contract balance has been considerably delayed beyond the usual three months after completion of work, as stipulated, is not the architect justified in making an allowance to the builder out of the sum for contingencies for inconvenience and loss of interest?"

The architect has no power either to delay the issue of his certificate, or to issue it for a larger sum than the balance actually due. If the architect delays issue of certificate for the cause stated he becomes liable to the contractor for damages. The contractor should, by being given the certificate, be put in a position to exact payment when it is due.

G. A. T. M.

Excluding Surface Water from Wells.

BILDESTON, SUFFOLK.—J. H. C. writes: "Can you supply me with the address of a firm that supplies iron or steel cylinders suitable for lining a well in order to keep out surface water? Which is the cheapest way to keep out surface water from a well that is dug into the chalk? The chalk is about 20ft. from the surface, and just above it is a bed of stone and sand mixed, which is full of surface water; this contaminates the water from the chalk below."

Cast-iron cylinders for wells may be obtained from the Stanton Ironworks Company, Limited, near Nottingham, whilst both cast and wrought iron lining tubes are manufactured by Messrs. Pearsons and Knowles Iron Company, Limited, Warrington. An economical method of excluding surface water from shallow wells of small diameter is to line them with rock concrete tubes, and fill in behind with a thick backing of well-puddled clay, thoroughly rammed. The rock concrete tubes are made by Messrs. Sharp, Jones and Co., Parkstone, Dorset. They are obtained in 2ft. to 3ft. lengths, and when fixed should be well bedded and jointed in neat Portland cement.

T. E. C.

Cess Pools.

WIMBANE.—E. T. B. writes: "Is it desirable for a cesspool for a private house in a small town to have a fresh-air inlet with mica flap head, as well as an outlet shaft, which is carried up above the eaves? I may say that the cesspool is close to the house (within 30ft.), and cannot be placed further away. The surveyor to the authority insists on a fresh-air inlet being provided. In theory the inlet may be perfect, but in actual practice I have noticed many times that it acts as an outlet; especially is this the case on a hot summer day, when there is not sufficient movement in the air to cause a draught. The mica flap is by no means a perfect valve and is generally missing from the inlet head. Is not the 4in. outlet shaft quite sufficient to carry off any gas that may generate in the cesspool? Of course the drains are disconnected from the cesspool and have a system of inlet and outlet ventilators."

It is very desirable that cesspools should be provided with a low-level fresh-air inlet in addition to a high-level foul-air extraction shaft. When the cesspool is situated at some considerable distance from inhabited buildings the fresh-air inlet may take the form of a surface grating or ventilating manhole cover. In cases such as that referred to in the query the fresh-air inlet should be fitted with a good form of mica flap-valve as a safeguard against reverse currents of air. An outlet shaft in itself is not sufficient to properly ventilate a cesspool.

T. E. C.

At Northumberland Heath, Erith, an infants' school is about to be erected from designs by Messrs. Ford, Son and Burrows, architects, of London, E.C.

"BUILDERS' JOURNAL" SHILLING FUND.

THE FINAL LIST.

WITH the list published below we close our subscription list to the BUILDERS' JOURNAL Shilling Fund, which is our readers' contribution to the Building Trades' Gift to the Nation. It will be remembered that a few weeks ago we announced our intention of closing the fund, and appealed to our readers to send in the small amount then required to make up 3,000 shillings. We are glad to say that not only the required amount but more than 600 shillings in addition have now been contributed, so that we are able to send to the treasurer of the Building Trades' Gift a cheque for £180 9s. 6d. (3,609½ shillings).

In view of the very heavy expense involved in not merely relieving a temporary distress, but providing permanent homes for many generations of soldiers who may be in need of such help, the sum mentioned is perhaps but a comparatively small contribution. But when it is remembered that the bulk of the amount is made up of very small sums which in all probability would—but for our fund—not have been contributed at all, we cannot but regard the result as eminently satisfactory, and it only remains for us to thank those of our readers who have responded to our appeals on behalf of our wounded soldiers, and especially those who have devoted some personal service to the good cause by collecting subscriptions from their employees, friends or fellow-workmen.

	Shillings.
Previously acknowledged...	3,499½
Per H. McClure Anderson, Rose- neath Terrace, Edinburgh:—	
R. Hamilton Paterson, architect	5
W. C. H. Connell	2½
T. D. Rhind, A.R.I.B.A.	3
C. Macnair	2½
J. H. Cuthbert	1
J. O. Anderson	1
J. G. Hardie	1
H. McClure Anderson	6
	22
Per W. A. Warwick, Lorn Street, Birkenhead (Third Contribu- tion):—	
W. A. W.	3½
— Taylor...	1
F. T.	1
	5½
Per J. Peter, Cleveland Road, Islington, N.:—	
F. Morgan	1
J. Peter	5
	6
P. Lane	1
W. Wells	1
S. H. J. Murch, Loughton, Essex	2½
T. H. Gamble, Bradford	5
Rodborough, Stroud, Glos.	2
Per T. Noller, foreman of works, Felixstowe; collected from employees of Fred Bennett, contractor, New Street, Ipswich (Second Contribu- tion):—	
W. O. Bennett	2
Charles A. Green	2
Thomas Brett	1
Thomas Bunn	1
— Meachin	1
— Gelding	1
— Rodwell	1
— Manners	1
— Mitchel	1
— Finch	1
— Turrell	1
— Shelley	1
— Mitchel	1
— Boyd	1
— Barker	1
— Hines	1
— Ward	1
— Harvey	1
— Woodruffe	1
— Hines, jun.	1

— Burgess	1
— Hovells	1
— Shiplee	1
— Allen	1
— Baldry	1
— Mobbs	1
— Beavers	1
— Sykes	1
— Payford	1
— Alpe	1
— Aldred	1
— Prettyman	1
— Lambert	1
— Cook	1
— Talbot	1
— Houghton	1
— Howe	1
— Woodgate	1
— Newrick	1
— Rodwell	1
— Bridges	1
— Merrick	1
— Leech	1
— Dawkins	1
— Gilbert	1
— Kemp	1
— Shawe	1
— Reeve	1
— Daniels	1
— Chapman	1
— Drew	1
— Duffield	1
— Harper	1
— Chapman	1
— Willgress	1
— Whitmore	1
— Leng	1
— Lockwood	1
— Nelson	1
— Smith	1
— Snazell	1
— Potter	1

Per E. G. Fletcher, Prince Regent Street, Stockton-on-Tees:—	
P. P. R.	1
W. F.	1
Found in Hyde Park	1
N. F.	1
E. G. F.	6
	10
Per R. H. Tribble, Disbury Villas, Percival Road, Enfield Town (Second contribution):—	
R. H. Tribble	1
A. H. Butcher	1
P. Watts	1
S. Davies	1
C. Leakes	1
C. Lucas	1
C. Hamilton	1
C. Hall	1
J. Smith	1
E. Butler	1
	7
G. E., Northampton	1
Per John W. Harrison, 2, Ashley Street, Rock Ferry, Cheshire (6th contribution):—	
F. N. Davies	2
Tom	2
J. W. H.	1
	5
A. J. Whitbread	1
Total	3,609½

A new Baptist Chapel at Oldham has been built from designs by Messrs. Winder and Taylor, architects, at a cost of £5,000. It is situated in Chamber Road, and accommodates 470 worshippers. Messrs. J. and D. Blunn were the contractors.

New Bells for Beverley.—A new peal of ten bells has been hung in the tower of St. Mary's Church, Beverley. They come from the foundry of Messrs. Taylor, of Loughborough, and have a total weight of 142cwt. 20lbs. The fittings comprise all the firm's latest improvements, the frames being in massive H-shaped castings, standing upon and bolted to stout steel girders. The total cost will be about £1,600, which includes the value of the old bells, about £400.

PEKIN AND ITS BUILDINGS.

AT the present time attention is being drawn from the War that is concluding to China and the operations in progress around its capital. In the four cities which make up Peking—the Chinese, the Tartar, the Imperial, and the Forbidden—live most of the leading and opulent class, and, therefore, the houses are of a more important and solid appearance than is the rule elsewhere. High brick walls, with a single stone entrance, surround a multitude of courts, flanked by tile-roofed dwelling rooms. It is a curious and universal custom among the Chinese to put up immediately facing the outer door a stone or brick screen, bearing tablets or painted scrolls inscribed with the names of ancestors or with classical texts. The object, according to time-honoured superstition, is to ward off evil spirits. There is no attempt at ostentation, or even of decent comfort, about the dwelling-places. Within they are mere ramshackle bungalows, with stone-flagged floors and paper windows, fantastically cut up by wooden partitions, and papered without taste or cleanliness. The furniture is of polished wood made in the stiff, square style that is not unfamiliar, and ornaments are few, and of the commonest foreign make. A Chinese window is a quaint subterfuge for obscuring the light of day. It is an intricate pattern of woodwork in straight lines, with pieces of glass stuck on the surface, and filled up with strong, yellowish paper. The tiles used for roofing are rounded and well made, of various colours—yellow for the Emperor, green for the gods, blue and red for the rest—the ends are capped with a flat, embossed circle, and crested with mythical animals and horned heads. Within the Chinese city is a vast open space, the two great enclosures of which are green with trees and dedicated respectively on the north and south to the Temple of Agriculture and the Temple of Heaven. Beyond the area of temples a random aggregation of wooden shops leads up to one of the principal gates, pierced in the Tartar wall, the second and famous wall of Peking. In all, this wall is twelve miles round, flanked by protruding bastions and solidly faced with broad baked bricks, the 20ft. of space between the sides being filled with mud. A great difference exists between the Imperial capital and the provincial cities, in that the main streets of Peking are of adequate width, although stalls have been set up between the frontage and the roadway on each side. The buildings are rarely two storeys high; most of them have a flat roof, protected by a carved wooden parapet. A certain amount of fantastic carving in wood is used for external decoration, and on the wooden doors of the houses are painted the figures of Chinese gods and heroes. The infancy of the paving and road-making of Peking has passed into a proverb. Originally, the stone-flagged pass-ways that lead from the Chinese to the Tartar Wall, and to and from the several gates, must have been grand achievements, made up as they are of substantial blocks of limestone, clamped with iron bolts, but nobody has ever troubled to keep them in the slightest semblance of repair, although a large sum of money is annually paid over to the officials for the purpose. The consequence is that they are now broken up by deep ruts and cavities; moreover they are made up and repaired with the contents of the drains and cesspools. In order to keep the dust within the bounds of respiration, the roads are plentifully watered with the liquid contents of the sewers, ladled out at every hour of the day in enormous wooden spoons. Curiously enough an electric tramway now runs from the railway station for a couple of miles to the gate of the Chinese city; but in the Forbidden City, which contains the Imperial palaces, no ordinary foreigner ever sets foot. The thought comes in the present crisis: What a change from eastern to western methods would be effected if the break up of China became something more than a creation of journalists whose stock of sensational news was running rather low!

Bricks and Mortar.

APHORISM FOR THE WEEK.

<i>Nobles, discretos varones</i>	<i>Ye honourable, and wise men</i>
<i>Que gobernais à Toledo,</i>	<i>Who rule Toledo,</i>
<i>En aquestos escalones</i>	<i>On these stairs</i>
<i>De sechad las aficiones,</i>	<i>Relinquish all (your) prejudices,</i>
<i>Codicia, temor y miedo.</i>	<i>Avarice, frailty and fear.</i>
<i>Por los comunes pro- vechos</i>	<i>For the public good</i>
<i>Desechad los particu- lares.</i>	<i>Relinquish your pri- vate interests.</i>
<i>Pues vos fizo Dios pilares</i>	<i>Then shall God make you the pillars</i>
<i>De tan requisimos techos.</i>	<i>Of this splendid palace.</i>
<i>Estad firmes y dere- chos.</i>	<i>Stand always firm and upright.</i>

(An inscription on the entrance stairs to the Town Hall of Toledo.)

Our Inset Sheets.

THE new schools at Whitwick, Leicestershire, will accommodate 250 infants, and were designed by Mr. J. P. Cooper, of London, W. The building consists of a big schoolroom, three classrooms and a cloakroom, and is divided by a passage, with a lobby at each end, which runs through to the playground at the back. —The four houses on the Embankment at Cheyne Walk belong to a group in the space between Old Chelsea Church and Danvers Street. No. 72 and 73 is a composite house, and is constructed with sculptor's studio at back and mezzanine floor, and a painter's studio above. It has been sought to give a colour effect with grey stocks, rough cast in parts, and a high-pitch green slate roof. In No. 74 is an elaborate hammered coppered door. The internal arrangement of this house is also different from what is customary, as the whole of the ground floor is given up to a large room, the kitchen being on the second floor. Mr. C. R. Ashbee, M.A., of Chelsea, is the architect. —The pair of cottages by Mr. George W. Webb, F.R.I.B.A., of Reading, have recently been erected on "The Island," about two miles from Romsey, Hants, for the Rev. C. W. H. Kenrick. The walls are hollow to first floor, and the bricks used for facings are old deep-red ones selected from some old buildings which were pulled down. The upper parts of the walls are covered with ornamental tiles of a deep-red colour nailed to joints of brick-work. The roof is covered with dark-red tiles. Messrs. Roles and Son, builders, Romsey, have carried out the work. —The house at Wellington College, Berks, has recently been erected for Mr. H. W. Brougham, one of the masters at the College. The materials are dark-red facing bricks up to first floor and rough cast above. The roof is covered with dark-red tiles. The builder was Mr. J. B. Seward, of Wokingham, and the architect Mr. G. W. Webb, F.R.I.B.A., of Market Place Chambers, Reading, and Wokingham.

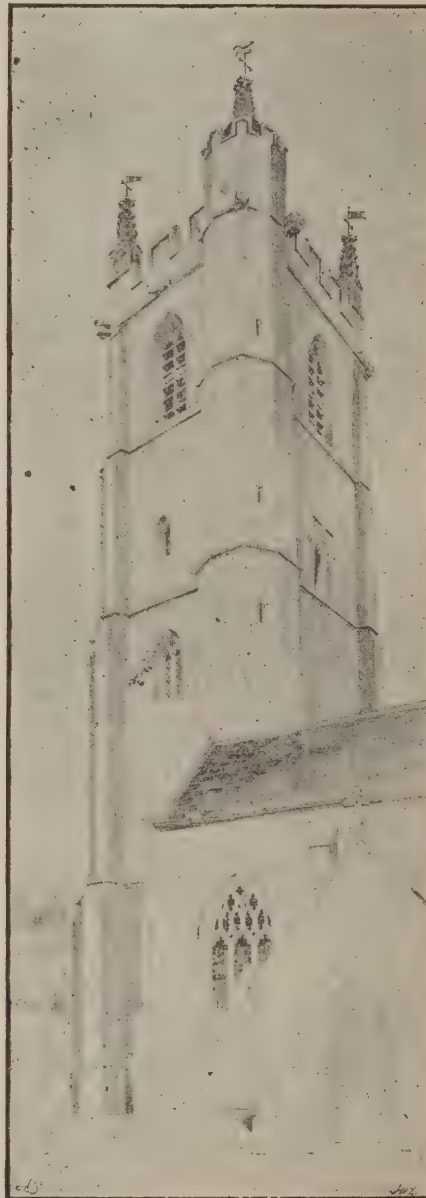
Over- crowding in Bombay.

It appears that the authorities at Bombay have a difficult problem to solve in the matter of housing their poor. A large portion of the population, many of whom never paid any house rent in their lives until they came to the city, consider that any rent at all is too much, and they live actually in the streets throughout the fair season. During the rains they will grudgingly pay one-thirtieth of their wage for the eighth part of a floor 10ft. square, and this custom has received no check from the authorities. As these people sleep by preference with door and shutters closed during the rains, the foulness of their unventilated rooms defies all description. Such tenants are not particular about their surroundings. They never clamour about paint and varnish, window glasses, or drains. As long as there is a door or a window from which to throw any and every kind of refuse they seem content, for they

have brought the cost of house rent down to something very near the irreducible minimum. This class furnishes a large proportion of the domestic servants. Living in an overcrowded city seems to have a degrading and demoralising influence in India, as elsewhere, and much of this degradation is plainly due to the complete irresponsibility of the Bombay house-proprietor, who up to the present time has enjoyed an immunity from control that it would be hard to find in any other part of the British dominions.

The Old Method.

IN the good old times, when an Indian city became absolutely rotten with saturated filth of every kind, when the wells were poisoned with the cesspools, and disregard of



TOWER OF ST. DIONYSIUS' CHURCH, BRADNINCH, DEVON. DRAWN BY JAMES M'LACHLAN.

the most elementary sanitation ran up the death-rate to awful percentages, it was the fashion to abandon the city, and build a new one at a sufficient distance to be out of reach of the influences that had wrought such havoc among the people. A new town was built, and the old ways of life were pursued as before, repeating former experiences in a way that, at least, may be called consistent. The time is approaching slowly but surely when Bombay must either cross the harbour or strike sternly at the "national customs" of filth, disorder, and greed that have brought the city to its present deplorable condition. From recent telegrams it appears that the

work of improvement and re-building has already begun. New erections are springing up everywhere, and it is stated that never before has there been such a boom in the building trade. Private enterprise is effecting the change, but the Bombay Improvement Trust have schemes in hand which will cost about four million pounds sterling. Within the next few years it is probable that about £7,000,000 will be spent in the re-modelling of Bombay.

St. Dionysius' Church, Devon. The drawing of the tower and porch of this building on this page is by Mr. James M'Lachlan, of Edinburgh, and is one of a set which gained the Pugin Studentship prize for 1900 given by the Royal Institute of British Architects. Other drawings by Mr. M'Lachlan have appeared in our issues for February 7th and April 25th last.

Wood- working Machines.

WE have already referred in previous issues to the excellent series of articles on "American Engineering Competition" now appearing in the columns of "The Times" newspaper. In the first part of the article on machine tools, which was printed on Tuesday in last week, the author says that the two most interesting mechanical features he saw at a large wood-working shop were the band saws for breaking down logs and a new fixed-knife planer. The usual method of cutting up timber in this country is by the gang saw, which may be described as a number of pit saws placed side by side in a frame and worked up and down by an engine. The band saw consists of a flexible, serrated steel strip, the two ends of which are brazed together to make a continuous band. This runs over two flat-rimmed wheels, or pulleys, mounted in a suitable frame. The speed is very high and the direction of motion is continuous, not reciprocating, as in the gang saw. For these reasons a very thin saw may be used, and naturally there is a narrow saw cut, so that less timber is wasted and much thinner boards can be produced. It is but fair to English engineering to say that a firm of manufacturers of wood-working machinery in London have also taken up the introduction of the band saw for heavy work.

Manual Dexterity and Brain Power.

THE author says that the great army of skilled mechanics in America "are considered a tower of industrial strength, but perhaps they may also prove a source of weakness; and here it may be pointed out that great manual dexterity by no means indicates a high state of civilisation, but perhaps rather the reverse. The ivory carvings of China, and even the flint implements of pre-historic man, are instances in point. Before planing machines, milling machines, and emery grinders were invented the mechanics who chipped surfaces with the chisel, and filed them smooth by hand, possessed a manual dexterity that seems to be fast disappearing. Rude as many of the early steam engines are to our eyes, it is doubtful whether they could be produced now with the appliances then in use. Any lad fresh from school can learn to attend a milling machine in a few hours, and will produce a surface that could hardly be excelled by a man with hand tools who had spent half a lifetime in acquiring manual dexterity.

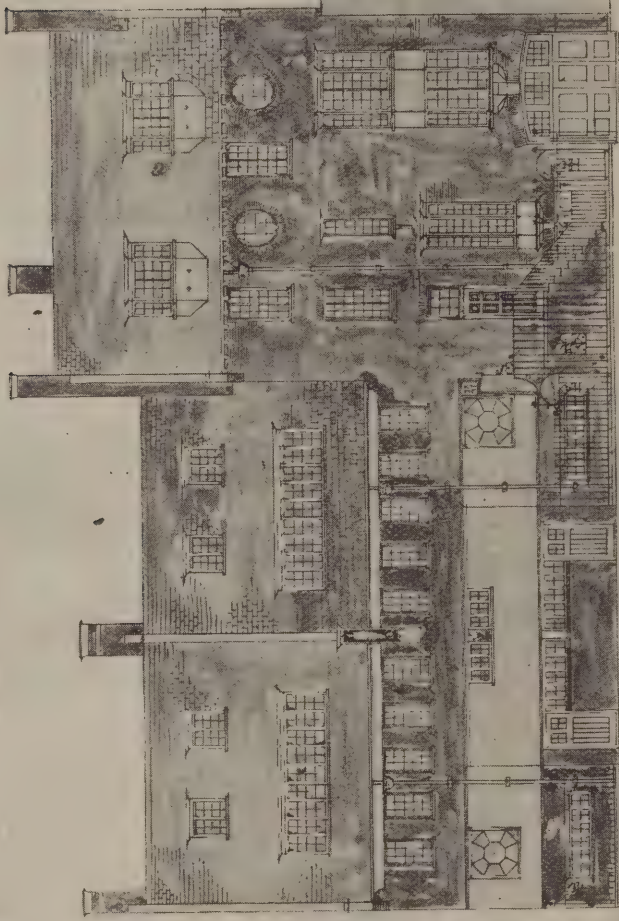
What is Demanded.

"A GREAT many English artisans who go out to the United States find the first thing they have to do is to forget they are skilled mechanics. Some refuse to learn the lesson, and they either go to the wall or go home again. The majority, however, conform to the situation, and mould themselves to the new conditions in a manner they would never do in England. The man who has the sense to do this will generally rise, and then his wider knowledge stands him in good stead. His early training has been in shops where specialisation is not carried to the extent it

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HOUSES ON CHEYNE WALK.
 CHELSEA EMBANKMENT.



DANVERS STREET.

NO. 71 & 70.
 TO BE PULLED-DOWN.

MR. ROLLIN'S
 JUNE 1872.

MR. WALTERS' HOUSE
 8/17/18. NO. 73.

NO. 74.

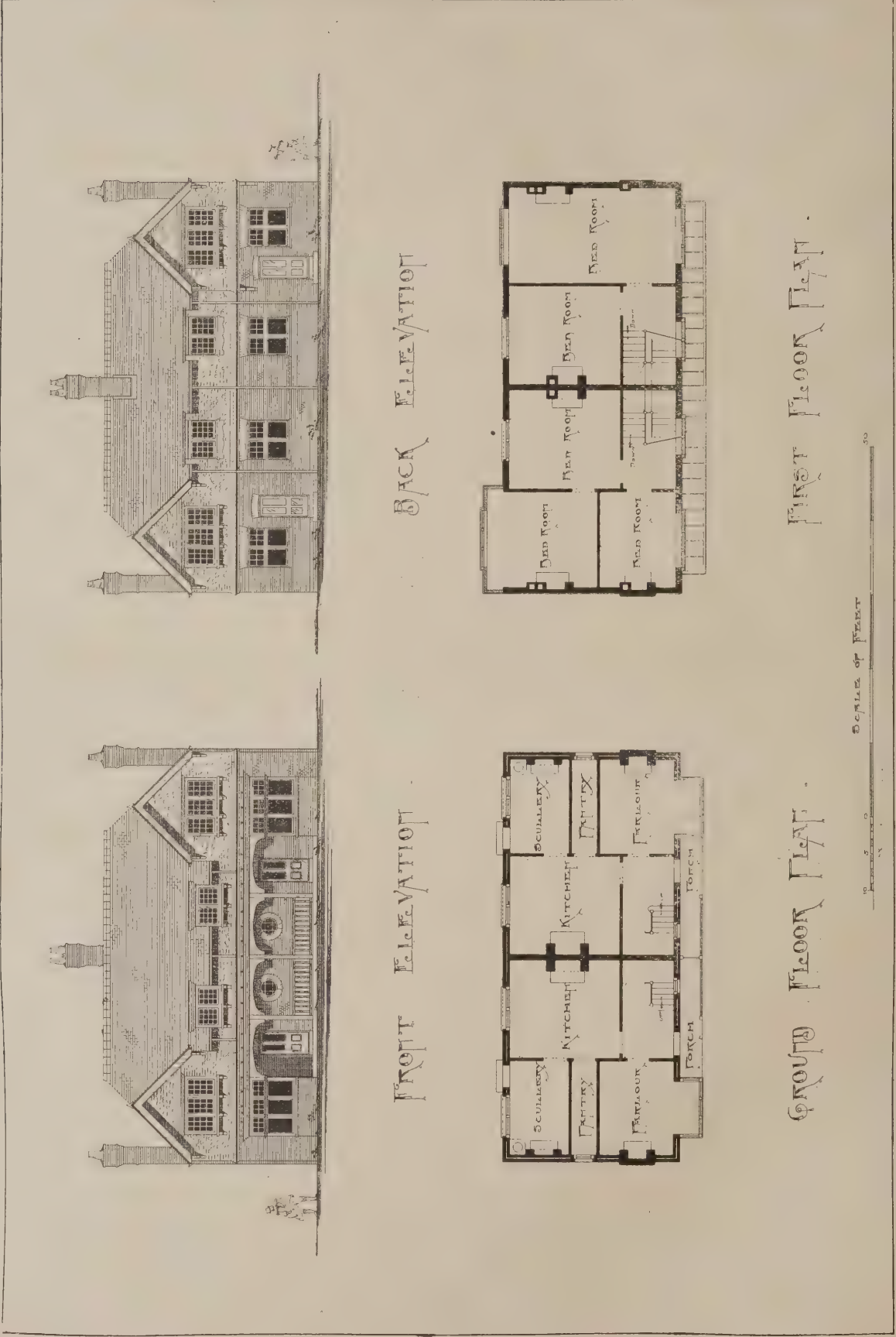
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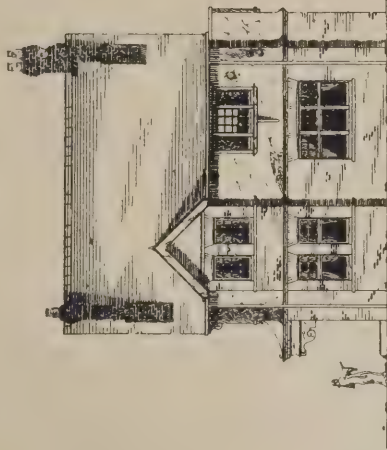
GRASHBEE WAS ARCHITECT.
 MACPHEE & STAMP-HOUSE
 37 CHEYNE WALK
 CHELSEA LONDON. S.W.

HOUSES ON CHEYNE WALK, CHELSEA EMBANKMENT, S.W. C. R. ASHBEE, M.A., ARCHITECT.

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PAIR OF COTTAGES, "THE ISLAND," ROMSEY. GEORGE W. WEBB, F.R.I.B.A., ARCHITECT.



ELEVATION TO ROAD



ELEVATION TO DRIVE



GROUND FLOOR PLAN



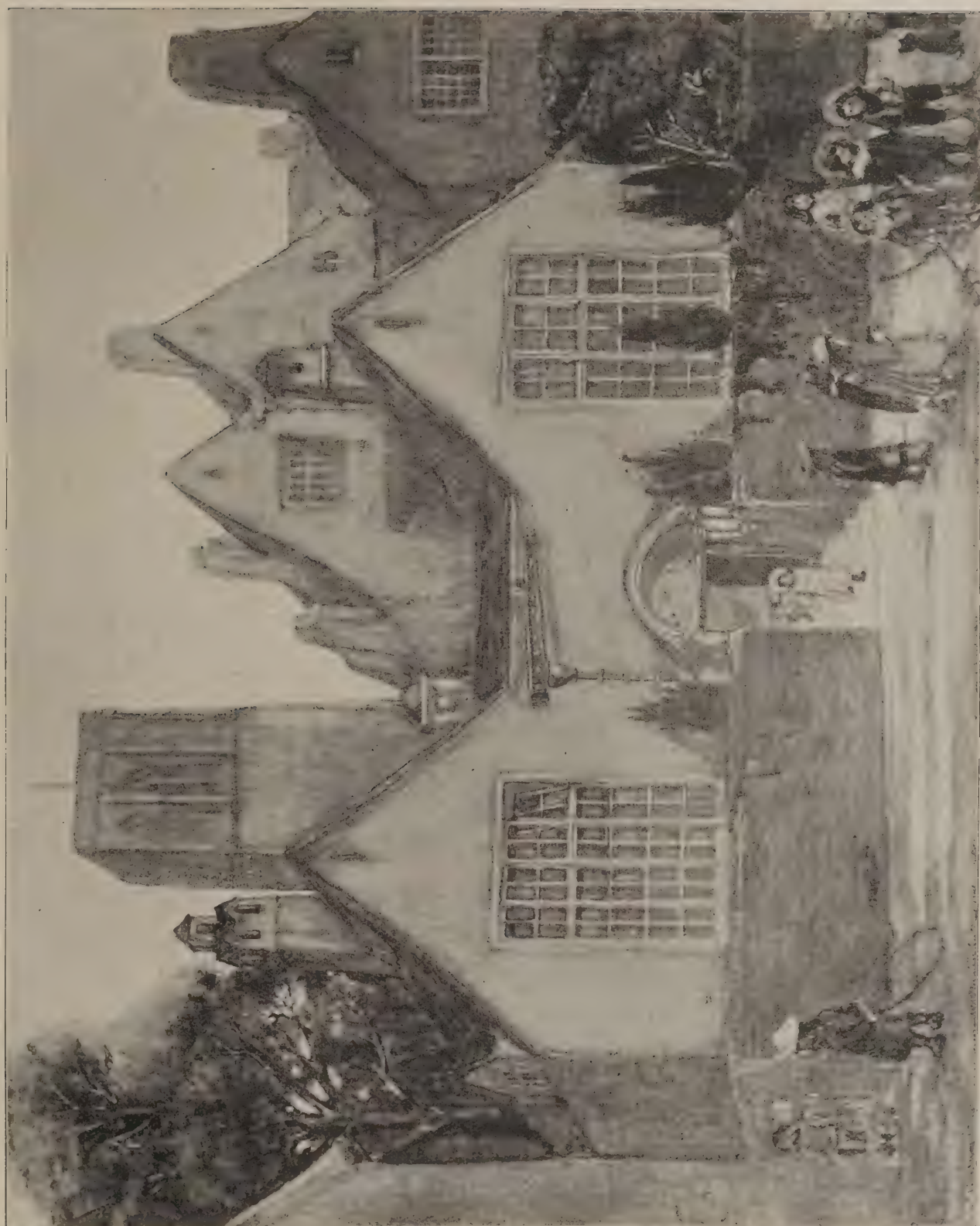
FIRST FLOOR PLAN

SCALE OF FEET

0 5 10

Geo W Webb M.A.
ARCHITECT
READING

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INFANT'S SCHOOLS, WHITWICK, LEICESTERSHIRE. J. P. COOPER, ARCHITECT.

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is in America. He is not a mere machine-minder, and so it often comes about that he is chosen as foreman, because his more comprehensive knowledge enables him to exercise jurisdiction over a wider field. On the other hand, I have found the majority of the most highly-skilled mechanics in America, such as are employed in the tool rooms, to be Americans native born, or at any rate educated in America. The reason for this it is difficult to give, but probably that superior education—to use the word in its widest sense—of the American workman enables him to think more closely, and to study how best to develop manual dexterity; for, after all, what we call manual dexterity is largely a matter of brain power."

An Old Roman Gateway.

FOR some time past excavations have been going on at Gelligaer, not far from Cardiff, on the site of a Roman camp,

under the auspices of the archaeological section of the Cardiff Naturalists' Society, of which Mr. G. E. Halliday, F.R.I.B.A., is the secretary. At the present time the whole of the efforts of the excavators is concentrated upon the middle of the south-western rampart. Inequalities in the surface of the soil pointed to the fact that there was a gateway here, and subsequent excavations have laid bare the foundations of a big double portal, through which ten Roman warriors might have marched abreast. It is a portal double the size of that which was laid bare on the north-western side, and one far larger than any that has yet been excavated in the west of England or Wales. The recently excavated gateway had two portals or passages, each of which was arched, whereas that which was unearthed last autumn on the north-west side of the camp had but one portal. At each end of the gate-way is a guard-room, about 8ft. 6in. by 10ft., the walls of which are between 2ft. and 3ft. thick. The excavations were carried down about 3ft. or 4ft., until the original ground level was reached. Work was continued then across the old entrance, and the long stone slab which formed the sill, and which projected 6in. above the roadway, was found, the grooves caused by the passing of the chariot wheels over the stone being clearly defined. There is every hope that many more discoveries will be made on the site of this old camp.

Technical Education in London.

FOUR institutions are now under the direct control of the Technical Education Board of the London County Council—the Central School of Arts and Crafts in

Regent Street, the School of Photo-engraving and Lithography in Bolt Court, the Camberwell School of Arts and Crafts in Peckham Road, and the Shoreditch Technical Institute in Pitfield Street, Hoxton. The last was opened by the Board last October in buildings formerly occupied by the Haberdashers' Schools. Extensive alterations have been made, new workshops erected, and a series of trade classes established, mainly for persons engaged in the furniture and cabinet trades. The organisation which the Council has established as the local authority for technical education under clause 7 of the Science and Art Directory has now been joined by fifty-three institutions, and the working of the clause has assisted the Board in coming into closer touch with the work of the various institutions. Steps have been taken during the past year for the co-ordination of the evening classes conducted by the Technical Education Board and the School Board for London, and certain proposals for carrying out this object have been adopted by both bodies. The establishment of the New University of London is likely to have an important bearing on the future work, especially as regards that carried on under the new faculties of engineering and economics. The Board has voted £2,500 a year towards the support of each of these faculties, and its total grants to university institutions now amount to £10,000 a year. The Council has voted the sum of £180,000 for the purposes of technical education during the coming year.

New Art Society.

AN art poster society is being formed and a committee has been selected, including Mr. Robert Sauber, Mr. Cecil Aldin, Mr. Tom Browne, and Mr. W. S. Rogers, with Mr. Austin Fryers as secretary, to arrange working details. One of the qualifications for membership of this society is that candidates should have published three posters at least. As poster designing has of late become a very widely-recognised form of professional work, and has acquired a standing among the arts that is certainly far from unimportant, such a society has many possibilities. Its exhibitions ought to be extremely interesting; and, if they are managed in the right spirit, they may well be expected to encourage the originality and enterprise of clever designers.

Charing Cross Hospital.

WORKS for the enlargement and improvement of Charing Cross Hospital have been commenced, the designs being those of Mr. A. Saxon Snell, F.R.I.B.A. When the building, the cost of which will exceed £80,000, is completed, it will join the Royal Westminster Ophthalmic Hospital in King William Street and Chandos Street. Most of the leases of the intervening property have fallen in, and the General Court is now treating for the surrender of the remainder. A new sanitary tower and a new kitchen are now in course of erection, and a building of considerable interest is being demolished. This is the old Charing Cross Theatre, in King William Street, which was built about seventy years ago. From 1848 to 1856 it was used as a chapel and residence by the Fathers of the London Oratory of Saint Philip Neri, before their removal to the Brompton Oratory. Here, too, in 1850, Cardinal Newman delivered his celebrated lectures on "Anglican Difficulties." Afterwards it became the Folly Theatre, under the management of Mr. John S. Clarke. In November, 1880, Mr. J. L. Toole took over the management of the theatre, which he reconstructed and renamed, calling it Toole's Theatre. Of the sum required to carry out the hospital structural improvement the Council have in hand or promised £25,000. The architectural features of the new wing will harmonise generally with the creation of Decimus Burton, which was erected in 1831.

Italian Restorations.

CONTINUING the discussion about the restoration of the church of Santa Maria della Spina at Pisa (see page 330 of last week's issue, and page 234 of our issue for May 2nd), Mr. Charles L. Eastlake, in the "Times" newspaper for June 2nd, says: "I have before me a carefully measured elevation of the facade and detailed sketches of this church, which I made in 1858, and I can only say that the attention with which the profiles of the mouldings and character of the carved work have been preserved, and where necessary reproduced, in the restoration, is highly commendable. Mr. Ruskin's name is dear to all lovers of art, but it is generally admitted that his enthusiasm often tempted him into hyperbole, and that in accentuating his theories he sometimes sacrificed accuracy to rhetoric. His description—quoted by Mr. Cockerell—of the destruction of a cross by a workman during the restoration of Santa Maria della Spina would be pathetic if we were assured that the cross in question formed part of the original design. But I happen to have a well-preserved photograph of the building, taken many years before Mr. Ruskin wrote his declamation, and neither in the photograph nor in my notes can I find any trace of such a feature. If, therefore, a stone cross were really destroyed on the occasion referred to, is it not probable that it was a bit of late and temporary *rifacimento*, properly discarded when the work of restoration was undertaken by competent hands. In my 'History of the Gothic Revival' and elsewhere I have protested as strongly as anyone against the practice of injudicious 'restoration.' But when, as in the present case, an interesting old struc-

ture is preserved from certain ruin (for the water of the Arno was sapping the foundations of the church) by necessary and, as I think, careful repair, it seems to me unreasonable to complain."

Mr. Cockerell's Reply.

MR. COCKERELL replies as follows: "I can only say that the church of Santa Maria della Spina at Pisa has all the appearance of a new building, and that a well-known architect told me the other day that the exterior was on this account so painful to him that he had not had the heart to go inside. The accuracy of the renewed mouldings is not questioned, any more than those of many another building of which the beauty has passed into nothingness at the hands of the restorer. In such cases the more skilful the forgery the more lamentable is the result, as the difficulty of disentangling the authentic portions of the building is increased. In a memorable passage of the 'Seven Lamps of Architecture,' written more than fifty years ago, Ruskin asserted this principle once for all. In a less known essay of the same period (1849) he says: 'Care and observance, more mischievous in their misdirection than indifference or scorn, have in many places given the mediæval relics the aspect and associations of a kind of cabinet preservation, instead of that air of majestic independence, or patient and stern endurance, with which they frowned down the insult of the regardless crowd. Nominal restoration has done tenfold worse, and has hopelessly destroyed what time, and storm, and anarchy, and impiety had spared.' These words seem peculiarly applicable to the church of Santa Maria della Spina, as it now confronts us on the quay."

Two Old Churches.

AMONG the exhibits at this year's Academy are some drawings of two famous Lincolnshire churches—St. Edith's, Anwick, and South John the Baptist's, South Witham. The first named is well known to archaeologists and architects as a fine example of the Decorated style. The tower and spire are regarded as especially beautiful, and have been much copied with more or less success. Though mainly of the Decorated period, the north side of the nave has Early English features. Marks on the interior of the tower show that the church has had at various times three roofs at different heights. The chancel has been much mutilated from time to time, and a great deal of carved work belonging to it has been found buried. It is now being restored to its original state and length. The church at Witham is principally noteworthy for the varied character of its architecture—Norman, Early English, Decorated, and Perpendicular being all represented. Another noticeable feature is the tapering of the north and south aisles from west to east. Here, too, the chancel had been badly treated, and was practically ruined, so that it has to be rebuilt. There are some fine windows in the transepts.

Brief, but to the Point.

THE zeal of the descriptive writers about the French Exhibition is showing signs of flagging, but before it ceases altogether it may be well to draw attention to the following critique on the different art styles, written by a foreigner who has certainly the rare quality of crispness: "The fresh and childish totterings of Norway and Sweden, the solemn and processional tread of Germany, the hot-headed and bold-handed dash of Russia, the Gothic modernity of Greece and Italy, and the intensely European civilisation of America positively pluck one by the sleeve and seem to beg for nicknames. The Croatia and Slavonian rooms are the most remarkable for steady and noble epic style—fine subjects and full academic study. Denmark has some stirring touches of genius, and Spain the freest handling of the brush and of dramatic opportunity. But, on the whole, the English rooms have the best groomed canvases, well-bred, well-fed, and sleek-coated."

Babylonian Treasures. THE new Babylonian and Assyrian Room at the British Museum contains, if not the largest, certainly the most representative collection to be found in any museum in the world. In one case are a number of circular documents giving the cadastral surveys of estates on which the Imperial revenue was based. These surveys were necessary owing to the boundaries of land being frequently disturbed by the inundations of the Euphrates. The wonder about the tablets, which date from 2,300 B.C., is their astonishing preservation, many of them looking quite new. In the wall cases are an excellent collection of inscribed bricks belonging to the later Nebuchadnezzar's (II.) reign. There is also a brick bearing the names and titles of Nabonidus (the father of Belshazzar); and on this there is a distinct impression of a human foot, manifestly made on it when the clay was moist. Many of these bricks have still adhering to them the bitumen with which they were cemented. There are also a number of bricks which bear the names and titles of the Elamite kings who reigned at Shushan. This newly-opened Babylonian Room has not only been carefully arranged but is also accompanied by an excellent catalogue and guide, a work reflecting great credit on Dr. Budge, the curator of the department, and his assistant, Mr. King.

On Ruskin. MR. R. WARWICK BOND, M.A., lectured last Tuesday week at the Royal Institution on "Ruskin, the Servant of Art." He began with some general observations on Art and the function of the critic, describing the latter as being to announce to the world the practical principles gathered from artists, and to artists the limitations necessary to their usefulness and preservation, thus correcting the suicidal usurpation of technique. The critic's function was the result of modern estrangement between Art and general life. Ruskin's philosophy, his insistence on the didactic and useful function of Art, and its relation to religion, was next dealt with by the lecturer. Then, after a reference to Ruskin's claim for the necessity of, first, faculty, and, secondly, hard work, his dislike for conventionality, and demand for truth of representation, Mr. Bond spoke of his criticism of early Italian painters and of Turner. Though in Turner he was inclined to magnify his office as patron and discoverer, still Ruskin was no wholesale admirer and was ready to recognise faults in the works of Turner. A brief reference was then made to Ruskin's claims for Gothic over Greek architecture, his wilful preference for Venetian over northern Gothic, and his disregard for modern conditions governing architecture. Ruskin's unreliability was spoken of. Coming to Ruskin's literary faculty, the lecturer attributed it to the effect of hearing his father read aloud both prose and poetry and to his early habit of recording his impressions in a diary. It was not that he wrote prose and poetry that was remarkable so much as that he so early and so decisively abandoned the writing of verse. Ruskin's prose, if it did not exhibit what Ruskin himself had noted as the "Pathetic Fallacy," contained in a still higher degree the recognition of God in Nature, and so carried forward the naturalistic movement of Wordsworth, Shelley, and others.

At St. Andrew's Church, Letheringsett, Norfolk, an elaborately-carved alabaster reredos has been erected.

London's New Street: The Work Begun.—The pulling down of the Holywell Street block as part of the Strand widening has diverted public attention from the beginnings of the greater scheme to carry a new thoroughfare through to Holborn. The work of carving a way through the mass of brickwork behind the north side of the Strand has already commenced, the first demolition having taken place in the neighbourhood of Clare Market. It is calculated that it will be quite three years before all the necessary clearances are effected.

Surveying and Sanitary Notes.

Mr. W. Champion, borough surveyor of Southmolton, has been appointed surveyor and sanitary inspector for Northam at a salary of £120 per year.

New Pleasure Grounds at Bourne-mouth have been opened. They have been presented by Mr. Robert B. C. Scarlett, and cover nearly four acres on the cliff front.

Gift of a Park.—Mr. John Christie, of Gallangad, has given a piece of ground of fourteen acres extent to be laid out as a public park for the residents in the Vale of Leven district, Dumbartonshire. It is at present known as Notman's Park, and between £6,000 and £8,000 will be needed to effect the necessary alterations.

New Recreation Ground for Worthing.—The Worthing Town Council have agreed to purchase about eight acres of land at £650 an acre for the purpose of a recreation ground in the north-west part of the town. Including the cost of fencing and the levelling and laying-out of the ground, this will mean a capital outlay of about £6,600.

A Wise Direction.—The city engineer of Liverpool (Mr. J. A. Brodie) has been granted municipal authority to prepare a list of streets which bear duplicate names, together with suggestions for renaming these. It is suggested that Mr. Brodie might go further and persuade the Health Committee to take away the double designation of such short thoroughfares as Elliot Street, and Parker Street, Hardman Street, and Leese Street, Liverpool.

Surveyors' Benevolent Fund.—The annual report of the Surveyors' Institution states that £6,791 3s. have now been received and promised towards initiating a benevolent fund in connection with the institution. Mr. Robert Vigers presented £500 as the nucleus. The Committee, after the most careful consideration, have decided to make an application to the Board of Trade for the incorporation of the fund under the Companies' Acts, with the style and title of the Incorporated Benevolent Fund of the Surveyors' Institution.

New Public Garden at Blackfriars.—The old and somewhat neglected churchyard of Christchurch, Blackfriars, which has been transformed into a charming public garden by the Metropolitan Public Gardens Association, is to be formally opened to-day. The ground has been laid out by the Association's lady gardeners, and will be maintained at the cost of the St. Saviour's District Board of Works. In addition to the Collingwood Street and Bennett Street entrances to the transformed ground, there will be a new one from the Blackfriars Road.

Monmouthshire Main Drainage.—At a recent meeting of the Newport and District Association of Civil Engineers, Architects and Surveyors, Mr. William Tanner, Monmouthshire County Surveyor, read a paper on a main drainage scheme for the county, in the course of which he said that the length of sewer from the tops of the Valleys to the sea wall was 32 miles 338 yds., the estimated cost being £149,421. In addition, there was the outfall, which was intended to be 1,407 yds. in length, carried to low-water mark, and estimated at £12,000; making a total of £161,421.

Sewage Works: Sunderland's Little Joke.—Some comical scenes have been witnessed at Sunderland. The neighbouring township of Fulwell having a legal right to connect their drainage system with that of Sunderland, attempted to do so at a point which would have necessitated the borough enlarging their sewer. Accordingly as fast as the navvies engaged by Fulwell threw up the earth from the trench gangs of corporation men shovelled it back again. Neither side would give way until Sunderland's engineer prepared to flood the trench, when the Fulwell workmen capitulated. The township is now asking for terms.

Rattray's new Sewage Works.—A sewage disposal works on the septic tank system patented by Mr. D. Cameron, city surveyor of Exeter, has been opened at Rattray, Blairgowrie. The advantages claimed for this system are non-production of sludge, a tank effluent in the best condition for either irrigation or filtration, a filtered effluent of great purity, a process free from nuisance, absolute reliability in working, and cheapness. The Rattray works are designed to serve a population of 2,000, the maximum flow of sewage provided for being 100,000 gallons per day. The cost of the tanks was about £350. Mr. Symon, C.E., of Arbroath, superintended the execution of the work.

Dust and Microbes.—A correspondent writes to the "City Press" as follows:—"It is not commonly known that in a London street the number of dust particles in a wineglassful of 'clean breathing air' is about 30,000,000, whereas at the level of the second floor the number is three times less, and the number of microbes thirty times less, facts of which advantage is taken in modern methods of ventilation. Nevertheless, as only twenty out of the 600 known bacteria are hostile to man, and of these only a few have their habitat in the air, we must not attach any exaggerated importance to their presence. What is important is dust. We spend £2,000,000 per annum in London alone to expel this plague (allowing one-tenth of a housemaid's time to every ten of the population). But are we right in doing this? Should we not rather imitate the jayvee who endeavours 'to kape the could out, before iver it gits in at all?' The example is easy to follow."

New Park and Promenade for Widnes.—The Victoria Park and Recreation Ground, Appleton, and the Victoria Promenade, West Bank, which form at Widnes a permanent memorial of the Queen's Diamond Jubilee, have been opened to the public. The park is 34½ acres in extent and was purchased for £4,500; it was laid out according to the designs of Mr. J. S. Sinclair, the borough surveyor. A band-stand has been erected, but the planting of shrubberies and trees is not yet completed. Altogether, the park has cost £7,349. The Victoria Promenade is an extension of the existing promenade on the banks of the Mersey. The new portion is 630 ft. long, and the width at the widest place, from Terrace Road to high-water mark, is 130 ft. The land has been laid out in terraces, and a strong river wall has been constructed. This work has also been done from the designs of Mr. Sinclair, the contractor being Mr. John Taylor. The cost of the land was £1,500, and the construction of the promenade entailed a further cost of £4,130, making a total of £5,630. Thus, on both undertakings, £12,979 have been spent.

Hospital Extension in Liverpool.—The Hospitals Committee of the Corporation propose to erect additional pavilions at Fazakerley, and to carry out a new scheme of drainage, at a cost not to exceed £8,510.

Architectural Association of Ireland.—At the last meeting of the session, held on May 31st at Dublin, the president, Mr. George Sheridan, in the chair, a resolution was passed expressing satisfaction at the honour of knighthood conferred on the president of the Royal Institute of Architects of Ireland, Sir Thomas Drew, who is also a member of the above association. After Mr. Sheridan had read a valedictory address, Mr. Kaye Parry, F.R.I.B.A., took the chair. The following elections were then made: President, Mr. F. Batchelor, F.R.I.B.A.; vice-presidents, Messrs. M. J. Tighe and C. H. Ashworth; committee, Messrs. H. Allberry, G. Sheridan, R. C. Orpen, J. Holloway, R. M. Butler, T. E. Hudman, H. J. Pentland, T. Coleman, L. O'Callaghan; librarian, Mr. J. Geoghegan; hon. treasurer, Mr. J. H. Webb; hon. secretaries, Messrs. F. G. Hicks and E. W. Bradbury; hon. auditors, Messrs. W. Beckett and M. J. Buckley. A vote of thanks was passed to Mr. H. Allberry, who, under the by-laws, had to retire at the end of two years from his position as hon. secretary.

Professional Practice.

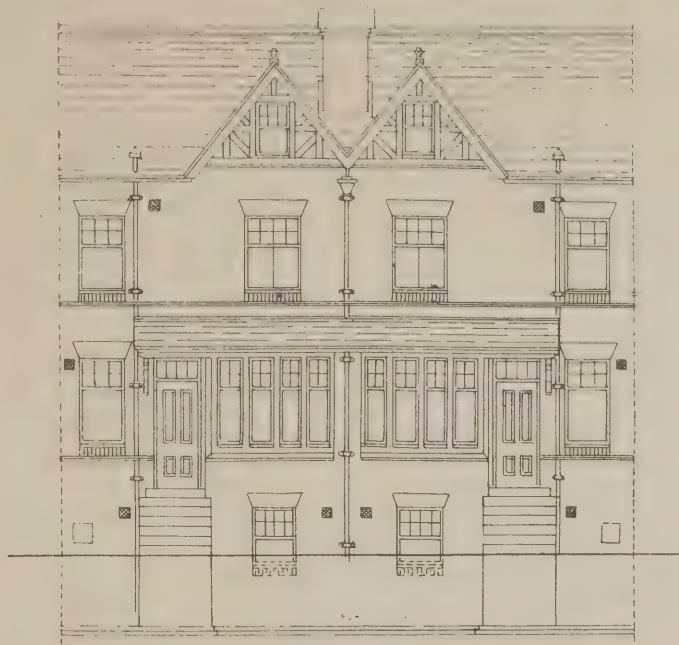
Birmingham.—A new theatre has been erected on a site at the corner of Nechells Place and Sattley Road, at a cost of about £14,000, from designs by Mr. T. Guest, architect. The main entrance to the building has been made at the junction of the two roads, and the central portion is built in Kingswinford red facing bricks, relieved with buff terra-cotta. Over the dress circle entrance there is a large window, which forms the main feature of the elevation. Around this sweeps a massive moulded arch, and radiating from it are keystones extending to the turrets on each side and the main cornice above. In the centre the building is surmounted by a heavy gable in terra-cotta bearing the name of the theatre—"The Carlton Theatre"—in red terra-cotta; while at each side there is an octagonal turret in buff terra-cotta, with ogee-shaped lead roof. The pit is about 60ft. square and provides seating accommodation for between 600 and 700 persons. Four gangways will add materially to the convenience of the audience, and not more than ten or a dozen persons are accommodated on each bench. The orchestral stalls seat about 100 persons. The exits are good and well arranged, there being six doors, all fitted with panic bolts. The stage is 60ft. by 38ft. Facing Nechells Place are four retail lock-up shops, and in the rear of these are the refreshment rooms of the pit and the artistes' dressing-rooms. Each of the latter has an external window, while the stage is adequately provided with exit accommodation. All communication to the stage from the auditorium is cut off by means of an asbestos fireproof curtain, and the doors between stage and auditorium are of armoured oak. On the first floor a dress circle has been constructed to accommodate 350 persons, and two distinct staircases are provided for purposes of exit. The gallery gives seating accommodation for 700 persons, and the first two rows form an amphitheatre. There are six private boxes, two of them being on the pit level. On the Nechells Place frontage no erection has been made over the shops, and these for the time being will form a concrete flat, which will, in all probability, be converted into a sort of winter garden. Fire is provided against by numerous hydrants and corridor pumps, and granite fireproof plaster is used on the walls and ceilings. This is the first building in Birmingham in which this plaster has been used. The theatre will be lighted by electricity, but gas will also be laid on. Unlike many theatres, the stage will be heated on the low-pressure system, and the rush of cool air to the auditorium on the raising of the curtain will thus be obviated. Mr. T. Johnson was the building contractor.

Darlington.—A few miles south of Darlington lies the little village of Croft, with its quaint old church. This building has just been restored under the superintendence of Mr. W. S. Hicks, architect, of Newcastle. Not infrequently "restoration" is a word of evil omen, but in the present case it is stated that care has been taken not to interfere with any antiquarian or picturesque feature. For the present the work has been confined to the chancel and the extreme west end of the church. The south aisle has been restored by Sir William Chaytor, Bart. Lady Chaytor has also taken a warm interest in this work, while Mr. W. H. Wilson-Todd, M.P., of Halmaby, has undertaken the restoration of the north aisle. The chancel is now handsomely panelled in oak, slightly darkened so as to harmonise with the old woodwork. An oak reredos, designed by Mr. Hicks, and carved by Mr. Hedley, of Newcastle, has been erected by the Chaytor family and a few friends in memory of the late Sir William Chaytor. The side panelling is the gift of the Dowager Duchess of Northumberland. The floor of the sanctuary is composed of alternate squares of Frosterley marble and Barton limestone. The oak roof was thoroughly restored last year by the Rector, who, with his family, has now provided the

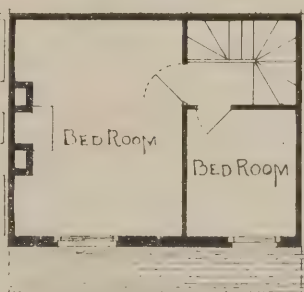
chancel stalls. At the west end four rows of excellent oak seats have taken the place of a few temporary benches; the font has been restored to its ancient position; and the heating apparatus and gas supply have been improved. Mr. H. Harwood, of Mansfield, was the contractor.

Dublin.—An addition is being made to the Dublin University Union Buildings

from the designs of Sir Thomas Drew, F.R.I.B.A., R.H.A. Operations were begun in 1899 and now the third floor has been reached. This block of buildings will add much to the appearance of the College in the centre and is the Graduates' Memorial, erected by subscription; at the sides are two blocks of buildings containing chambers for students erected by the Board. The buildings will harmonise with the rest of the College, being built of granite and



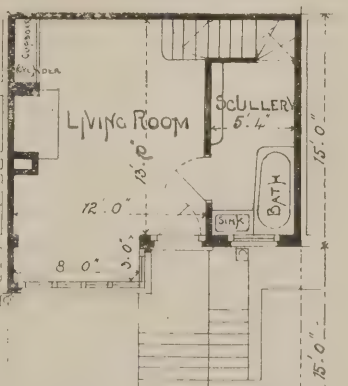
ELEVATION



1ST FLOOR



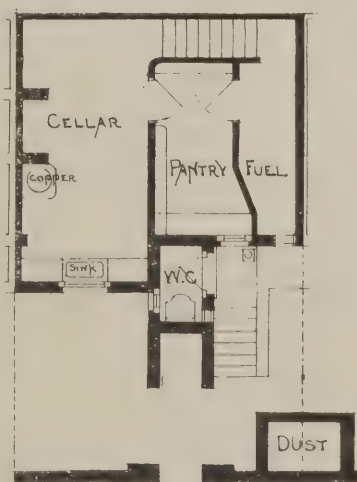
2ND FLOOR



GARDEN

CAUSEWAY

GROUND PLAN



BASEMENT

Portland stone, which is at first white but becomes grey with age, and they will represent a free treatment of a classical design. On the ground floor there will be a large writing room and library (two storeys); on the first floor, reading room and galleries to library; on the second floor, four rooms for the use of the voluntary societies; on the mezzanine floors, three rooms for lavatories, cap and gown rooms, &c. The coal stores, heating apparatus, &c., will be situated in the basement. The entrance hall will be 24ft. by 20ft. A theatre or debating room, about 44ft. square, will be situated at the rear of the building, to which there will be access from the other principal rooms. The students' bedrooms will be situated on the north side of a corridor, while the sitting rooms will be on the south side. The sets of rooms will be single, and will afford accommodation for about forty students. Messrs. Sharp and Emery, of Great Brunswick Street, Dublin, are the contractors. It is probable that the buildings will be completed in a year.

Glasgow.—The Nurses' Home at Gartloch Asylum, Glasgow, the foundation-stone of which was laid in September, 1898, has recently been completed and opened. The new Home is an admirable example of its class, and its internal arrangements are such as to provide every possible comfort and convenience. The building is separated from the principal asylum structure, and is situated to the south of it, overlooking the loch and its wooded surroundings. Accommodation is provided for about fifty nurses, and there is, in addition, a section for servants. The night nurses, for whom proper rest by day is essential, are lodged in a separate part of the Home, reached by a special staircase. There are six parlours, four of which are for day nurses. Each floor has ample bath and lavatory arrangements, and a room is provided in which nurses may receive their friends. The principal kitchen is placed on the ground floor, and small lifts run to the sculleries on the upper floors. The basement contains box and bicycle rooms and the heating apparatus. The building throughout is handsomely furnished, and the well-lighted rooms and corridors have a bright and cheerful appearance. Messrs. Thomson and Sandilands, of Glasgow, were the architects.

Leeds.—The back-to-back houses illustrated on the preceding page were erected in Leeds a short time ago from designs by Mr. Charles Fowler, C.E., architect and land surveyor, of Leeds. They have a frontage of 18ft. 6in., are 15ft. in depth from back to front, and have a forecourt 15ft. wide abutting upon a street 39ft. wide. They are built with double-pressed red bricks; there is a bath in each scullery with a lid to fall down and form a table; hot and cold water is laid on to the baths and sinks in the sculleries and washing cellars; the hearths in the living rooms are laid with black and red tiles 6in. square; the bay windows are of wood; and the buildings are roofed with Welsh slates. The cost, including land, was a little more than £200 per house.

New Church for Mexborough, Rotherham.—The Bishop of Beverley visited Mexborough last week in connection with the stone-laying of a new church at the populous west end of the town. The building is to cost £2,500, and there is ample area for contemplated enlargement. The architect is Mr. J. N. Cowper, of Westminster, and the contractor, Mr. G. H. Smith, of Mexborough.

The Royal Institute of British Architects held a business meeting last Monday evening, when the following gentlemen were elected members: As Fellows, Messrs. Ibrahim Shaik David Ahmadi (Bombay), John Bain (Newport, Mon.), Sydney Francis Bartlett (London), Henry Budgen (Cardiff), Alfred Arthur Cox (Montreal), Thomas Dinwiddie (London), Ernest Flint (London), Frank Loughborough Pearson (London), and Nathan Glossop Pennington (London); as Hon. Associates, Messrs. George James Frampton, A.R.A. (London) and Frank Newton Jackson (London).

Engineering Notes.

The Amalgamated Society of Engineers have now a membership of 85,000; the capital is put at £328,000.

Proposed Tramways for Wakefield.—A London syndicate proposes to construct tramways in Wakefield and some of its suburbs. The estimated cost of the scheme is £82,181.

Heating by Hot Water.—New premises and a concert hall, for the Burton-on-Trent Co-operative Society are now being fitted with the latest improved hot-water heating apparatus by Messrs. John King, Ltd., engineers, of Liverpool.

Electricity at Simla.—Electricity is making its way in the summer capital of the Government of India. Four schemes have been proposed for the lighting of Simla by electricity; all propose to employ water power and turbines for generating the necessary current.

Proposed Trams to Piccadilly.—The London County Council propose to construct tramways from the present terminus in Theobald's Road to Piccadilly Circus. The Vestry of St. James, Westminster, object; but they suggest that the tram lines should stop at Cambridge Circus.

The new Workhouse Infirmary, Doncaster, is being warmed and ventilated throughout by means of Shorland's patent Manchester stoves, some of them double fronted and some single fronted, with descending smoke flues, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Rapid Artesian Well-Boring.—A 200ft. deep artesian bored tube well, 13½in. internal diameter, has just been completed at Dunstable for the Gas and Water Company. The depth of 200ft. was reached in just over three weeks' time. The engineers are Messrs. C. Isler and Co., of Southwark.

Electric Lighting Scheme for Rhyl.—The Local Government Board have approved of the scheme for lighting Rhyl with electricity. The scheme will entail an expenditure in the first instance of £19,000, and will be worked in conjunction with a refuse destructor and a new electric tramway along the sea front.

Railway Improvements at Bridlington.—It is stated in Bridlington that the North-Eastern Railway Company are likely, before long, to make extensive alterations at Bridlington Railway Station, including the erection of a bridge over the line on Quay Road, and that the cost of the proposed alterations will be close upon £70,000.

Clegg Street Station, Oldham, is being enlarged. Messrs. T. and W. Meadows, of Stockport, are the contractors. The work includes a new booking hall and office, from which two staircases lead down to the platforms, whilst great alterations are being made on the platform levels. New refreshment and waiting rooms and other station buildings are being built, and an additional length of platform is to be added.

Blackburn Tramways.—The municipalisation of the tramways in Blackburn has resulted for the first year in a loss of £4,500, notwithstanding an increase in the number of passengers and the substitution of electric for steam traction on half the system. Reduction of fares, increase of employees wages, the price of coal, and repairs are responsible for the deficiency. The Darwen section, worked by steam, shows a substantial profit.

New North-Eastern Station at Hull.—The new locomotive sheds constructed for the North-Eastern Railway Company on the Argyle estate at Hull have just been completed. This brings within measurable distance the day when a commencement will be made with the reconstruction of the Company's Paragon Station in the city. The main front of the new station will, it is stated, be in Brook Street, in a line with the existing hotel. For this improvement the Company have for years past been purchasing large areas. Collier Street, on the north side of the station, will

almost cease to exist, and other alterations are contemplated by the municipal authorities which will change the whole aspect of this quarter of the city.

Electric Traction in Leeds.—For a considerable time electric cars have been run on the Kirkstall, Headingley, Chapelton, and Roundhay sections of the Leeds tramways, and have proved a great convenience to the public and a source of largely increased revenue to the Corporation. The system is being gradually extended to other districts in the city, and electric cars have now commenced running on the Beckett Street route.

New Gas Works in Glasgow.—Messrs. Robert M'Alpine and Sons, railway contractors, of Glasgow, have obtained, at the sum of £171,765 13s. 4d., the contract for excavation, brick building, and other work in connection with the gas works about to be erected by the Glasgow Corporation at Proven, in the east end of the city. At present it is intended to proceed with half only of the work ultimately contemplated—namely, with two gas-holders (each capable of storing 8,500,000ft. of gas) with their accessories. The contract given out is to be completed in two years, and thereafter the erection of the gasholder will be begun. As that will take up another eighteen months, four years will elapse before the works can be in operation.

Electricity on the Underground.—On the invitation of Messrs. Sir J. Wolfe Barry and Co., about 100 members of the Institution of Junior Engineers on Saturday inspected the electric train which has been running experimentally for the past three weeks between Earl's Court and High Street, Kensington. Subsequently the party visited the generating station, where Mr. Franklin, Sir J. Wolfe Barry's representative, explained the plant and described its working. One or two minor alterations have been made in the train since it started running. One is the shifting from the guard's compartment into the "engine-room" of the air-pumps which supplied compressed air for the Westinghouse vacuum brake and the whistle. In this way the noise and vibration caused in the end coaches by the constant action of the machines have been greatly reduced. The train has worked very satisfactorily and without interference with the ordinary traffic. It is still being run by the engineers, Sir J. Wolfe Barry and Co., and will not be taken over by the railway company till October.

New Bridge at Bristol.—Bristol had many ancient bridges, but most of the important structures which to-day are arteries for traffic have come into existence since the Cut and the Floating Harbour were formed. Noteworthy among them is the Suspension Bridge, famous among the bridges of the world. The latest addition is a swing bridge at Vauxhall. Its total length, including south abutment, swing portion, and fixed span, is about 270ft., and the width is 10ft. 8in. inside flanges of main girders. The swinging portion of the bridge is built of steel, weighs 150 tons, and is 158ft. in length. It is carried on a pier founded on concrete below the bed of the river, and is protected when open by timber dolphins up and down stream. Between the swinging portion of the bridge and Cumberland Road is a fixed girder span over the towing path and the new railway, from which a staircase communicates with the towing path, and another staircase and an easy incline lead to Cumberland Road. The foundations, masonry work, and timber dolphins were built by Messrs. Durnford and Son, the steelwork throughout was constructed by Messrs. J. Lysaght, Limited, and the opening and closing machinery has been made and fixed by Messrs. Sir W. Armstrong, Whitworth and Co.

New Branch Police Station at Derby.—Subject to the approval of the Council, the Watch Committee of the Derby Corporation have agreed to purchase 2,780 sq. yds. of land on the Dale Road Estate, at a cost of £1,369 9s., in order to erect a branch police station in that part of the town.



THE RAALZAAL, PRETORIA.

THE BUILDINGS OF PRETORIA.

PROMPTITUDE is regarded as a prime essential nowadays. When a noted person dies now we expect to find a long, perhaps an illustrated, notice of his life's work in the next morning's paper; and we find it. It is therefore not at all surprising to read particulars of the buildings of Pretoria the day after the news arrived of the fall of that city. The "Daily Graphic" says:—Though founded in 1855, Pretoria, as it stands to-day, is practically a creation of the same era as the Witwatersrand, the gold found there by the Uitlanders since 1885 having afforded the means for the ambitious architecture of the last ten years. In 1889 the Boer Parliament House was a little thatched building, little better than an English barn. Since then it has been replaced at a cost of £200,000 by a solid and massive edifice of some grandeur, unquestionably one of the finest of such buildings in South Africa. (We give an illustration of this building on this page.) Within, there are very handsome galleried chambers for the Upper Volksraad and the Second Raad. In the same block of buildings are the Government offices of all kinds. The Raadzaal, or Parliament House, fronts upon Church Square, a large bare space, on which also stand the new Law Courts, and the centre of which is occupied by the Dutch Reformed Church, representing the most numerous, but not, in President Kruger's time, the most powerful of the Transvaal sects. The object of the square or open ground around the large church, be it noted, was neither ornament nor hygiene, but rather the reverse; it is intended as an "out-span," or place whereon may be unharnessed the dirty and often insanitary ox-drawn waggons of the country people, drawn thither at fixed intervals for that curious compound of religion and sociality, "Nachtmaal." Near the lower corner of the square is the hospitable Pretoria Club, the centre of light and leading—mainly Uitlander—in Pretoria. The public buildings are the post-office, the new market, the public library, museum, and hospital; and there are one or two good-sized hotels which, as is common in South Africa, are to a great extent used as boarding-houses. The eccles-

iaistical buildings include, besides St. Mary's Church already mentioned, St. Alban's Church (the so-called English Cathedral), a Roman Catholic church, school, and convent; a fine Jewish synagogue, a Wesleyan church, Baptist Church, and others; and not least, the Doppe church, where President Kruger himself has not infrequently occupied the pulpit.

BRISTOL & GLOUCESTERSHIRE ARCHÆOLOGICAL SOCIETY.

THE spring meeting of this society was held on Thursday last. The old House at Toddington was first visited: the glass there is of three kinds—Swiss, German and English. The Swiss glass, which of its class is said to form one of the most important collections in Europe, belongs to the period of the thirteen cantons—1481 to 1798—during the chief part of which Switzerland was still formally dependent upon the Empire; hence the frequent appearance of the Imperial insignia. It was manufactured chiefly at Basle, Zurich, Berne, and Lucerne, and came from churches, and private and municipal buildings. The church of St. Leonard, Toddington, has a nave with chancel and two aisles, and a tower on the south side of the nave; the whole of debased style except the tower, which is Decorated. The nave has been recently embellished by the insertion of some modern painted windows. The chancel has windows which may be called Perpendicular, and has on the north a sepulchral chapel, closed. In the east window are pieces of ancient stained glass. The tower is plain, embattled and without buttresses, divided by one string. The belfry windows are of two lights, Late Decorated; there is also a two-light window in the lower part. The tower arch of the nave is pointed, springing from octagonal shafts.

The party next went on to Hayles Abbey. It was founded by Richard, Earl of Cornwall, in 1246. Twenty-five years afterwards fire consumed a large portion of the monastic pile, and Earl Richard, then king of the Romans, devoted 8,000 marks to its restoration. Again, in the fifteenth century, the monastery fell a prey to an extensive conflagration, and a

restoration became necessary, which transformed the cloisters from Early English to Perpendicular. In 1539 the abbey was surrendered to the commissioners of Henry the Eighth, and all but the abbot's house, standing on the west side of the cloisters, and the kitchen, butteries and larders, on the south-west, were condemned as useless. For the third time there came a fire, and cloisters and chapter house were burnt. For 300 years Hayles Abbey has been treated as a quarry, and its glory has departed. Much, however, remains that is full of interest for students of history and architecture, and the Council of the Bristol and Gloucestershire Archæological Society have obtained permission to excavate the site of the abbey and to protect the remaining cloister arches from collapse. The quaint church of Hayles consists of nave and chancel, both small. The adjoining meadow contains the earthworks of Ralph's Castle, and part of the Norman church itself remains. The shafts and caps of the chancel arch and two pilasters which support the south wall of the chancel are a hundred years older than the oldest part of Hayles Abbey. It is impossible to tell how much more remains, as a thick coat of plaster on the walls, outside and inside, forms a barrier to research. There is a campanile of two bells at the west end, and the remains of a sanctus bell-turret over the chancel arch.

Didbrook was the next place visited by the party. The manor of Didbrook formed part of the original grant by Richard, Earl of Cornwall, to the Cistercian monks of Hayles for the endowment of that abbey. The church of St. George was rebuilt by William Whitchurch, Abbot of Hayles and sometime vicar of Didbrook. The tower is constructed within the nave, at the west end, and its north, east and south sides rest on arches with graceful piers and capitals. Battlements, pinnacles, and vigorous gargoyles render the arrangement of the tower stately and unusual. The east window contains fragments of ancient glass and part of an inscription.

The next place at which a halt was made was Stanton. The two manors of Stanton and Snowhill were given to the abbey of Winchcombe by Kenulph, king of the Mercians. The church of St. Michael consists of a nave with

south porch, north and south aisles, and north and south transeptal chapels, chancel, and western tower. In the village street are the base and shaft of a characteristic fifteenth-century cross.

Stanway was the next and last place on the route. The Manor of Stanway was given to Tewkesbury Abbey in 715. In 1066 there was a monastic cell here, which afterwards devolved into an abbot's country seat. The nave and chancel of the church of St. Peter were originally Norman, and still retain much of their original walling. Rudge spoke of a Saxon pillar in the church in his time (the commencement of the nineteenth century) but said that the church had been completely modernised. Stanway House is a splendid example of domestic architecture, and there is a gateway of fine design leading from the churchyard. In the house itself the charm is due to dignity, fine outline, and good proportion, the chief feature being the hall with its large bay window, divided by mullions and transoms into sixty divisions.

Builders' Notes.

Society of Estate Clerks of Works.—On and after June 24th, 1900, all communications for the secretary of this society are to be addressed to Mr. T. Potter, 5, Outram Road, Croydon.

New Shops for Leeds Estates Co.—The tender of Messrs. Armitage and Hodgson, of Leeds, has been accepted by the Leeds Estates Company for the erection of three blocks of shops on the north and south sides of Cheap-side, and the south side of New Bond Street.

The Southampton Disaster.—At an inquest held at Southampton on Thursday last on Charles Pattison, who died from injuries sustained through the recent collapse of a structure at Southampton Dock, it was shown that the ground on which the structure stood had sunk 4ft. 3in. at one end, and thus caused the accident (as suggested in the letter which we printed on page 329 of last week's issue). A verdict of "Accidental Death" was returned.

A Scottish Compensation Case.—In Kirkcaldy Sheriff Court on Thursday last Sheriff Gillespie decided a compensation claim under the Workmen's Compensation Act at the instance of A. Wishart, carter, Kirkcaldy, against Messrs. A. Fraser and Sons, contractors, and A. Fraser, jun., brick manufacturer and contractor, Pathhead, Kirkcaldy. Wishart went to the brickworks with two horses and carts to carry bricks to a factory in course of erection, and while crossing an unfenced bridge leading to the brickworks he, together with one of the horses and carts, fell a distance of 29ft. to a rocky foundation beneath. The defence was that plaintiff was not employed about the brickworks, or any part of it, and was not entitled to compensation from the defendants. The Sheriff found that, in the circumstances, neither of the defendants was liable to pay compensation, and he accordingly dismissed the action, discerning against the plaintiff for £3 of modified expenses.

Structures Below Ground under the L.B.A.—Judgment was recently given at the Thames Police Court in a summons taken out by Mr. Arthur Crow, district surveyor, against the Whitechapel Board of Works for executing certain works in Great Prescott Street without serving a notice respecting them, in accordance with the London Building Act. The Board had been engaged laying electric lighting cables and inspection chambers under the footway. The chambers were built of brick, with iron joists for the roof, for the purpose of moving the cable in case of accident, and without removing the paving, and no notice had been given of these works.—Mr. Dickinson held that the inspection chambers were "buildings, or structures, or works," within the meaning of section 145 of the Act. He could see no reason why the terms of the Act should not apply to buildings below as well as on the surface of the ground. He therefore imposed the nominal penalty of 1s. and £10 10s. costs.

BACON'S ESSAY ON BUILDING.

ONE could hardly say that the "Essays" of the great Sir Francis Bacon (1561-1626) had such a wide circle of readers now as some yellow-backed novels or half-penny newspapers; in fact, it might fairly be stated that Bacon has become a memory. As this is so, and as, nevertheless, we feel sure many of our readers will be interested in his essay on "Building" (which, it may be mentioned, has been suggested as a good scheme for architectural students to carry out), we give a reproduction of it below:—

Houses are built to live in, and not to look on; therefore let use be preferred before uniformity, except where both may be had. Leave the goodly fabrics of houses, for beauty only, to the enchanted palaces of the poets; who build them with small cost. He that builds a fair house upon an ill seat committeth himself to prison. Neither do I reckon it an ill seat only where the air is unwholesome; but likewise where the air is unequal; as you shall see many fine seats set upon a knap of ground, environed with higher hills round about it; whereby the heat of the sun is pent in, and the wind gathereth as in troughs; so as you shall have, and that suddenly, as great diversity of heat and cold as if you dwelt in several places. Neither is it ill air only that maketh an ill seat, but ill ways, ill markets, and, if you will consult with Momus, ill neighbours. I speak not of many more; want of water; want of wood, shade, and shelter; want of fruitfulness, and mixture of grounds of several natures; want of prospect; want of level grounds; want of places at some near distance for sports of hunting, hawking, and races; too near the sea, too remote; having the commodity of navigable rivers, or the discommodity of their overflowing; too far off from great cities, which may hinder business, or too near them, which lurcheth all provisions and maketh everything dear; where a man hath a great living laid together, and where he is scant: all of which, as it is impossible perhaps to find together, so it is good to know them, and think of them, that a man may take as many as he can; and, if he have several dwellings, that he sort them so that what he wanteth in the one he may find in the other. Lucullus answered Pompey well—who, when he saw his stately galleries and rooms so large and lightsome in one of his houses, said: "Surely an excellent place for summer, but how do you in winter?" Lucullus answered, "Why, do you not think me as wise as some fowl are, that ever change their abode towards the winter?"

To pass from the seat to the house itself; we will do as Cicero doth in the orator's art—who writes books *De Oratore*, and a book he entitles *Orator*, whereof the former delivers the precepts of the art, and the latter the perfection. We will therefore describe a princely palace, making a brief model thereof. For it is strange to see now in Europe such huge buildings as the Vatican and Escorial and some others be, and yet scarce a very fair room in them.

First, therefore, I say you cannot have a perfect palace, except you have two several sides; a side for the banquet, as is spoken of in the book of Hester, and a side for the household; the one for feasts and triumphs and the other for dwelling. I understand both these sides to be not only returns, but parts of the front; and to be uniform without though severally partitioned within; and to be on both sides of a great and stately tower in the midst of the front, that, as it were, joineth them together on either hand. I would have on the side of the banquet, in front, one only goodly room above stairs, of some forty foot high, and under it a room for a dressing or preparing place at times of triumphs. On the other side, which is the household side, I wish it divided at the first into a hall and a chapel (with a partition between), both of good state and bigness, and those not to go all the length, but to have at the further end a winter and a summer parlour, both fair. And under these rooms a fair and large cellar sunk under ground, and likewise some privy kitchens, with

butteries and pantries, and the like. As for the tower, I would have it two stories, of 18ft. high apiece, above the two wings, and a goodly leads upon the top, railed with statua's interposed, and the same tower to be divided into rooms, as shall be thought fit. The stairs likewise to the upper rooms, let them be upon a fair open newel, and finely railed in with images of wood, cast into a brass colour, and a very fair landing-place at the top. But this to be, if you do not point any of the lower rooms, for a dining place of servants. For, otherwise, you shall have the servants' dinner after your own, for the steam of it will come up as in a tunnel. And so much for the front. Only I understand the height of the first stairs to be sixteen foot, which is the height of the lower room.

Beyond this front is there to be a fair court, but three sides to it of a far lower building than the front. And in all the four corners of that court fair staircases, cast into turrets, on the outside, and not within the row of buildings themselves. But those towers are not to be of the height of the front, but rather proportionable to the lower building. Let the court not be paved, for that striketh up a great heat in summer and much cold in winter; but only some side alleys, with a cross, and the quarters to graze, being kept shorn, but not too near shorn. The row of return on the banquet side, let it be all stately galleries, in which galleries let there be three or five fine cupolas in the length of it, placed at equal distance, and fine coloured windows of several works. On the household side, chambers of presence and ordinary entertainments, with some bedchambers; and let all three sides be a double house, without thorough lights on the sides, that you may have rooms from the sun, both for forenoon and afternoon. Cast it also, that you may have rooms both for summer and winter—shady for summer and warm for winter. You shall have sometimes fair houses so full of glass that one cannot tell where to become to be out of the sun or cold. For inbowed windows, I hold them of good use (in cities, indeed, upright do better, in respect of the uniformity towards the street), for they be pretty retiring places for conference; and besides, they keep both the wind and sun off, for that which would strike almost through the room doth scarce pass the window. But let them be but few, four in the court, on the sides only.

Beyond this court, let there be an inward court, of the same square and height; which is to be environed with the garden on all sides; and in the inside, cloistered on all sides, upon decent and beautiful arches, as high as the first story. On the under story, towards the garden, let it be turned to a grotto, or place of shade, or estivation. And only have opening and windows towards the garden; and be level upon the floor, no whit sunken under ground, to avoid all dampishness. And let there be a fountain, or some fair work of statua's in the midst of this court; and to be paved as the other court was. These buildings to be for privy lodgings on both sides; and the end for privy galleries. Whereof you must foresee that one of them be for an infirmary, if the prince or any special person should be sick, with chambers, bed-chamber, ante-chamber [anti-chamber], and re-chamber [a back chamber], joining to it. This upon the second story. Upon the ground story, a fair gallery, open, upon pillars; and upon the third story likewise, an open gallery, upon pillars, to take the prospect and freshness of the garden. At both corners of the further side, by way of return, let there be two delicate or rich cabinets, daintily paved, richly hanged, glazed with crystalline glass, and a rich cupola in the midst; and all other elegance that may be thought upon. In the upper gallery, too, I wish that there may be, if the place will yield it, some fountains running in divers places from the wall, with some fine avoidances [outlets]. And thus much for the model of the palace; save that you must have, before you come to the front, three courts. A green court plain, with a wall about it; a second court of the same, but more garnished, with little turrets, or rather embellishments, upon the wall; and a third court, to make a square with

the front, but not to be built, nor yet enclosed with a naked wall, but enclosed with tarrasses, leaded aloft, and fairly garnished, on the three sides; and cloistered, on the inside, with pillars, and not with arches below. As for offices, let them stand at distance, with some low galleries, to pass from them to the palace itself.

New Patents.

These patents are open to opposition until July 16th.

1899.—Roof Coverings.—14,038. R. S. SMETHURST, Patricroft, Lancs. This invention relates to the manufacture of a waterproof material to be used in place of glass. Woven wire-cloth or perforated sheet metal is dipped into, brushed over, or run through a solution obtained by dissolving gelatine in water and adding when hot 10 per cent. of water to 5 per cent. of formic aldehyde, or other suitable acid; by which means the meshes in the wire-cloth become filled and the material is well coated on both sides. A coat of varnish or oxidised oil may be applied for very wet climates, and the gelatine may be coloured if desired.

Fireproof Windows.—14,231. J. W. SHEPARD, New York, U.S.A. The object of this invention is to provide a window which will be fireproof without employing shutters. For this purpose the frame and sash are made of metal and have openings for the admittance of air between the two sheets of wire-glass with which the window is furnished. When heat is applied to one side a rapid circulation of air is created between the panes, so carrying off the heat and preventing the second pane becoming dangerously hot.

Purifying Acetylene Gas.—14,379. E. GOODWIN, Dublin. The following composition can be used in any gas-washing apparatus for purifying acetylene gas:—Copper sulphate crystals, 1 part (by weight); infusorial earth, 1 part; water 48 parts.

Sheet Metal Cisterns.—14,740. W. P. BUTTERFIELD, Baildon, near Bradford. The joints of the plates forming the cistern are bent so that the edge of one plate overlaps and is folded into the edge of its neighbour, so facilitating the construction. No rivets are used. The joints may be permanently secured by soldering or by galvanising the cistern.

Preserving Wood.—16,732. C. D. ABEL, London, W.C. (*Berliner Holzcomptoir, Germany*). In this process tar-oil is the impregnating fluid, but the essential feature of the invention is the formation of a fine emulsion of tar-oil, produced by mixture with a dilute soap solution. In this way much less tar-oil is needed for the preservation of the wood (though an equally satisfactory result is secured), and the method of working is cleaner.

1900.—Gas Leakage Testing Apparatus.—4,539. E. SCHUSTER, Berlin, Germany. Near the top of an upright cylinder is a sieve, from which is suspended a central tube, open at its lower end. Within this tube is a smaller pipe, open at the top, connected with an air pump. Above the sieve is a gas outlet fitted with a cock, and on the top of the cylinder is a pressure gauge. The vessel is about half filled with gasoline, and air is then pumped through it into the gas pipe system until a certain pressure is reached, when the cock is closed. If, on reopening the cock, the pressure is shown to have decreased, the system is defective.

The following specifications were published on Saturday last, and are open to opposition until July 24th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—10,083, DAIX, mantles for incandescent lighting. 10,375, FARQUHAR, stand for supporting circular saws or similar articles

while being hammered, &c. 10,519, MONTGOMERY-MOORE and PRESTON, mechanism for closing and opening bulkhead and other doors. 10,588, HILL, edging for garden paths. 10,603, DAVIS and WADKIN, street sweeping machines. 10,616, DARBY, DARBY, DARBY PUNCHARD, and WILLIAM CHARLES PUNCHARD, circular-flame gas burners. 10,664, HILTON, metallic lathing. 10,671, PILKINGTON and ORMADY, utilisation of waste sand from glass grinding works for the manufacture of hones, grindstones, &c., crucibles, emery and other wheels, bath and fire bricks, tiles, ornamental slabs, imitation porcelain and pottery, &c. 11,473, RODNEY and LLEWELLYN, catches and locks for doors. 11,878, WIDMANN, process for making high relief plates from original drawings or original Indian ink sketches. 12,836, SCHNEIDER, process of manufacturing fireproof stones, applicable also in the manufacture of blocks from plastic compositions of coal tar and clay. 12,870, STUGG, compressing gases for various purposes in the arts. 13,052, SANDERS, incandescent gas burners. 13,072, REGOUT, muffle-furnaces or ovens. 13,257, SMITH, underground conduits for electric tramways. 13,874, EADIE, construction of cupolas. 13,166, MERRYWEATHER, hinges and catches for doors and gates. 14,346, BRANDON, apparatus for heating and moistening the air of conservatories, churches, dwelling-houses, &c. 14,514, BLEAZARD, construction of desks and seats used in schools. 14,571, JENNINGS, pipe joints. 14,594, ROWAN, emery wheel machines for polishing metal surfaces. 14,657, O'CONNELL, supports for window blinds. 14,869, MORGAN and WILLIAMS, flap valve for sewers. 14,870, MORGAN and WILLIAMS, system of ventilating sewers. 15,002, BARTON and JANDUS ARC LAMP and ELECTRIC CO., LIMITED, electric arc lamps. 15,021, BROOKS and HOLT, riveting tools. 15,425, HARRISON, means for carrying and attaching a plurality of tools or bits used in conjunction with a brace. 16,053, APT, illuminating media for use in incandescent gas lighting. 16,827, BLAKE, bituminous asphaltic composition for paving purposes. 18,867, STEVENSON, air-tight doors and frames, hinges and fastenings. 24,187, SIMPSON, means for opening the discharge valves of baths automatically. 24,685, TITUS and TITUS, excavating apparatus. 24,926, WELHAM, hot and cold water tap.

1900.—837, LAKE (*Shearman*), incandescent electric lamps. 840, LAKE (*Shearman*), incandescent electric lamps. 961, MORRISON, road-breaking and trenching machines. 1,907, POST, nut locks. 2,875, LORD, manufacture of files for sharpening saws. 4,195, WIDMANN, calcium carbide admission-valve for use with acetylene gas generators. 4,308, FESSENDEN, electric incandescent lamps. 4,531, BALL, steam heating systems. 4,884, BLUMENBERG and GLEUE, manufacture of hooks and nails by cold process. 5,065, REID, socket and spigot drain pipes. 5,108, HAACKE, process of manufacturing building and non-conducting material from cork cuttings or granulated cork. 5,700, ADAM, earth closets. 6,876, MCSHERRY and O'NEIL, metal window sashes and frames. 6,933, PAYNE, acetylene gas generators. 6,977, RUEGG, hinges. 7,022, WAGNER and LORENTZ, method of making mirrors with coloured decorations. 7,023, WAGNER and LORENTZ, mirrors with translucent coloured decorations. 2,077, HOFFMANN, hydraulic pressure dredging machines. 7,182, BATES, method of securing the glass in green-houses and similar buildings.

A Monument to Lord Roberts is proposed to be erected in the Guildhall. The monument commemorating Nelson's victories in the old City building cost about £4,400.

Medals for Artists.—Mr. W. Q. Orchardson and Sir Laurence Alma-Tadema have been awarded medals of honour for their paintings at the Paris Exhibition. In all, twenty medals of honour have been awarded. France receives seven, the United States two (Mr. Whistler and Mr. Sargent), England two, Germany two, and Belgium, Denmark, Holland, Spain, Norway, Russia, and Sweden one each.

Masters and Men.

The Edinburgh and Leith Masons have struck against the masters' proposal to reduce their wages from 9½d. to 9d. per hour.

The Fleetwood Joiners' Strike has been settled after an eleven months' struggle by the masters conceding a ¼d. per hour increase.

The Malvern Builders' Labourers have struck for an increase of 1d. per hour on the rate of 5d. The Urban Council have granted an increase to 5½d.

The Llandudno Stonemasons have struck for an advance of 1d. per hour on their wages, and demand to have the masters sign a number of rules.

Strike at Hull.—One hundred deal-carriers employed by timber importers on the quays of the Victoria Dock have struck for an advance of wages from 4s. 3d. to 5s. per day.

The Threatened Strike of Hawick Masons has been avoided by the masters withdrawing the intimation that they would reduce wages from 9d. to 8d. per hour.

London Brickmakers' Strike is practically settled, the masters having agreed to increase their offer of 5s. 3d. per thousand to 5s. 7d., which the men have accepted.

The Skipton Plumbers' Strike has been settled by an advance from 7½d. to 8d. being granted and a set of working rules agreed to by the masters. The men asked for 8½d.

The Norwich Bricklayers have struck for an advance of ¾d. per hour on the present rate of 7½d., a reduction in working hours from fifty-six to fifty-two and a half hours per week, and for an alteration of rules.

The Federated Builders' Labourers held a conference at Newcastle last week. The mayor, in welcoming the delegates, said he was glad to learn that the union had settled 90 per cent. of disputes without strikes.

The Peterhead Masons have struck in consequence of the masters having reduced their wages from 7½d. to 7d. per hour, as they claim to be still ½d. under the Aberdeen standard rate. About 150 men are affected.

Dundee Slaters' Strike Ended.—The Dundee slaters, who came out on strike in the beginning of May owing to a reduction of wages to the extent of a ½d. per hour have decided to resume work on the masters' terms.

The Strike in the Wigan Building Trade has been settled. The men asked for an increase from 6½d. to 7d. per hour, but have accepted the old rate of pay during the summer and 7d. per hour in the winter months.

The Strike of Bricklayers and Masons at Barrow with regard to which of the two should set the terra-cotta front of the new technical schools still continues. The masters, however, have decided in favour of the bricklayers.

Strike of Aberdeen Dock Labourers.—About 150 men, members of the Dock Labourers' Union, employed on board cargo vessels arriving at Aberdeen have struck for 7d. instead of 6d. per hour for day work, and 9d. instead of 8d. per hour for overtime.

The Barrow Plasterers have struck for an advance of wages from 8½d. to 9½d. per hour, and also to have the apprentices bound. The masters offered a compromise of 8¾d. per hour, on condition that the winter season was increased from twelve to fourteen weeks; this was refused.

Advances at Stockton.—The wages of the Stockton plasterers were officially recognised as being 10d. per hour from May 1st; 9½d. was the standard rate, but, owing to the scarcity of men, 10d. has been generally paid for some time. The Stockton slaters have received an advance of ½d. per hour. The Stockton painters' demands have been referred to arbitration as per rule. The Stockton bricklayers are now on strike for an advance of 1d. per hour, having twice refused an offer of ½d.

The Gasworkers and General Labourers' Union held a conference at Sunderland last week. Resolutions were passed in favour of an eight hours' day, of raising the age to fifteen in respect of child labour, and of the extension of the Workmen's Compensation Act to all sections of labour. The idea of making May 1st a general holiday throughout the country was also endorsed.

Perth Painters' Dispute.—A number of the apprentice painters of Perth went out on strike last week. This new development is said to have taken place at the instigation of the men, who have now been out on strike for a considerable number of weeks. The dispute arose through the operative painters asking the master painters to sign an agreement and rules at the busy season, and this the masters are determined not to do.

Amalgamated Society of Carpenters and Joiners.—The annual report of this society gives the income for the past year as £150,653, an increase of £7,887 over the previous year, and the expenditure £122,835, or £16,473 over that of the preceding year, for which trade privileges caused £11,606. The amount paid as unemployed benefit was £14,993, or £1,531 over the previous year. To replace tools lost by fire cost £2,905; sick benefit, £33,413, as against £29,978, an increase for the year of £3,435; funeral allowance, £5,806; accident benefit, £3,495; superannuation, £16,267; benevolent grants to widows and orphans of deceased members, £2,591; assistance to other trades, £1,851. The balance on hand at the close of the year was £200,530 13s. 2½d.

The Masons and Bricklayers at Falkirk have struck in consequence of several alterations in wages, &c., proposed by the masters. The masters desire that the yearly agreement should run from March to March instead of from June to June as formerly. They also take exception to the rule regulating the number of apprentices, which states that each firm start no more than one apprentice every eight months, and lastly they propose to reduce the wages—in the case of the masons from 9½d. to 8½d. per hour, and in the case of the bricklayers from 10d. to 9d. per hour. An agreement has been come to with the bricklayers on the apprentice question, it having been arranged that one apprentice for every three journeymen will be employed. To the other changes proposed the men are, however, opposed, and the masons object to all the changes. About 350 masons and 100 bricklayers are out.

Sale of Asphaltic Roofing Felt.—On Friday next, June 15th, Messrs. Knight, Frank and Rutley will sell by auction, at their sale galleries, 9, Conduit Street, and 23a, Maddox Street, W., about 700 rolls of asphaltic roofing felt in lengths of 16yds. to 25yds. each, and 76 rolls for damp courses. Catalogues free.

Hospital Extension in Leeds.—A Local Government Board enquiry was held on Friday last into the application of the Leeds Corporation to borrow £278,750 for extending the present hospital at Manston and building a smallpox hospital on the Killingbeck estate. The sum is made up as follows: £188,027 for extensions at Manston, £61,781 for the hospital at Killingbeck, and £28,942 for architect's fees and other expenses and general contingencies.

Restoration of St. Peter's Church, Derby.—At the ancient parish church of St. Peter, Derby, many improvements have been effected, and additional space has been secured sufficient to accommodate 125 worshippers, the work having been carried out by Messrs. Walker and Slater, under the direction of Mr. Hawley Lloyd, architect, of Birmingham. Though the church has been re-opened, the whole of the restoration scheme has not been completed. A new tower is being erected, new heating chambers and apparatus have been provided, and the electric light installation has been presented by Mr. Douglas Rickard, of Friargate. About £6,500 will be the entire cost of the work.

GLASGOW BUILDINGS REGULATIONS BILL.

THE third reading of this Bill (particulars of which were given on page 339 of our issue for January 3rd last) is expected to come on before the House of Lords' Committee on the 18th or 19th of June, and that formal proceeding over, the Bill will be transferred to the Commons, and will probably come before the Commons' Committee about the middle of July. The Glasgow Corporation have come to arrangements with several objectors. The main objections of the landowners were to the restrictions proposed to be put upon unfenced or unbuilt ground in the city, and to the powers proposed to be given to the Master of Works and Dean of Guild. In the Bill, as originally framed, it was proposed to enact that the Dean of Guild should not, except with the consent of the Corporation, authorise the formation or laying out of a street that was less than 50ft. wide; or, if intended for vehicular traffic, that the gradient should not be steeper than 1 in 12. A concession was granted in the case of the gradient by increasing it to 1 in 9, and in the case of the width of streets the new Bill proposes that: "The Dean of Guild shall not, except with the consent of the Corporation . . . grant decree for the formation or laying out of any street where the width . . . is less than 50ft.; or where the width, in case of a street, the distance of the building lines whereof is at least 30ft. from the centre, is less than 36ft.; or where the width, in case of a street, which from the configuration of the ground cannot be built upon except on one side thereof, is less than 30ft.; where such street exceeds 60ft. in length, and is proposed to be formed or laid out in such a manner that it will not at each end thereof afford direct communication with another street. . . ." As originally framed, the Bill proposed that every public street and public sewers therein should absolutely vest in the Corporation, and that the proprietors adjoining, notwithstanding that their titles authorised them to construct sewers underneath the pavement, should not be allowed to do so without the consent of the Corporation, the latter thereby gaining the right to use the solum of the public streets for municipal purposes. It has been conceded in the new Bill that the right of property should, as heretofore, remain in the proprietors' hands, so far as affecting the solum of the street; but that cellars should not in any case be constructed without the consent of the Corporation. As regards the height of buildings, it was originally proposed that, except by the Corporation, no building should be erected in or adjoining any street of a greater height than the width of the street and one-fifth more, and that in no case should a building, except with the consent of the Corporation, exceed 90ft. These restrictions were, however, exclusive of ornamental towers or other architectural features. In the new Bill the restrictions have been relaxed to allow the height of a building to be the width of the street and one-half more; the maximum height being raised to 100ft., with the proviso that where any existing building forming part of a continuous tenement or a continuous row exceeds the height above specified any other building in the same tenement or row, belonging at the passing of the Act to the same owner, may be carried to a height equal to but not exceeding that of the existing building. The greatest opposition to the whole Bill was in regard to the clauses dealing with the proposed control over the cubical extent of buildings. As originally framed it proposed that no division of a warehouse should extend to more than 350,000 cubic feet, with authority to the Corporation to grant in special circumstances permission to form a division of such warehouse to an extent not exceeding 500,000 cubic feet. As now arranged the maximum of 350,000 cubic feet has been retained, but the right of appeal to the Corporation has been increased, so as to enable them to give 750,000 cubic feet. With the clauses as now arranged substantial control will be obtained without undue inconvenience being entailed upon proprietors.

For example, if a warehouse having a cubical extent of 12,000,000ft. is burned down and comes to be re-erected, it cannot possibly be re-erected as it formerly existed, but it may contain one division of 900,000 cubic feet and about thirty other divisions each no more than 350,000 cubic feet each.

Trade and Craft.

Iron Buildings.

We have received from Messrs. Isaac Dixon and Co., of the Windsor Iron Works, Liverpool, and 25, Cockspur Street, London, S.W., a copy of their catalogue containing designs of steel and iron buildings. It is remarkable to note how extensive is the use of erections of this kind, and though—from an architectural point of view—we cannot but regard a church, for example, built of corrugated iron as an eyesore, there are numerous instances where an iron building is just what is needed. Messrs. Dixon have had forty years' experience and have completed more than 20,000 structures, facts which speak for themselves. They supply steel and iron buildings suitable for warehouses, dock sheds, engineering works, stores, pavilions, refreshment rooms, dwelling-houses, hospitals, and indeed buildings of every description and of all sizes, from a £9 tool-house to an exhibition building costing £6,750. Such a range ought to satisfy the most exacting purchaser. The firm has in course of preparation a catalogue illustrating some of the works they have executed during the last few years, including, in addition to home work, contracts for large ranges of iron and steel roofs and buildings supplied for Central America, West Africa, the Red Sea, India and other distant parts. For those of our readers who need particulars of iron buildings of every class we cannot do better than recommend an examination of Messrs. Dixon's catalogue, which, by-the-bye, shows plans as well as elevations, so making it all the more valuable.

The Uses of Asphalt.

Asphalt is certainly a material for the future, that is to say, it possesses qualities which are superlative in their own particular line. Yet there is asphalt and asphalt, and those who use it should particularly note that Messrs. Pilkington and Co., of Monument Chambers, King William Street, E.C., preface their catalogue with the four following facts: "That they are the oldest firm in the asphalt trade in England. That they supply only the best articles of their respective classes. That (taking quality into account) their prices compare favourably with those of any house in the asphalt trade. That they guarantee all work laid by them." Moreover, it is pointed out that the firm do not attempt to compete with those makers whose inferior goods prove so costly in the end and throw such discredit on the trade. Messrs. Pilkington are importers, manufacturers and merchants of Seyssel asphalt, Limmer asphalt, Catania asphalt, Polonceau asphalt, Lava asphalt, and White Silica asphalt, and are patentees of asphalt and felt roofing and acid-resisting asphalt. Seyssel asphalt is a natural product coming from the valley of the Rhone, and is especially suitable for covering flat roofs and terraces and for paving corridors, courtyards, &c. Limmer asphalt comes from Germany (near Hanover) and is similar to the kind just mentioned, though it is not quite so much liked; both should be used for all outdoor work. Polonceau asphalt is manufactured solely by Messrs. Pilkington, and for many purposes is cheaper and superior to the Seyssel brand. From the result of the tests made by Messrs. Kirkaldy and Son to ascertain the thrusting stress of asphalt damp course (between stones), we notice that with an area of 33·7 sq. in. of this asphalt, 42in. thick, at a temperature of 53deg. F., there was slight compression at 30,000lbs., or 57·2 tons per sq. ft., and that the material slightly squeezed out laterally at 286·2 tons per sq. ft. Lava asphalt is a good ordinary British variety, and White

Silica asphalt is very suitable, among other things, for lining ponds and fountains. Messrs. Pilkington's patent system of roofing consists first of a layer of Polonceanu asphalt $\frac{1}{2}$ in. thick, then a layer of specially-prepared hair felt, and a top coat of Seyssel asphalt $\frac{1}{2}$ in. thick; and all roofs made in this fashion are guaranteed for seven years. The firm's patent acid-resisting asphalt is the result of much experiment, and has been used with success at many London electric-lighting stations. Messrs. Pilkington have secured that highly commendable, but somewhat rare, reputation for supplying material of a uniformly good quality.

CURRENT PRICES.

FORAGE.

		£ s. d.	£ s. d.
Hay, best	per load	3 10 0	4 0 0
Sainfoin mixture	do.	3 15 0	4 5 0
Glover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 6 6	1 8 0
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 8 0	1 11 6
Colza Oil, English	per cwt.	1 10 0	—
Copraas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	per cwt.	1 2 10	—
Do. red	per cwt.	1 0 4	—
Linseed Oil	per cwt.	1 13 6	1 13 9
Petroleum, American	per gal.	0 0 6	0 0 6
Do., Russian	per gal.	0 0 6	—
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	3 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 5 6	1 8 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 1 0	—

METALS.

Copper, sheet, strong	per ton	84 0 0	—
Iron, Staffs, bar	do.	10 15 0	11 10 0
Do. Galvanised Corrugated sheet	do.	14 10 0	—
Lead, pig, Spanish	do.	17 5 0	17 7 6
Do. do. English common brands	do.	17 12 6	—
Do. sheet, English, 8lb. persq.ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	8 15 0	9 5 0
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	136 0 0	136 10 0
Do. English ingots	do.	139 0 0	—
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Vieille Montaigne	do.	25 17 6	—
Do. Spelter	do.	20 15 0	21 10 0

TIMBER.

Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 0 0
Do. Pitch	do.	3 16 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 4	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	12 15 0	16 15 0
Do. do. 4th & 3rd.	do.	12 15 0	14 10 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	16 10 0
Do. do. 2nd	do.	8 15 0	14 10 0
Do. do. Unsorted	do.	14 5 0	—
Do. do. White	do.	11 5 0	—
Do. Swedish	per P. Std.	14 5 0	17 10 0
Do. White Sea	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st	do.	18 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd & 4th	do.	9 15 0	9 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	9 10 0	12 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 0 0	9 0 0
Flooring Boards, 1 in. prepared, 1st	per square	0 10 6	0 10 9
Do. 2nd	do.	0 10 9	—
Do. 3rd & 4th	do.	0 8 9	—

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4	—
Do. Honduras	do.	0 0 3 15/16	—
Do. Tobasco	do.	0 0 4 1/32	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 9/16-5 1/16	—
Do. African	do.	0 0 3 3/4	—
Do. St. Domingo	do.	0 0 6 7/32	—
Do. Tobasco	do.	0 0 4 11/16	—
Do. Cuba	do.	0 0 6 27/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	8 15 0	5 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 7	0 3 5

Edinburgh Architectural Association.

—This association recently held its annual excursion, visiting Balmerino Abbey, Balmreich Castle, and Lindores Abbey, by the kind permission of the Hon. Lieut.-Colonel Stuart Grey, the Earl of Zetland, and Mr. David Speirs. Mr. Hippolyte J. Blanc, R.S.A., acted as leader.

Keystones.

Richmond Grammar School has been enlarged.

Clapham Parish Church is proposed to be restored and enlarged.

A New Post Office at West Hartlepool has been built at a cost of £15,000.

A new Organ at Battersea Polytechnic has been built by Messrs. Beale and Thynne.

Wallasey Art School, Liverpool, is proposed to be altered and extended at a cost of £2,000.

The New Sessions House.—At tomorrow's (Thursday's) meeting of the City Corporation the name of the successful architect for this new building will be announced.

Alterations to Stow Workhouse.—Mr. J. S. Corder has been asked to prepare the necessary plans and estimates for proposed alterations to Stow Workhouse for the approval of the Guardians.

New Friends' Meeting-house for Southport.—The Society of Friends in Southport are about to erect a new meeting-house at a cost of £2,500, which is to supersede a building that has stood for a century.

Northern Architectural Association.—The members of this Association visited Jarrow Church and Tynemouth Priory on Saturday last. The president, Mr. William Glover, was among the party.

A new Board School at Oulton, Lowestoft, has been built from the designs of Mr. F. W. Richards, M.S.A., of Lowestoft, Messrs. Scarle and G. Beckett, of Carlton Colville, being the contractors. Accommodation is provided for 150 infants, and the central hall is 53ft. by 25ft.

St. Mary's, Soho.—This church has passed through many vicissitudes. It was built in 1677 by a Greek Archbishop, and two years ago the old nave was demolished by the London County Council because it had become a dangerous structure under the Act. Now, however, there is going to be a renovation, the corner-stone of the new nave having been laid on Monday last.

New Conservative Club at Brixham, Torquay.—The foundation-stones were recently laid of a new Conservative club in course of erection at Brixham from designs by Mr. E. Richards, architect. The building adjoins the Market Hall by the Bolton Cross, and will be of limestone from the Barton quarries, with Bath stone dressings. The site cost £200, and the contract for the building, which is being erected by Messrs. Hazlewood Brothers, amounts to £1,137.

The Removal of Newgate.—The transformation of the old military prison on Brixton Hill, which is to take the place of Newgate, will occupy nearly two years. With the exception of the north and south wings and the chapel, all the interior of the prison is to be rebuilt. On the west side of the prison yard, which is to be extended, a large cell wing 157ft. by 48ft. will contain the execution pit, mortuary, infirmary, and workshop. Being separated from the high road by an avenue of lime trees, the new prison will be well hidden from view.

Proposed New Fire Stations for Liverpool.—At the last meeting of the Liverpool City Council Mr. Houlst, in proposing the adoption of the general proceedings of the Watch Committee, referred to a minute with regard to the suggested provision of new fire stations for the city. In 1898, he said, a sum of £40,000 was voted by the Council for the erection of new fire stations. It was afterwards ascertained that the scheme would cost something like £53,000, this being the result of an advance in the cost of material and in wages. Owing to the erection of fire signals, &c., the circumstances under which the expenditure was decided upon had altered, and the head constable had reported that there was no immediate necessity for proceeding with the work. After discussion, the proceedings of the Committee were confirmed.

A new Central Fire Station at Edinburgh was opened last week. Mr. Robert Morham was the architect, and Messrs. Kinnear and Moodie were the contractors.

St Columb Major Church, Cornwall, is proposed to be restored. Mr. G. H. Fellowes Pryne has prepared a report in which the necessary work is estimated to cost £2,500.

The Essex Archaeological Society held its quarterly excursion on Saturday, when Nevendon, Benfleet, and Thundersley were visited. Mr. G. F. Beaumont, the hon. secretary, acted as leader.

Ruins of Baalbec.—At a recent meeting held at the New Palace, Potsdam, the German Emperor being present, the proposed expedition to Baalbec was considered. Several architects were present.

New Municipal Buildings for Hereford.—Certain premises in Owen Street, Hereford, have been offered by a Miss Johnson and her sisters for the erection of new municipal buildings. The offer has been accepted.

Nottingham Architectural Society.—The annual report of the Council for 1899 states that the total membership is now fifty-three, consisting of thirty-one members and twenty-two associates. There is a balance at the bank of £31 3s. 6d.

A new Wesleyan Chapel at Scunthorpe, Doncaster, has just been completed from designs by Mr. John M. Dossor, A.R.I.B.A., of Hull. The building has cost £4,190, the land £2,200, and new Sunday schools are being built at a cost of £1,500.

Workmen's Dwellings in Aberdeen.—Tenders amounting to £2,314 10s. have been accepted for the erection of artisans' dwellings in Roslin Street, Aberdeen. Tenders amounting to £3,140 19s. have also been accepted for erecting similar dwellings in Park Road, Aberdeen.

Municipal Insurance.—The conference of London local authorities convened by the Shoreditch Vestry resolved, on Thursday last, to adopt a system of mutual insurance, in order to escape the large amounts paid by the authorities in insuring municipal property. A committee was appointed to formulate a scheme upon the lines adopted by the Nottingham and Glasgow corporations.

Plenty More Chapels.—The Wesleyan Chapel Committee at its last meeting gave official sanction for the erection forthwith of twenty-four new chapels, estimated to cost £52,210; for thirty cases of enlargement, &c., estimated to cost £2,000; for eight ministers' houses, one Sunday school, nine new organs, and an additional outlay on works previously sanctioned, amounting in the aggregate to fully £90,000.

The Death is Announced of the Count de Marsy.—He was among the chief promoters of the law in France relating to the protection of ancient buildings, and the classification of such as were thereafter registered as national monuments. The Comte de Marsy was probably most widely known in his capacity as Director of the French Society of Archaeology, and as president of the yearly congresses of that learned body.

A Famous Old Bridge.—The old bridge at Brentford, spanning the little river Brent immediately before it flows into the Thames, is threatened with destruction. In Leland's day it was a wooden structure of three arches, probably the self-same bridge across which in olden times Christian passengers were permitted to pass free of toll, whereas Jews and Jewesses were forced to pay a half-penny if on foot, and one penny if on horseback.

Undercliff Hospital Competition.—At a meeting of the Undercliff Isolation Hospital Committee, held at Ventnor on Wednesday last, it was decided that the first premium (£20) in the recent competition for the proposed new hospital building should be given to the designs marked "Aeration," and the second premium (£10) to the designs marked "Desormais." These designs are respectively by Mr. George Broughton, of Ryde, I.W., and Mr. Edward L. Gaunt, of London, W.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
June 15	Cromer, Norfolk—Coastguard Buildings ...	Admiralty ...	Director of Works, Admiralty, Northumberland-av., E.C.
" 15	Aberdare—Model Bakery ...	Workmen's Industrial Society, Ltd. ...	J. L. Smith, Architect and Surveyor, Aberdare.
" 15	Draycott, near Derby—Schools ...	School Board ...	F. S. Antliff, Architect, Draycott, Derby.
" 15	Huddersfield—Houses ...	...	A. Shaw, Architect, Knowle, Golcar.
" 15	Kingston-upon-Thames—Foundations ...	Corporation ...	Borough Surveyor, Clattern House, Kingston-on-Thames.
" 16	Abergorlech, Wales—Bridge... ..	County Council ...	D. Phillips, County Surveyor, Carmarthen.
" 16	Carmarthen—Arch ...	County Council ...	D. Phillips, County Surveyor, Carmarthen.
" 16	Driffield and Holme-on-Spalding, Yorks.—House ...	Standing Joint Committee ...	A. Beaumont, County Hall, Beverley.
" 16	Horley—Alterations ...	London County Council ...	Architect, Council Offices, Spring-gardens, S.W.
" 16	Edenderry, Ireland—Cottages ...	District Council ...	T. H. F. Bor, Clerk, Edenderry.
" 16	Birkenhead—Houses ...	Corporation ...	F. and G. Holme, 1, Crosshall-street, Liverpool.
" 16	Brighton—Villas ...	...	J. M. Ferguson, 8, Quality-court, Chancery-lane, E.C.
" 16	Llangollen—Repairs ...	...	Morris and Hughes, Castle-street, Llangollen.
" 16	Teignmouth—Alterations and Additions... ..	S. A. Croydon ...	Watson and Watson, 1, Lower-terrace, Torquay.
" 18	Luton—Engine-house, Boiler-house, &c. ...	Town Council ...	Borough Engineer, Town Hall, Luton.
" 18	Scarborough—Roof ...	Gas Co. ...	W. J. Holliday, Gas Offices, 32, Westborough, Scarborough.
" 18	Holywell—Chapel ...	...	Mr. Williams, 3, Cable-street, Liverpool.
" 18	Blackburn—Conveniences ...	Highways Committee ...	W. Stubbs, Municipal Offices, Blackburn.
" 18	Castlemagner, co. Cork—Improvements ...	...	W. H. Hill and Son, 28, South Hall, Castlemagner.
" 18	Falmouth—Additions ...	...	W. Smith, 38, Lemon-street, Truro.
" 18	Kendal—Cottage... ..	...	Engineer, Gasworks, Kendal.
" 18	Manchester—Food Stores ...	Sanitary Committee ...	City Surveyor, Town Hall, Manchester.
" 18	Sheffield—Shops ...	J. H. Bryars ...	Gibbs and Flockton, 15, St. James's-row, Sheffield.
" 18	St. Anne's-on-Sea—Public Offices ...	Urban District Council ...	T. Muirhead, Clifton-chbrs, Orchard-row, St. Anne's-on-Sea.
" 18	Walsall—Additions ...	School Board ...	Bailey and McConnell, Bridge-street, Walsall.
" 19	Fleetwood, Lancs.—Engine Shed ...	Urban District Council ...	E. Frobisher, Town Hall, Fleetwood.
" 19	Ovenden, Yorks.—Classrooms ...	...	M. Hall, 29, Northgate, Halifax.
" 19	South Shields—Newsroom ...	Corporation ...	T. E. Burgess, Engineer, Chapter-row, South Shields.
" 19	Yealand Conyers, near Carnforth—Police Station ...	Standing Joint Committee ...	H. Littler, County Offices, Preston.
" 19	London, W.—Alterations ...	Paddington Guardians ...	E. H. Sim, 8, Craig's-court, Charing Cross, S.W.
" 19	Morton Banks, near Keighley—	Hospital Board ...	Judson and Moore, Architects, York-chambers, Keighley.
" 20	Plumstead—Building ...	Vestry ...	F. Summer, Vestry Offices, Maxey-road, Plumstead.
" 20	Preston—Constabulary Headquarters ...	Standing Joint Committee ...	H. Littler, County Offices, Preston.
" 20	Aldershot—Buildings ...	Urban District Council ...	Council Surveyor, Victoria-road, Aldershot.
" 20	Deal, Kent—School ...	...	C. L. Crowther, Architect, Deal.
" 21	Huddersfield—Hospital ...	...	Room 54, County Hall, Wakefield.
" 21	Grimsby—Residence ...	...	W. H. Wood, 14, Park-square, Leeds.
" 21	Kensington—Repairs ...	Guardians ...	E. Flint, 80, Coleman-street, E.C.
" 22	West Hartlepool—Church ...	...	E. and W. Richardson, Park-road, West Hartlepool.
" 22	Gt. Yarmouth—Dwellings ...	Urban Sanitary Authority ...	J. W. Cockrill, Town Hall, Great Yarmouth.
" 25	Wolverhampton—Shops ...	Markets Committee ...	J. W. Bradley, Town Hall, Wolverhampton.
" 25	London, N.—Public Offices ...	Hendon Urban District Council ...	T. H. Watson, 9, Nottingham-place, W.
" 25	Leeds—Library ...	Library Committee ...	P. Robinson, 72, Albion-street, Leeds.
" 25	Northfleet—Schools ...	School Board ...	S. J. Adam, Weston-chmbrs., Weston-rd., Southend-on-Sea.
" 26	Sutton Coldfield—Electricity Buildings ...	Corporation ...	Borough Surveyor, Town Hall, Sutton Coldfield.
" 26	Hull—Additions ...	School Board ...	Brodrick, Lowther, and Walker, 77, Lowgate, Hull.
July 4	Ellesmere, Salop—Shelters ...	Urban District Council ...	R. E. Lloyd, Clerk, Ellesmere.
" 16	Hellingly, Sussex—Asylum ...	...	B. Blaker, 211, High-street, Lewes.
ENGINEERING—			
June 15	Newcastle-Emlyn, Wales—Reservoir ...	Urban District Council ...	T. Thomas, Terra-Cotta-buildings, Newcastle-Emlyn.
" 15	Wells, Somerset—Sewage Purification ...	City Council ...	Cameron, Commin, and Martin, 7, Belford circus, Exeter.
" 15	Grimsby—Refuse Destructor ...	Corporation ...	Town Clerk, St. Mary's-gate, Great Grimsby.
" 15	Grimsby—Lighting ...	Urban Sanitary Authority ...	Borough Surveyor, Town Hall, Grimsby.
" 15	Dudley—Electric Wiring ...	Corporation ...	R. P. Wilson, 66, Victoria-street, Westminster.
" 15	West Ham—Laundry Machinery ...	Town Council ...	G. Wise, Quadrant-street, Canning Town, E.
" 16	Warrington—Well ...	Corporation ...	J. Deas, Bank House, Warrington.
" 16	Bacup—Reservoir ...	Corporation ...	J. Diggle, 3, Longford-street, Heywood, Lancs.
" 16	Middlesbrough—Crane ...	Ferry Committee ...	F. Baker, Municipal-buildings, Middlesbrough.
" 16	Horton, near Epsom—Electric Lighting ...	London County Council ...	E. W. Partridge, 6, Waterloo-place, S.W.
" 16	Bootle, Lancs.—Cables ...	Corporation ...	A. B. Wright, Electric Light Station, Pine-grove, Bootle.
" 18	Larne, Ireland—Lighting ...	Urban District Council ...	W. C. Younge, Town Hall, Larne.
" 18	Croydon—Engines and Pumps ...	Council ...	Borough Engineer, Town Hall, Croydon.
" 18	Blackpool—Electrical Equipment ...	Corporation ...	E. C. Quin, Corporation Electricity Works, Blackpool.
" 18	Bermondsey, S.E.—Electric Mains ...	Vestry of St. Mary Magdalen ...	F. Ryall, Town Hall, Spa-road, Bermondsey.
" 18	Burley in Wharfedale—Reservoir ...	Urban District Council ...	M. Paterson, 35, Manor row, Bradford.
" 18	Dunfermline—Waterworks ...	Fife County Council ...	Buchanan and Bennett, 12, Hill-street, Edinburgh.
" 19	Grays Thurrock—Heating ...	School Board ...	The Clerk, Board Room, Quarry-hill, Grays.
" 19	London, E.C.—Boilers ...	Shoreditch Vestry ...	G. N. Russell, Electric Light Station, Coronet-st., Hoxton, N.
" 19	Rugby—Filter Beds ...	Urban District Council ...	D. G. Macdonald, Surveyor, Rugby.
" 21	Glasgow—Cranes ...	Corporation ...	J. Younge, 88, Renfield-street, Glasgow.
" 21	Sutton Coldfield—Electric Lighting Plant ...	Corporation ...	T. V. Holbeche, Town Clerk, Sutton Coldfield.
" 22	Uxbridge—Filters ...	Rural District Council ...	Bailey, Denton and Co., Palace-chambers, Westminster, S.W.
" 22	Walthamstow—Hydraulic Plant ...	Urban District Council ...	G. W. Holmes, Town Hall, Walthamstow.
" 25	Wolverhampton—Abattoir Fittings ...	Markets Committee ...	J. W. Bradley, Town Hall, Wolverhampton.
" 26	Wolverhampton—Tramway Track ...	Tramways Committee ...	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
" 26	Barnet—Precipitating Tank ...	Urban District Council ...	W. H. Mansbridge, 40, High-street, Barnet.
" 26	Salford—Calorifiers ...	Baths Committee ...	Superintendent, Blackfriars-road Baths, Salford.
" 26	Salford—Hydro-Extractor ...	Baths Committee ...	Superintendent, Blackfriars-road Baths, Salford.
" 29	Hartlepool—Reservoir ...	...	Martin and Fenwick, 1, Park-place, Leeds.
" 29	Hull—Bascule Bridge ...	Corporation ...	City Engineer, Town Hall, Hull.
July 1	Alexandria, Egypt—Generating Machine... ..	...	Controller-General, Ports and Lighthouses, Alexandria.
" 7	Madrid—Electric Tramway ...	Spanish Government ...	Commercial Department, Foreign Office, S.W.
" 23	Callao—Reconstruction of Railway ...	Peruvian Government ...	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways ...	Corporation ...	Webster, Steel and Co., 5, East India-avenue, E.C.
" 23	Kolbergermunde, Germany—Dredger ...	Harbour Superintendent ...	Der Hafenbauinspektor, Harbour Works, Kolbergermunde, Germany.
IRON AND STEEL—			
June 18	Manchester—Iron and Steel Work ...	Ship Canal Warehousing Co., Ltd. ...	W. H. Hunter, 41, Spring-gardens, Manchester.
" 18	Llangollen—Pipes ...	Urban District Council ...	J. T. Wood, 3, Cook-street, Liverpool.
" 25	Blackburn—Ironwork ...	Highway Committee ...	W. Stubbs, Municipal Offices, Blackburn.
PAINTING AND PLUMBING—			
June 19	London, N.—Painting ...	Hornsey School Board ...	S. Hodson, 99, Southwood-lane, Highgate, N.
" 21	Glasgow—Painters' Work ...	Corporation ...	Office of Public Works, 64, Cochrane-street, Glasgow.
" 25	Blackburn—Painting ...	Guardians ...	Mr. Ruddle, Union Offices, Cardwell-place, Blackburn.
ROADS—			
June 15	Newcastle-on-Tyne—Road ...	Guardians ...	Oliver, Leeson and Wood, Mosley-st., Newcastle-on-Tyne.
" 15	Preston, Lancs.—Levelling, Paving, &c. ...	Corporation ...	Borough Surveyor, Town Hall, Preston.
" 18	Haverhill, Suffolk—Granite ...	Urban District Council ...	J. J. Knewstubb, Surveyor's Office, Haverhill.
" 18	Horsham—Tar Paving ...	Rural District Council ...	Mr. Dengate, 58, Park-street, Horsham.
" 19	Acton—Making-up ...	Urban District Council ...	D. J. Ebbetts, 242, High-street, Acton.
" 19	London—Stone Paving (Three Years) ...	Corporation ...	The Engineer, Guildhall, E.C.
" 19	Chertsey—Road ...	Urban District Council ...	J. F. Stow, Engineer, Chertsey.
" 19	Lewisham—Kerbing, Paving, &c. ...	Board of Works ...	Surveyor, Town Hall, Catford, S.E.
" 21	London, S.W.—Granolithic Paving ...	Metropolitan Asylums Board ...	The Clerk, Board Offices, Carmelite-st., Embankment, E.C.
" 26	Barnet—Paving ...	Urban District Council ...	W. H. Mansbridge, 40, High-street, Barnet.
SANITARY—			
June 16	Bakewell—Drainage Works ...	Rural District Council ...	Sterling and Swann, Town Hall, Chapel-en-le-Frith.
" 18	Croydon—Sewers ...	...	Engineer, Town Hall, Croydon.
" 18	Thame, Oxon—Sewers... ..	Urban District Council ...	Taylor, Sons, and Crimp, 27, Great George-street S.W.
" 19	London—Reparation for Sewers (Three Years) ...	Corporation ...	The Engineer, Guildhall, E.C.
" 19	Wakefield—Sewers ...	Rural District Council ...	F. Massie, Tetley House, Kirk gate, Wakefield.

COMPLETE LIST OF CONTRACTS OPEN--continued.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
SANITARY--continued.				
June	22	Uxbridge--Sewerage Works	Rural District Council	Denton and Co., Palace-chambers, Westminster.
"	25	Newmarket--Sewerage Works	Urban District Council	S. J. Eanion, Devac-hambers, High-street, Newmarket.
"	26	Barking, Essex--Sewerage Works	Urban District Council	C. F. Dawson, Council's Surveyor, Barking.
"	26	Romford--Drainage Works	Rural District Council	J. Simmons, Bank-chambers, Doncaster.
TIMBER--				
June	18	Trimdon Grange--Colliery Timber... ..	Walter Scott Ltd.	Storekeeper, Trimdon Grange Colliery.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
June 16	Berkhampsted--Girls' Grammar School	£50, £35, £15... ..	A. W. Vaisey, Solicitor, Berkhampsted.
" 30	Baviera--Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."
" 1	Falmouth--Sewerage Scheme	£100, £50, £25	J. H. Gann, Town Clerk, Falmouth.
July 16	Sunderland--Church ... ..	.....	William Wilson, 7 Azalea-terrace, South Sunderland.
Aug. 1	Cardiff--Asylum... ..	£105	Borough Engineer, Town Hall, Cardiff.
" 25			

CLASSIFIED INDEX TO ADVERTISERS.

Acetylene Gas-- Strode and Co.	PAGE i	Glazing-- Griffiths, Wm.	PAGE --	Sanitary Appliances-- Adams and Co.	PAGE vi
Armoured Fireproof Doors-- Dowson, Taylor and Co.	iv	Granite-- Bower and Florence	i	Couzens Duckett, T., and Son, Ltd.	xii
Artificial Stonework-- Ward, B., and Co.	--	Heating-- Blackman Ventilating Co.	xv	Doulton and Co. Ltd.	i, iii
Asphalt-- Pilkington and Co.	i	Jones and Attwood	i	Leeds Fireclay Co. Ltd.	--
Val de Travers	xv	Milne, E. P.	xiv	Oates and Green	--
Blinds-- Bell, R., and Co.	xv	Young and Marten, Ltd.	ii	Stanley Bros., Ltd.	xiv
Williams, G. A., and Son	xv	Horticultural Buildings-- Hypolite	xv	Twyford's Ltd.	x
Boilers-- Hartley and Sugden	--	Hurdles-- Bayliss, Jones and Bayliss	xii	Woolliscroft, G., and Son, Ltd.	--
Horsfall Destructor Syndicate	xv	Incandescent Electric Lamps-- The General Electric Co. Ltd.	--	Young and Marten, Ltd.	ii
Young and Marten, Ltd.	ii	Insurance-- London Plate Glass Insurance Co. Ltd.	ix	Sanitary Ware-- Doulton	i, iii
Bricks-- Burmantofts... ..	vi	Credit Assurance and Guarantee Corpora- tion, Ltd.	xv	Duckett, T., and Sons, Ltd.	xii
Eastwood and Co. Ltd.	xiii	Iron Paint-- Szerelmey, N. C., and Co.	viii	Stiff, J., and Sons... ..	viii
Edwards, J. C.	iii	Latrines-- Adams and Co.	vi	Twyford's Ltd.	x
Stanley Bros., Ltd.	xiv	Oates and Green, Ltd.	vi	Woolliscroft, G., and Son, Ltd.	--
Woolliscroft, G., and Son, Ltd.	--	Lift, Elevators, Hoists, &c.-- Waygood and Co.	i	School Partitions-- Stones, J.	--
Builders' Ironmongery-- Ball, H. A.	iii	Locks, Latches, and Furniture-- Kaye, J., and Sons... ..	i	Silicate Cotton or Slag Wool-- Jones, F., and Co.	iv
Measures Bros. Ltd.	viii	Sharland and Waddington	xv	Slates-- Buttermere Green Slate and Stone Works	--
Castings-- Coalbrookdale Co. Ltd.	--	White and Sons	--	Carter, A., and Co.	xiii
Chimney Cowl-- Milne, E. P.	--	Machinery, &c.-- Reynolds, F. W., and Co.	vii	Morris, M. E.	i
Chimney Pieces-- Coalbrookdale Co. Ltd.	--	Manholes and Covers-- Bayliss, Jones, and Bayliss	xii	Shepherd, E.	i
White, J. P.	viii	Young and Marten, Ltd.	ii	Stable and Harness-room Fittings-- St. Pancras Ironworks Co.	iv
Cradles-- Palmer, E.	iii	Marble-- Patteson, J. and H.	--	Young and Marten, Ltd.	ii
Damp Courses-- Morris, M. E.	--	Metal Cement (Diener's)-- Michaelsen and Heine	viii	Stoves, Ranges, Mantles, &c.-- Coalbrookdale Co. Ltd.	xiii
Decoration-- Anaglypta	v	Mosaic Work-- Minton, Hollins and Co.	i	King, J., and Co. Ltd.	--
Directories, &c.-- Local Government Annual	xv	Wooliscroft, G., and Son, Ltd.	--	Structural Ironwork-- Ball, H. A.	iii
The Scottish Local Government Gazette	xv	Non-Flammable Wood-- London Non-Flammable Wood Co.	--	Bayliss, Jones, and Bayliss	xi
Door Springs and Hinges, &c.-- Adams, Robert	--	"Opalite" Griffiths, W.... ..	--	Blakeley, E. F., and Co.	xv
Drain Pipes-- Doulton	i	Paints, Stains, Varnish, &c.-- Sissons Bros. and Co. Ltd.	viii	Homan and Rodgers	iv
Stiff, J., and Sons	viii	Howie, Wm.	xiv	Measures Bros.	viii
Drawing, Tracing, &c. London Drawing and Tracing Office	ix	Paving-- Ward, B., and Co.	--	The St. Pancras Ironworks Co.	iv
Electric Light Fittings-- Brawn, T., and Co.	--	Woolliscroft, G., and Son, Ltd.	--	Williams Bros. and Co.	i
Enamels-- Aspinall's Enamel, Ltd.	vii	Photo-Engravers-- Carl Hentschel, Ltd.	xv	Tanks, Cylinders, Cisterns, &c. Bawn, W. B., and Co.	iv
Faience-- Burmantoft	vi	Plumber-- Howie, Wm.	xiv	Winn, C., and Co.	xiv
Woolliscroft, G., and Son	--	Pottery-- Burmantofts... ..	vi	Terra-Cotta-- Burmantofts Works	vi
Fencing-- Bayliss, Jones, and Bayliss	xi	Public Urinals-- Oates and Green, Ltd.	vi	Doulton	i, iii
Fibrous Plaster Slabs-- Jones, F., and Co.	iv	Publishers-- Boyle, R., and Son, Ltd.	xvi	Edwards, J. C.	iii
Fireproof Flooring, Partitions, &c.-- Dowson, Taylor and Co.	iv	Griffin, C., and Co. Ltd.	--	Pilkington and Co.	i
Homan and Rodgers	i, v	Railings-- Bayliss, Jones and Bayliss	xii	Woolliscroft, G., and Son, Ltd.	iv
Ward, B., and Co.	--	Young and Marten, Ltd.	ii	Tiles-- Edwards, J. C.	iii
Fountain Pens-- Mabie, Todd and Bard, Swan Fountain Pen... ..	--	Roofing (various)-- Blakeley, E. F., and Co.	xv	Godwin, W., and Son	xiv
Garden Seats, Frames, &c.-- Hypolite	xv	Carter, A., and Co.	i	Leeds Fireclay Co. Ltd.	--
White, J. P.	viii	Shepherd, E.	xv	Minton, Hollins and Co.	i
Gas Fittings-- Brawn, T., and Co.	--	Woolliscroft, G., and Son, Ltd.	--	Pilkington	i
Gates, Railings, &c.-- Bayliss, Jones, and Bayliss	xi	Sand, 'allast, Shingle, and Garden Gravel-- The Builders' Material Supply Stores	xv	Woolliscroft, G., and Son, Ltd.	--
Young and Marten, Ltd.	ii			Urinals-- Twyford's Ltd.	x
Glass-- Union Plate Glass Co. Ltd.	vi			Woolliscroft, G., and Son, Ltd.	--
				Ventilating-- Blackman Ventilating Co. Ltd.	xv
				Boyle, R., and Son, Ltd.	vii, xvi
				King, J., and Co. Ltd.	--
				Wallpapers, Decorations, &c.-- Knowles, C., and Co.	xiv
				Walton, F., and Co. Ltd.	v
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				Water Heaters-- Doulton and Co. Ltd.	iii
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				Window Frames and Sashes-- Williams Bros. and Co.	i
				Young and Marten, Ltd.	ii
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				Woolliscroft, G., and Son, Ltd.	--

COMING EVENTS.

Wednesday, June 13.

SURVEYORS' INSTITUTION.—Special Certificate Examination in Forestry and Sanitary Science. Second Day.

INCORPORATED GAS INSTITUTE.—Annual General Meeting (Second Day), at the Royal United Service Institution. Mr. W. H. Webber on "The New Gas." 10 a.m.

JAPAN SOCIETY.—Annual General Meeting. 8.30 p.m.

CARPENTERS' COMPANY.—Examination at Carpenters' Hall, London Wall. 6 to 10 p.m.

Thursday, June 14.

SURVEYORS' INSTITUTION.—Special Certificate Examination in Forestry and Sanitary Science. Third and Last Day.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting. 8.30 p.m.

CARPENTERS' COMPANY.—Examination at Carpenters' Hall, London Wall (Second day). 6 to 10 p.m.

HOUSE OF COMMONS.—Second Reading of the "Water Supply Bill," and of the "Housing of the Working Classes (Rural Districts) Bill."

Friday, June 15.

ROYAL COLLEGE OF ART, SOUTH KENSINGTON.—Mr. Lewis F. Day on "Ornamental Design."—XX. 11.30 a.m.

CARPENTERS' COMPANY.—Practical Examination at Schools, Great Titchfield Street. 9.30 a.m. to 5 p.m.

HOUSE OF COMMONS.—Second Reading of the "Architects' Registration Bill."

Saturday, June 16.

ARCHITECTURAL ASSOCIATION.—First Summer Visit to Deepdene, Dorking.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Westminster Abbey. 3.30 p.m.

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—Visit to St. Albans Cathedral by 2.13 p.m. train from St. Pancras.

CARPENTERS' COMPANY.—Viva Voce Examination at Carpenters' Hall, London Wall. 12 a.m.

Monday, June 18.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Reception by the President R.I.B.A., at 9, Conduit Street, W., 8 p.m. Presentation of the Royal Gold Medal to Commendatore Rodolfo Lanciani, per one of the secretaries of the Italian Embassy, 8.30 p.m.

Tuesday, June 19.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Mr. William Emerson, P.R.I.B.A., on "The Official Control of Public Buildings," 8 p.m. Conversazione at the Guildhall, 8.30 p.m.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Annual General Meeting at the South Wales Institute of Engineers' Building in Park Place, Cardiff. (First Day.) Reception by the Mayor, Councillor S. A. Brain, J.P., 10 p.m. President's Inaugural Address by Mr. C. H. Priestley, A.M.I.C.E.; Election of Auditors for the year; 10.30 a.m. Mr. F. J. Bancroft, B.Sc. A.M.I.C.E., on "The Rating of Water Undertakings," 2.30 p.m. Visits to Cardiff Docks Iron and Steel Works and to the Butte Docks of the Cardiff Railway Company, 4 p.m.—6.30 p.m.

HOUSE OF COMMONS.—Second reading of the "Housing of Working Classes Bill."

Wednesday, June 20.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Mr. E. W. Mountford, Sir William Richmond, K.C.B., R.A., and Mr. Roscoe Mullins on "The Collaboration of the Architect, the Painter and the Sculptor," 11 a.m. Visit to the new Westminster Cathedral, 3 p.m. Mr. Halsey Ricardo, the Earl of Moath, and others on "The Ideal City—Streets and Bridges; Public Monuments; Public Gardens and Open Spaces," 8 p.m.

SOCIETY OF ARTS.—Conversazione at the Natural History Museum, Cromwell Road, S.W., in the evening.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Annual General Meeting at Cardiff (Second Day). Mr. Alfred J. Jenkins, A.M.I.C.E., on "The Relationship between the Cost of Water Wasted and the Cost of Detection," 10 a.m. Visit to the Corporation Waterworks, at 2 p.m. Annual Dinner at the "Esplanade" Hotel, Penarth, at 7.30 p.m.

New Companies.

London and General Properties Company, Limited.

This company was registered on May 30th with a capital of £15,000 in £1 shares to acquire land and property and to carry on the business of builders, financiers, builders' merchants, &c. The first directors (to number not less than two nor more than seven) are to be appointed by the subscribers.

London Wall Estate Company, Limited.

This company was registered on May 25th with a capital of £20,000 in £1 shares to carry on the business of builders, contractors, decorators, brick, timber, and hardware merchants, &c. The first directors (to number not less than four nor more than seven) are C. E. Rube, M. A. Braunstein, F. I. R. Seaver, and L. Wagner.

Fylde Investment Syndicate, Ltd.

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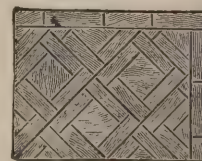
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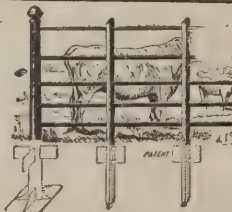
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TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

CLACTON-ON-SEA.—For the erection of a house to be built in the Harrow-road. Mr. R. Mawhood, architect, 2, Market-road, Chelmsford:—
Shillitoe £2,500 | E. West, Chelmsford
Linzell 2,287 | and Clacton* £1,993
* Accepted.

CHELMSFORD.—For the erection of nine cottages for the Chelmsford Star Co-operative Society. Mr. R. Mawhood, architect, 2, Market-road Chelmsford:—
Lummis and Son £2,353 | W. Sannus £2,110
F. Weight 2,175 | J. Gowers, Chelms-
ford* 2,135 | ford* 2,070
* Accepted.

FELIXSTOWE.—For the construction of basement of hotel, for the Hon. Douglas A. Tollemache. Mr. T. W. Cotman, architect, Northgate-street, Ipswich. Quantities by Mr. Sidney J. Parmenter:—

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H. J. Linzell ...	5,445	30 "
Thos. Ward ...	5,389	9 months.
A. and B. Hanson ...	5,342	24 weeks.
F. C. Thurman, Walton (Felixstowe) ...	5,200	18 "

HENDON.—For erecting a factory at Hendon, for Messrs. A. Garstin and Co. Mr. Richard H. Hill, architect, Ingram House, 165, Fenchurch-street, E.C.:—
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Grover and Sons 5,037 | J. B. Nightingale 4,725
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Wm. King 4,950 | J. Outhwaite and Son 4,711
T. Turner, Ltd. 4,917 | J. and G. Waterman* 4,544
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HERTFORD.—For building new wing to Herts Reformatory School, for the committee. Mr. G. R. Hammond, architect, 16, Essex-street, Strand:—
F. Hitch £1,566 | T. Hunt £1,358
Norris and Son 1,405 | Ginn and Son (accepted) 1,185
Ekins and Co. 1,390
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LEADEN RADING (Essex).—Addition to a farmhouse. Mr. R. Mawhood, architect, 2, Market-road, Chelmsford:—
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W. Drewery 460 | Heath* £370
* Accepted.

LONDON, E.—For alterations and repairs to "The Wave" lodging-house, Victoria Dock Road, E., for Mansfield House University Settlement. Mr. H. C. Lander, A.R.I.B.A., architect, Effingham House, Arundel Street, Strand, W.C. Quantities by Mr. C. A. Jaques, 29, Dartmouth Park-avenue, N.W.:—
Gregar and Son, Stratford £598 | Smith and Sons, South
Synes, Stratford 546 | Norwood £530
H. M. Dove, Euston-road 545 | W. J. Maddison, Cann-
ing Town* 515
* Accepted.

LONDON.—For alterations, additions, and redecorations at house and stables, No. 34, Hill-street, Berkeley-square, for Mr. Vivian H. Smith. Mr. R. G. Hammond, architect, 16, Essex-street, Strand:—
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LONDON.—For altering buildings at Grosvenor-road and forming new studio premises, for the Dowager Countess of Warwick. Mr. R. G. Hammond, architect, 16, Essex-street, Strand:—
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LONDON.—For proposed dancing academy at Tavistock-place, W.C., for Mr. H. R. Johnson. Mr. Fredk. W. Foster, architect, 41, Bedford-row, W.C. Quantities by Mr. J. F. Bulb, 30, Bedford-row, W.C.:—
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LONDON.—For altering 8, Sloane-street, S.W., for Mr. J. E. Mason. Mr. R. G. Hammond, architect, 16, Essex-street, Strand:—
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A. B. Nowakowski 2,392 | Colley and Sons 1,995
H. M. Dove 2,264 | G. and F. Kent* 1,991
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LONDON.—For sanitary and drainage works at King and Queen-street School, Walworth, for the London School Board. Mr. T. J. Bailey, architect:—
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Falkner and Sons 2,183 0 | W. V. Good* 1,576 0
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OLDBURY.—For the construction of sewers, Titford-road and Causeway-green, for the Urban District Council. Mr. J. T. Eayrs, engineer, 39, Corporation-street, Birmingham:—
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Marrin £2,298 10 11 | T. Vale £1,891 11 11
W. H. Jones 2,078 9 6 | G. Trentham,
Birmingham* 1,842 2 3
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REIGATE.—For the erection of municipal buildings, fire-station, the chief constable's house on the Castle Fields, for the Town Council. Messrs. Macintosh and Newman, architects, Birkbeck Bank Chambers, Southampton-buildings, High Holborn, W.C. Quantities by Messrs. Leaning and Sons, 28, John-street, Bedford-row, W.C.:—
G. Jackson £23,000 | Smith & Son, Croydon £24,575
Chas. Ansell 24,888 | Potter Bros. 24,400
Longley and Co. 24,718 | F. G. Minter 23,991
Smith and Son, Nor-
wood 24,627 | Turtle and Appleton,
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ST. MARY CRAY (Kent).—For the erection of a private residence in High-street. Mr. St. Pierre Harris, architect Quantities by Messrs. Stanger and Son:—
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Clerk to the County Council.

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COUNTY BOROUGH of CARDIFF.

TO ARCHITECTS.

The Corporation of Cardiff invite COMPETITIVE DESIGNS for their proposed NEW ASYLUM for 1,250 patients at Whitechurch, near Cardiff.

The Competition will be in two stages.

The first stage will be open to all architects, and the drawings therefore must be to a small scale in pencil. From the designs submitted in that stage the authors of six will be selected to enter the second stage of the Competition, the drawings to be in ink according to the requirements of the Lunacy Commissioners. A premium of One Hundred Guineas will be paid to each competitor in the second stage who complies with the conditions, and the successful competitor placed first will be employed to carry out the buildings on the terms stated in the conditions.

Printed conditions and instructions can be obtained on application to the Borough Engineer, Town Hall, Cardiff, on payment of One Guinea, which will be returned on receipt of a bona-fide design, or if the conditions are returned by JUNE 30th. In the selection of the designs the Corporation will be advised by Mr. G. T. HINE, Architect to the Commissioners in Lunacy, as Professional Assessor, whose decision shall govern the selection of the designs and be final and binding in all stages of the Competition.

Designs in the preliminary stage of the Competition, sealed and endorsed "Design for New Asylum," must be delivered to the Borough Engineer not later than TWELVE o'clock noon, on SATURDAY, AUGUST 25th, 1900.

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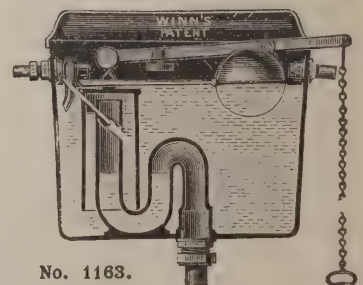
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JUNE 20, 1900.
No. CCLXXX.

EFFINGHAM HOUSE,
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An Architectural Causerie.

A Plea for Critics.

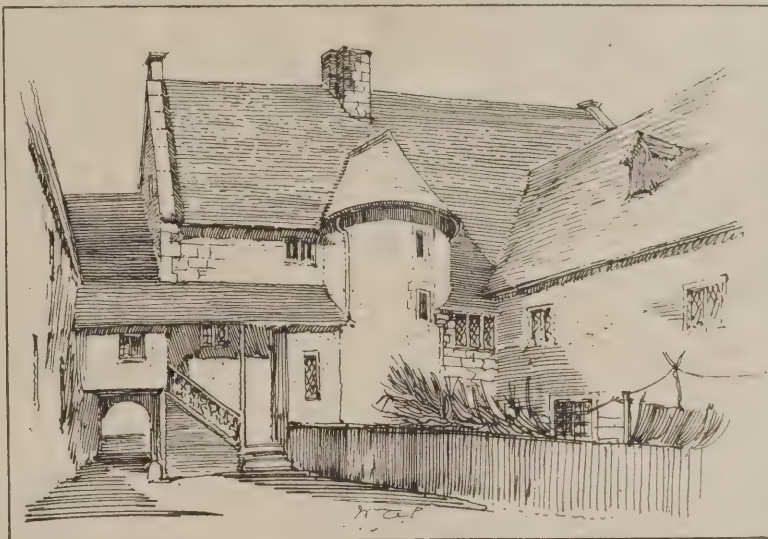
DISRAELI'S epigram on the subject of "Critics" has often served as a vent for the irrita-

tion of the professional man when smarting under an appreciation of his efforts which rates them less highly than he and his friends are disposed to do; and it is so quotable that many of the public, with or without the right to express an opinion upon matters pertaining to the domain of art, glibly repeat it, without thinking of the injustice which they are thereby inflicting, for the gibe has just so much of truth in it as to make it impossible to meet it with a flat denial. Critics often *may be* those who have failed in art and literature no doubt, for those who have succeeded keep for the most part to the exercise of a much more lucrative calling. Why should the successful artist leave his pleasant labours and trouble himself to enlighten an unresponsive public as to the merits or demerits of the productions of his fellows?—working, as he does, just when he pleases, as long as he pleases at what pleases him, and obtaining from the public what price he pleases. Or the successful dramatist or literary man whose income is counted by thousands, and who surely must be weary of labour with book and pen. Why should they trouble themselves to prolong that labour for the pittance which for the most part is all that an editor thinks criticism to be worth? Far better is it for them to spend the time in recreation and recuperation. At the same time the most virulent opponent of the critics can scarcely maintain that it is not an advantage, both to the public and to the man criticised, for them to have some practical acquaintance with the various arts upon the practitioners of which they pass judgment, and most certainly those whose knowledge enables them to speak intelligently, who are able to realise what difficulties have been confronted and overcome, are much more likely to be listened to when they express an opinion than others whose words show that they are speaking without any real comprehension of the problems which the artist has set himself to solve.

But if this be granted, and it be found impracticable to obtain the opinions of acknowledged masters, surely the next best

thing is to apply to those who have been less successful in obtaining the patronage of the public, though perhaps not less well equipped for success in other ways, for it must not be forgotten that "success," as the word is understood nowadays, depends upon the combination of many factors, and that it is not always the best artist who is most successful, even from the artist's point of view. For commercial success it is necessary to produce continuously things which are up to the same standard (which may perhaps gradually rise a little), and are so much on the same lines as to be immediately recognisable as being by the same hand. Every patron requires a "characteristic example," and the ambition which attempts quite different subjects and

and distinguish the meretricious from the excellent, instead of endeavouring to make the public laugh and the unfortunate artist squirm by a clever, smartly-written article—that he should, in fact, think more of art and of the things which he is supposed to be judging and less of himself and his reputation for cleverness. But it is plain that such unattractive conscientious work is not likely to be done by the brilliant man whose talents take him to the front rank, while he who is less successful in gaining the approval of the public for his own work may help others to the appreciation denied himself, at the same time assisting the ultimate triumph of the principles which guided him in his efforts in the cause of art. A. W.



AT BURFORD, OXON. DRAWN BY WILLIAM A. PITE. (See p. 359.)

treatment is generally unrewarded. Whereas the truly original artist is not satisfied with repeating his previous successes, he is ever striving to conquer for himself fresh heights, and sometimes finds the steep too great for his powers at the first or even second attempt. Such works are not at first glance recognisable as his, and fail of complete success both from his own point of view and from that of the market. In fact, it is arguable that popular success in art, with its tangible rewards, has nothing to do with artistry, but depends upon quite other qualities, though it does sometimes happen that success in both directions comes to the same person. It would be invidious to give instances, though names must spring to the lips of anyone who has lived thirty years and interested himself in matters of art, of those who have achieved popular successes which are not also artistic. The truth is that, in England at all events, the public has no criterion by which it may judge in matters of art, and that the conscientious critic may fill a most useful rôle if he be content to draw attention to the qualities which are likely to escape casual notice and public appreciation,

Toole's Theatre. STRANGE are the histories and varied the careers of many among London's buildings, but few have had such odd fortunes as those of the houses numbered 24 and 25, King William Street, Strand, which were last known as Toole's Theatre, and are now to be demolished for the impending enlargement of Charing Cross Hospital. King William Street, Strand, is a relic of that very busy era of rebuilding in London, the 20's and 30's of this expiring century, when Nash, the arch-beautifier, that—

Very great master
Who found us all brick and left us all plaster,

was actively engaged in setting out new and palatial streets and building stucco-fronted houses; and its tall and substantial buildings, designed in a Classic convention, have a certain dignity. As the name of the street implies, it was completed in the reign of William the Fourth. Already many of the streets and isolated buildings of that era, of which Londoners were at the time so proud, have given way to modern improvements. Even Regent Street's long and regular lines

have been broken by new structures not at all in accord with Nash's ideas, and the rather fine architectural scheme of St. Bride's Court, Fleet Street, which belonged to the same period, has only this month



TOOLE'S THEATRE. DRAWN BY C. G. HARPER.

disappeared under the pickaxe of the house-breaker in operations for the widening of Fleet Street.

King William Street, like New Oxford Street, Waterloo Place, and the Regent's Park district, where stucco most does flourish, has hitherto seen little change, but its time has apparently come after some seventy years. Toole's Theatre, about to be absorbed by the great hospital, was originally a whisky store. It was afterwards taken over for the use of the Roman Catholic Church in 1849, when the Oratorians came to London, under the control of the late Cardinal Manning. The Oratorians remained here until 1852, and then removed to the outlandish district of Brompton, since dignified and civilized under the fashionable name of "South Kensington." They secured a site in these wilds, since covered by a stately church. After an interval the deserted building in King William Street experienced another odd change, and was converted into a place of amusement, under the name of the Charing Cross Theatre, afterwards known as the Folly Theatre; it was leased in later years by that popular comedian, J. L. Toole, who renamed it after himself.

The pending enlargement of Charing Cross Hospital, so long contemplated, is to cost more than £80,000, and will, when completed, place that institution on a level with the other great hospitals of the metropolis.

C. G. H.

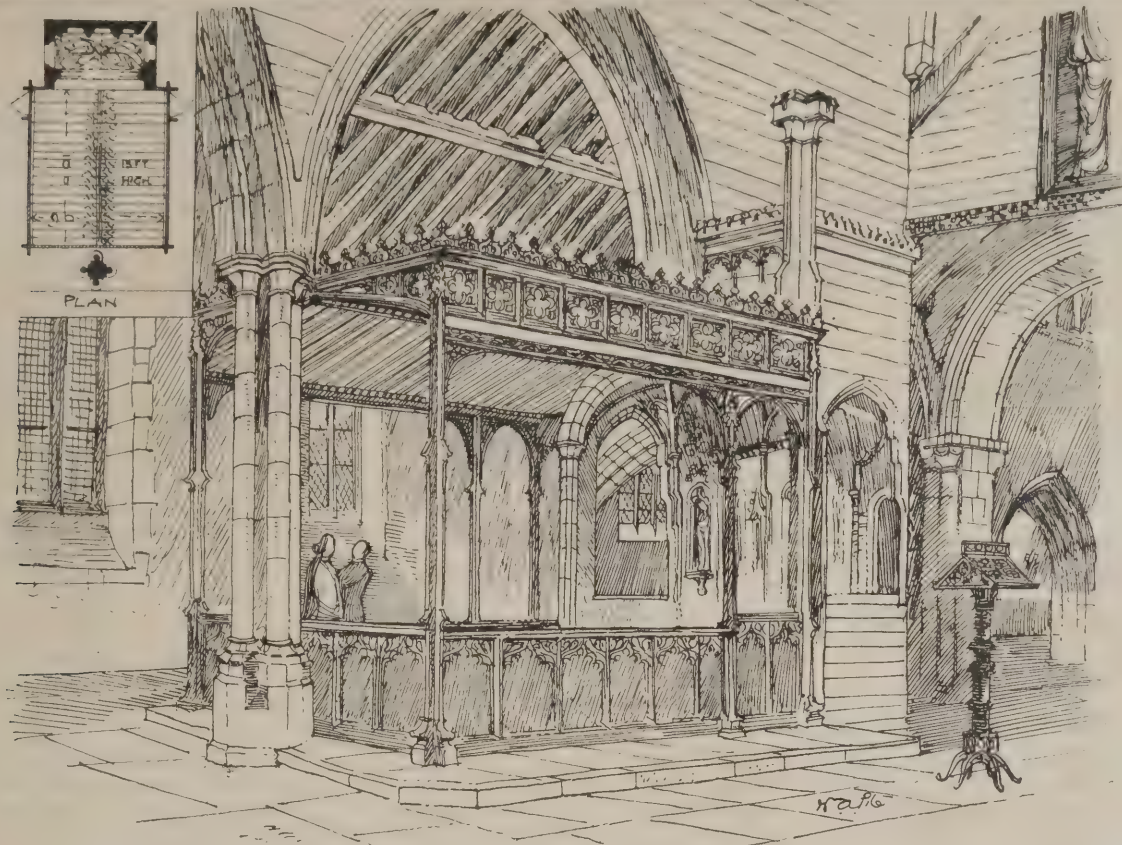
On Reflection.

THE L.C.C. has great ideas and unloads them occasionally on the subordinate vestries, who sit appalled by their immensity. Like Mr. Hooley, the L.C.C. deals in millions and is not afraid; but to a vestry like Fulham, which debates half the night over an expenditure of £20, the proposition to vote a scheme, costing a little half-a-million, before the vacation begins, comes something like the shock of the Serpentine to the early bather. The dream of the L.C.C. just now is to become a great tramway proprietor. Trams to the north of them, trams to the south of them, trams all round them. With this idea it has prepared two big schemes to beautify London generally, one a tramway route from Harlesden to Putney Bridge, *via* Fulham Palace Road, and another from the Bank along the Embankment, Victoria Street and Chelsea to Putney Bridge. What evil Putney Bridge has wrought that it should have this double visitation we do not know. But this is not all. These systems are to be connected with the southern lines across Battersea Bridge to Clapham. Fancy anybody wanting a second Clapham Junction. For these little undertakings the L.C.C. requires money, and suggests that the various vestries should contribute in view of increased trade and other (undefined) advantages. The vestries are a little appalled at the prospect. Like a few of the outsiders, they feel that trams which can bring desirable people into their neighbourhoods may just as easily bring undesirable customers. And this result, at a cost of half-a-million sterling, can hardly be considered a good bargain. So at present each vestry is inclined to sit on the fence and see what the other vestries say, and, as they are all going to do the same thing, the L.C.C. may have to wait some time for a definite answer.

Uniform By-laws. A PAPER will be read at the Architectural Congress next Friday on the desirability or otherwise of uniform building by-laws. What opinion will be vouchsafed by the lecturer remains to be seen, but in any case the subject is a thorny one, and likely to provoke discussion. It is felt by many competent authorities that the Model By-laws, from which the majority of the local bodies draft their regulations, are not so comprehensive or far-reaching as they should be, and that the first requisite is a new standard of building law. Doubtless, the argument of one law for the town and one for the country will find its exponent; and, to a certain extent, this must necessarily be correct, because many forms of building, as, for instance, earth-closets where there is no water-carriage sewage system, are legitimate in the country though prohibited in towns. Still we have always thought that the necessary requirements for satisfactory building in town or country might, up to a certain point, be enacted by law. A consolidation, too, of some of the Acts bearing upon building would also be beneficial. The admittedly imperfect London Building Act has been supplemented by several sets of

by-laws in connection with special works, and the reading of all these becomes somewhat confusing. A building law of minimum requirements for the whole of the United Kingdom, containing separate schedules of regulations for special buildings, such as theatres, &c., would be a boon to the architectural world, and of inestimable benefit in constructional work. There seems to be an idea abroad that anything will do for the country, and this insuperably foolish notion leads architects to design pretty houses rather than healthy ones. One design for a country house that recently came before our notice showed all the bedrooms in the roof, so that it was impossible to stand upright in three-quarters of the space, to say nothing of dark corners resulting from dormer windows and the impossibility of putting in a bed except across the door, window, or fireplace. Yet this house had a most pleasing exterior, and that is probably what it would be judged by. An acquaintance, who had bought a very pretty house, admitted some months afterwards that he regretted his purchase, because the district was so relaxing. Seeing that he was living in one of the most bracing parts of the Peak district the remark sounded foolish, and he was afterwards persuaded to re-model his house, build the bedrooms up square, and enlarge all the windows. As a result there has been no return of the headaches and general lassitude which he formerly experienced. These are questions which should all be dealt with in one ideal building Act. To say, because a man lives in a healthy country district, that there should be less stringent building regulations, and that the pure air outside his house will compensate him for the unhealthiness in it, is an absurdity that requires no comment.

Window Boxes. THE householder's thoughts naturally revert, at this period of the year, to the subject of window boxes, and the average Englishman's taste in such is not one to be commended. Generally, in the matter of colour, the English idea is sober; the range of colour for the male thing's clothes is somewhat restricted, and though his better half can, and, at times, does appear to rival the rainbow, we, as a nation, have never even approached the brilliancy of our Continental neighbours. Still, the love of brilliant colours, a survival of the primitive days of savagery, does exist in us somewhere in a greater or lesser degree, and what is bred in the bone comes out in the flesh. An Englishman rarely cares to be conspicuous in his dress, at least in his own country, and now that we are beginning to appreciate the vulgarity of flaring wall-papers and plush-covered suites at £5 5s. on the hire system, we let ourselves go in the matter of our window boxes. No doubt flowers have a natural and proper gaiety, but when you remove them from their native heath and distribute them about the outside of your dwellings, it is as well to see that there is not a hue and cry in various senses. Exactly what should be said to a man who, having a pink-brick house, adorns it with window boxes, faced with peacock blue and sage-green tiles, and plants therein a bottom row of trailing pink geranium, a middle row of blue lobelia, and a back row of white marguerites, is a matter of conjecture, and we have seen worse combinations. As the flowers are of more importance than their receptacles, we would suggest that the latter be kept as inconspicuous as possible. The colours of beautiful flowers may be forgiven in any combination, but the colour of glazed tiles is not always a thing of beauty and a joy for ever, especially when taken in conjunction with the late Victorian Utilitarian style.



PEOPLE'S ALTAR IN NAVE, ST. JOHN THE BAPTIST'S CHURCH, BURFORD. DRAWN BY WILLIAM A. PITE.

BURFORD, OXON.

By WILLIAM A. PITE.

SCATTERED up and down the country are numbers of small old-world towns left high and dry by our railway systems, cut off from urban intercourse, and insulated in rural districts. Their prosperity has declined with the advance of time, and the place to which but a few years before the stage coach brought business and bustling activity has now become a sleepy hollow and a quiet record of an historical past, a past which the average Englishman will do well to revere and preserve.

Some such places may rise in the reader's memory, and while many annually flock to the antiquities of Holland, Belgium, and Germany, how few there are who take the trouble to consider what treasure there is in this England of ours?

The town of Burford, in Oxfordshire, is such as merits the foregoing description. Buried away in the county, adjacent to the once famed Wychwood Forest, it is now desolate and silent, far from the screech of the locomotive and the hum of life. It is still easily reached from Witney or Bampton. The coach road enters the town by a wide and characteristic street, where the burghers found their prosperity and made the place famous for its saddlery and other goods. The records go back to an early date, a synod being held here in A.D. 704. This air of upright antiquity Burford still retains, and it is abundantly witnessed by many quaint streets and by-ways with much ancient work in evidence, all culminating in the great and wondrous Church of St. John the Baptist, replete with architectural interest and antiquarian enigma, sufficient to occupy and tax the speculation of architect or archaeologist, whether he be given to reflection or garrulity, for many a day.

At the bottom of the street is the ancient stone bridge spanning with four arches, besides massive abutments, the river Windrush. No doubt the local authorities will tell us the bridge is "old and inconvenient," but still, it is Burford Bridge, and so over it we go to the rolling country beyond, leaving the characteristic and beautiful ruins of the Priory on the left (immortalised by Mr. Waller's well-

known pictures), and to the right on the hill the little church of Fulbrook with its village-wrought work.

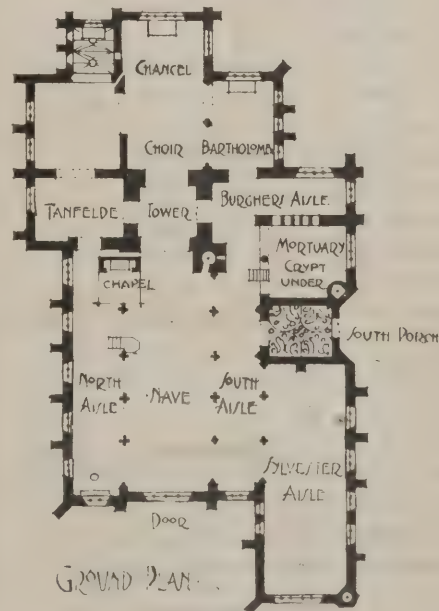
The great church would require a book to itself. Rambling and many-aisled, it is probably unique. The size and importance of the edifice gives us some idea of what must really have been the great importance of Burford Church; its scale, extent, and interest can only be described as magnificent. Some of its features may with advantage be briefly referred to. To begin with, it is grander than the general run of parish churches, and holds its own against such notable local rivals as Bloxham, Bampton-in-the-Bush, and Witney, and this is no slight thing to say.

I know of no church that I have seen which presents such irregularity (which a reference to the sketch plan will demonstrate); the possible theory has been advanced that two buildings have been united. What is now designated the Sylvester aisle, at the west end, may have been a distinct chapel detached from the church. This was without doubt founded in the thirteenth century, while in the fifteenth century the north wall was opened by arches into the church proper, and extended eastwards, so that the magnificent Perpendicular porch and parvise (probably one of the finest in England), at first partly detached, has become entirely embedded between this and one of the south transepts.

The central tower, which is of twelfth century work in the lower stages, exquisite in detail, and late fifteenth century in the upper part and spire, cuts the building in two, its narrow arches greatly assisting this undesirable end. Beneath the tower is much interesting evidence respecting the lines of former roofs to the nave. The church in mediæval days being in frequent daily use in a way which we of to-day can hardly realise, very great inconvenience must have been felt and resulted from the general arrangement. The altar at the east end in the chancel ceremonially must have been at a great disadvantage congregationally. In order to remedy this a most ingenious and interesting expedient was resorted to; a people's altar was erected on the west side of the tower. This unique feature is here illustrated. In appearance it is not unlike a large pew; and in later times it no doubt was used as such, being generally known as the Priory

pew. Enclosed in screen work, with a tester over, the altar and reredos are of stone with a squint east. To this point more people can look than from any other part of the church, and but little obstruction is caused by the columns of the Sylvester aisle. The church possesses an interesting font, and an adjacent stone bench, but nine inches off the floor, presents a nice problem in levels. The font is marked with English history. In May, 1649, the Levellers (by the way, what a characteristic name for the times), after holding Banbury, were driven back to Burford, and were all killed or taken prisoners. Many were confined in the church, one of whom, "Anthonye Sedley Prisner," rudely carved these words on the font.

A great deal more might be said. The church abounds with monuments, and the student of heraldry will find much to unravel in the Renaissance tombs and other remains of antiquity which, it is trusted, may ever remain our treasured heritage.



ST. JOHN THE BAPTIST, BURFORD.



IN THE HIGH STREET, BURFORD. SKETCHED BY WILLIAM A. PITE. (See p. 359.)

LANDSCAPE ARCHITECTURE.

By GUY LOWELL.

THE development of material prosperity in the United States, followed by a widespread activity in erecting fine buildings and in decorating them beautifully, has once more proved the truth of Lord Bacon's statement that, "when ages grow to civility and elegancy, men come to build stately sooner than to garden finely, as if gardening were the greater perfection." Americans have long since realised that, to have fine buildings, they must employ skilled architects, but it is only recently that they have begun to understand that landscape gardening is an art which requires as much study and training as architecture. And because men have "come to build stately," and realise the importance of "gardening finely," there is a constantly increasing demand for landscape architects.

There has always been, and there probably always will be, a number of able engineers, architects, and horticulturists who have drifted into the profession of landscape gardening; and there are others who will

always believe that the sphere of the landscape architect is confined to beautifying roads and bridges, improving the surroundings of a building, or grouping rare plants so as to produce a pleasing effect. Actually, the field of landscape art is far broader than that, requiring a knowledge of many things and drawing no line between itself and other arts and professions. Because the landscape architect should be a civil engineer, an architect and an expert gardener, or at least be as thoroughly grounded as is possible for one man to be in the principles of all three professions, it is a mistake to suppose that his education can stop there. Landscape architecture requires a special training, and, not being a branch of any other art, ought not to be treated as a specialisation of some other profession. But, because it has so much in common with the professions already mentioned, it can best be taught in fellowship with them; and therein lies the exceptional advantage in teaching landscape architecture where there are already well-founded courses in architecture and in civil engineering.

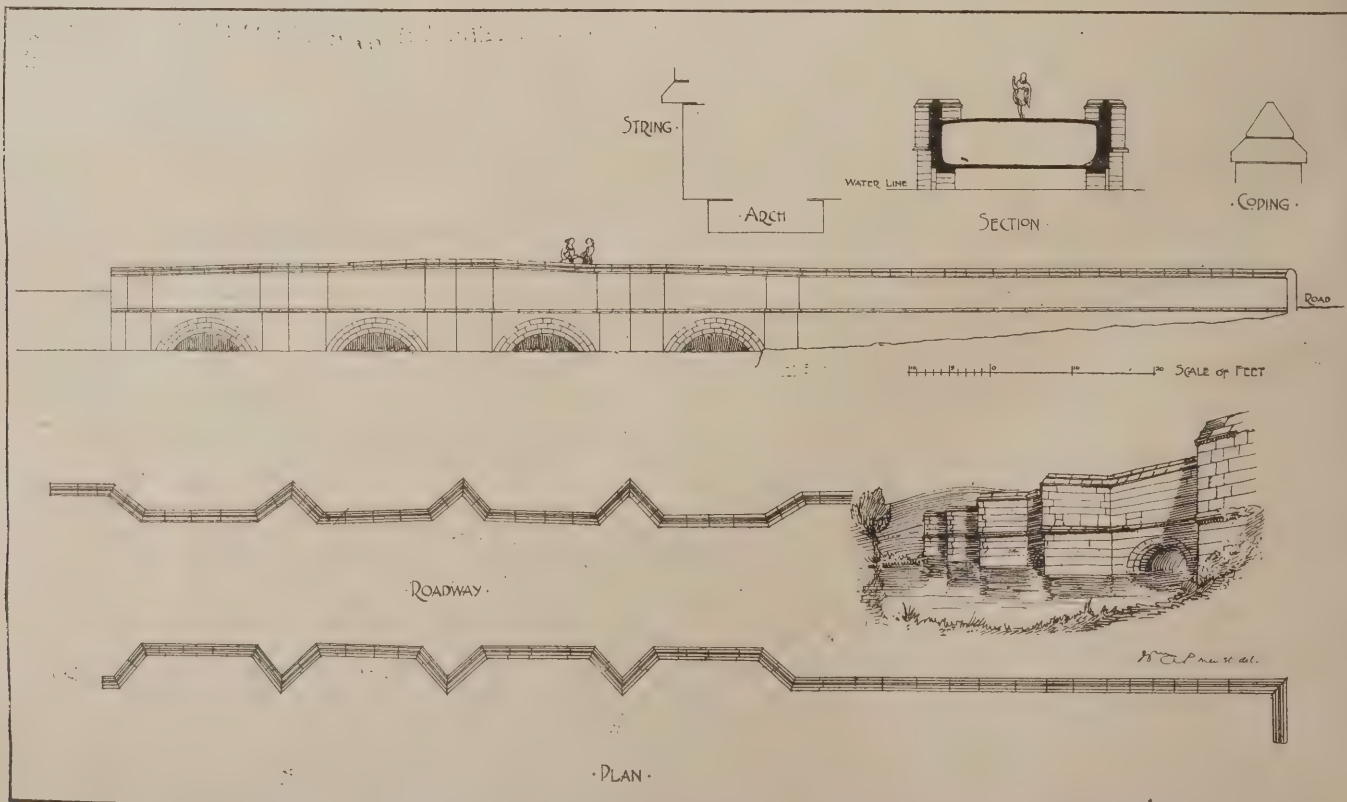
In Paris, the academic system of teaching art has been worked out so carefully that France is now admitted to be the centre

of the art students' world, painters, sculptors, and architects all working under the same roof; at the École des Beaux-Arts the sculptor and painter have to take a course in architecture, and the architect and the painter have to learn to model. Surely much of the good that comes from the French method is due to this broadening education. In the age of Pericles and at the time of the Italian Renaissance the different arts were studied side by side; and what proved wise in Greece, in Italy, and in France, will be found best in America and in this country to-day.

The new course in landscape architecture at the Institute of Technology at Boston, Mass., is at present classified as an option in the architectural course; but, though classified with that department, the subjects to be studied are well distributed among several other groups. From the beginning of the second year, when the student is for the first time allowed to specialise, he is trained in drawing, in architectural design, in the principles of art in general, and in the art of landscape design in particular. Through the third and fourth years he is kept studying examples, drawing, designing, creating, analysing, results, solving problems similar to those he will encounter during his professional career, working side by side with the architect, as he will be called on to do later in life, studying civil engineering, so that he may be able to design appropriately and execute his conceptions properly, and combining with all this a thorough course in the use and habits of plants. It is fortunate that the architectural department of the Institute of Technology is so well organised and so successful in its results, because many artistic principles are common to both architecture and landscape gardening, and many of the practical problems to be solved are alike in both cases.

What is true of the architectural department is in turn true of the courses in engineering. A student must be able to survey and make topographical drawings, he must understand the principles of highway engineering and of bridge building, of estimating quantities, and of properly draining land.

While the student is observing the effects that nature produces, while he is learning the constructive side in the engineering courses, while he is learning to draw and compose, he is being drilled in using his knowledge at the drawing board. For, though the eye be well



STONE BRIDGE BURFORD. MEASURED AND DRAWN BY WILLIAM A. PITE. (See p. 359.)

trained and the mind well stocked, the student must be able to summarise his knowledge in designing, and skill in design is the result of constant practice.

The work is necessarily hard, and the years of study long, for much is required of the landscape architect to-day. And yet the student should remember that he must in every way avoid a narrow life or a narrow point of view; for the problems to be solved are many and complex, and his noblest mission should always be to bring the love of nature nearer to the hearts of the people.

THE BRICK TRADE.

NOTWITHSTANDING the general prosperity of last year the brick trade benefited only in sections. Everywhere wages and prices went up and demand was continuous, but the clay handler often found himself threatened with a balance on the wrong side. For example, in Kent and Essex, the brickmakers found the trade going from very fair to bad as the year wore on, and now the view they take of this season is one of unrelieved gloom. They blame very largely the excessive competition of the Midland and Birmingham districts, where production has been intensified of late. Three or four good seasons have followed one another for the Essex and Kent clay-workers since the strike, but now a decided reversion is evident, and, as prices are sinking slowly but steadily, there is every prospect that the manufacturers will be compelled to recoup themselves by recalling the twenty per cent. increase in wages given to the operatives.

Belfast tells the same story of slack trade last year, and an outlook for this year marked by keen competition and a perpetual weakening of prices. Two thousand fewer brick buildings were put up in Belfast last year than in 1898, and seven hundred fewer than in 1897.

Such centres as Newcastle-on-Tyne, the great sea door for the northern coal mining regions, tell of a year of extensive trade. In the fire clay business, the oldest inhabitant knows of none busier. In the production of fire bricks the demand last year was superior to any since the prosperous years between 1872 and 1874.

But the prosperity brings its own troubles. For instance, in Exeter, where the brickyards have been in profitable and active use for a long time past, the house-builders are going in for brickmaking themselves. They have not yet ceased to buy bricks from the three local works, but they are hard at work getting a complete plant erected, and then expect very soon to have their co-operative scheme in operation.

Blue bricks, which are in heavy demand for engineering, sewerage, and water schemes, found a brisk market last year, and one which gives every promise of continuing for some time ahead. Prices are on the rise, and are such that, notwithstanding the high price of fuel occasioned by the war, satisfactory profits will be earned. The London market is a standing one. The number of new houses built in London from 1849 to 1897 was 633,615, and nearly 7,000 houses are in course of erection.

British brickmakers have but to come to a more cordial understanding amongst themselves to reap a golden harvest of profit from all this.

Since the inauguration of the Workmen's Compensation Act, employers of labour have to face a very serious risk of loss by accidents occurring to their work people. Clayworkers, especially, saw this, and hence there has arisen the British Clayworkers' Mutual Insurance Co. For a small premium the brickmaker, &c., is relieved from worrying about claims for compensation. So economically is the concern worked, that for the first year of trading it pays all claims and a 10 per cent. dividend to members. Premiums were £2650, and claims £750.

Makers of glazed brick are likely to have trouble with the Home Secretary, who purposes bringing glazed manufacturers under the heading of people carrying on a noxious trade, because of the lead compounds used to secure brilliancy, etc. This will mean a large expenditure of money to carry out many stringent rules, or else the abandonment of lead glazes and a consequent higher expenditure for fuel for firing non-lead glazes. There is a strong demand for lead glazes now.

British brickmakers who have taken to using traction engines for drawing their productions over the roads are finding themselves saddled with demands from local authorities for "excessive" use of these roads. A man at Leicester has been assessed £100 on this plea for last year. There are evidences that clayworkers will unite, however, to fight this new extortion.

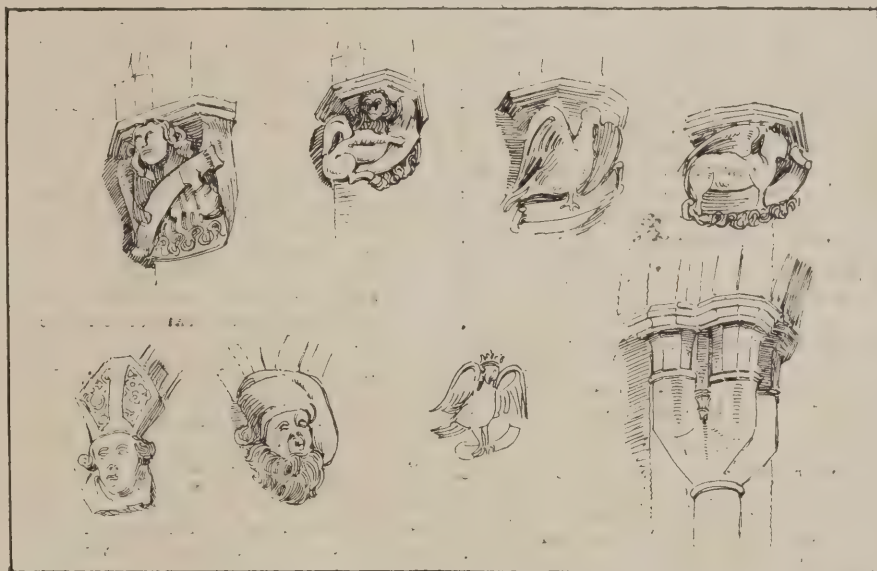
EASTBOURNE TECHNICAL INSTITUTE COMPETITION.

IN accordance with the recommendations of Professor T. Roger Smith, the assessor nominated by the president of the Royal Institute of British Architects, the Eastbourne Technical Instruction Committee have awarded the premiums offered for the best

front towards the apex of the ground and the approach from the railway.

The First Prize.

The assessor says: The buildings are three storeys high, and the architect has taken the trouble to show that the rear of his building will be presentable to persons coming towards the railway along the New Road. He has placed the fire-engine station quite distinct from the other buildings, which is, in my opinion, desirable, though many competitors have thought otherwise. It appears to me that the arrangement of the different departments is in each case good, and such as will be worked conveniently, and that they are well kept distinct. The separate entrances for male and female students are provided, and the lavatories are provided very cleverly by a mezzanine floor, which has given occasion to a very pretty feature of the elevation. The general treatment of the exterior is satisfactory. Exceedingly little has been done for the sake of ornament, but there is sufficient architectural character and a sufficiently varied outline to promise a suitable and pleasing exterior. I have carefully examined the design to see if it conforms with instructions, and I believe it does so fully. But I am afraid that this architect, like most of the competitors, has not given the class and other rooms in the science school as much height as the memorandum of the Education Department requires. I do not



TERMINALS AND CORBELS, BURFORD CHURCH, OXON. SKETCHED BY WILLIAM A. PITE. (See p. 359.)

competitive plans for a municipal technical institute, public library, fire station, &c., to be erected on the site at the corner of Grove Road and Water Lane, lately presented to the town by the Duke of Devonshire. There were twenty-one designs sent in, but the difficulties of providing adequate accommodation in an adaptable manner, together with the required facilities for lighting and ventilation in a set of buildings so complex and under the conditions imposed, were more than most of the competitors could satisfactorily overcome. This failure was especially noticeable in the distribution of space, the specified areas being in several instances varied. Professor Smith, however, set about his task by rejecting such designs as were extremely eccentric; such as had been planted the wrong way upon the site; others showing portions of the interior which would need to be artificially lighted in the daytime; and some weak designs obviously surpassed by others sent in. This process brought the number for selection down to five, and two of these were disqualified on the ground of cost, which would exceed the limit (£20,000) fixed by the Corporation by a sum little short, if at all, of £10,000. Of the remaining three the first prize was awarded for a design marked "F," representing a long block of buildings placed on the site so as to

find any room provided for a library in the art school, as the Department also requires. But there is no provision for this in the instructions. The classrooms do not communicate directly with each other, as the Department suggests, but to remedy that one or two doorways are all that is required. The author states the cubic contents of the institution at 491,840ft., and the cost of it at £18,450, and that of his fire station at £675. This is apparently worked out at 9d. per foot, a price which I have known to be sufficient for plain public buildings.

The Second and Third Prizes.

The second prize was awarded for a well-planned design marked "A," which does not adhere so closely to the instructions as design "F," but provides the accommodation required, though in some cases the dimensions of the rooms are modified. The science school is, in the opinion of Professor Smith, exceedingly well treated. The architectural chamber is satisfactory, while the general forms and the architectural detail would produce a picturesque and graceful exterior. The cubic contents of this building are stated at 654,608ft., which, with the bulk of it at 7d. but some at 4d., and with allowances of £1,650 for fittings and fences, gave a total of £19,932. The design marked "O" was recom-

mended to receive the third prize. "The general lines of the arrangement are suggested by the outlines of the ground. Throughout there is little lost space, but in a good many instances variations are introduced into the dimensions of rooms. Light has been carefully considered. The architectural treatment is picturesque and somewhat original, and the design is fairly economical. The author gives no particulars of his estimate, but expresses his conviction that the design can be executed in a satisfactory manner for the stipulated amount."

The prize-winners are:—First prize, Mr. Philip A. Robson, A.R.I.B.A., Palace Chambers, Westminster; 2nd, Mr. Henry A. Cheers, architect, Twickenham; 3rd, Mr. H. Drury, architect and surveyor, 2, Old Queen Street, Westminster, and Mr. W. C. F. Gillam, M.S.A., architect and surveyor, Central Chambers, 3, North Street Quadrant, Brighton, joint competitors.

Current Periodicals.

The Architectural Review (Boston, Mass.).—The leading article in the May issue of this magazine is by Mr. C. H. Blackall on "How to Study Buildings." This article is intended primarily for the information of young students desirous of becoming architects, and gives a number of useful hints upon the manner in which to approach actual examples of architecture for the purpose. The article, will certainly aid the beginner to seize upon the vital points of a building, and will probably prevent him from carrying away mere vague, general ideas which are often inaccurate and always unsatisfactory. Mr. Blackall's principles are briefly as follows: In studying a building consider firstly the mass; secondly, the disposition of the parts; thirdly, the scale; fourthly, proportions; and fifthly, the details. In considering the details, measure firstly the detail as mass, secondly for its fitness, and thirdly for its intrinsic qualities. A few words may be quoted from Mr. Blackall's article in extension of these headings:—"There are a few classes of buildings in which mass counts for but little, as in the design of a narrow street front or of any building which is only one in a block; but, generally speaking, mass is a very important consideration and the student can probably derive more good in less time by studying carefully the masses of the buildings which he investigates than by following any other one line. A good mass does not necessarily mean a good building any more than a poor mass necessarily means a poor building. . . . Especially is the mass not to be judged by questions of plan. . . . It is more in the distribution of parts, the breaking up of the whole, that the plan can to advantage count on the exterior of a building." Here are a few principles which, according to Mr. Blackall, should be considered in judging of the mass of a structure, and which seem essential to a successful design: "First, there must be some manifestly prominent idea, either a marked central feature or something which commands attention not for its detail, but for its paramount importance. . . . Second, there must be a unity of conception so that the design is treated as a whole, so that we feel that it is not pieced together, that it impresses us with the stamp of individuality and leaves no doubt in our minds of its being a completely conceived and completely finished structure. A building may in reality have been built in widely different periods, in different styles even, and with different materials, and yet be thoroughly consistent and coherent. So it is not a question of dates or of designers, but of result. Third, there must be a reasonable harmony between the purpose of the building and its general appearance. These three points, the preponderant idea, the unity of conception, and the harmony between use and design, are the points which one has to first consider in judging a building." . . . "After mass the next consideration is the sub-division of

parts." . . . "Scale and proportion are not the same, though the one is not often involved in the other. Scale in architectural design might almost be termed the exponent of a sense of fitness in the actual size of the parts, as related to each other, and to the design as a whole. In this is involved a certain indefinite quality by which is made manifest the real size of the building in feet and inches. . . . It is not so much the question of absolute size as of the feeling for proportion, and is not always a fixed measure.

Proportion is also a relative rather than an absolute quantity, depending very largely upon the character of the building."

"And, finally, there comes the question of detail. Detail must be considered in three ways. First, by its mass; second, by its fitness and co-relation to the design as a whole; and third, by its beauty or intrinsic worth. Detail in mass is always difficult to treat rightly. . . . The question of fitness of detail is one that has to do primarily with the character of the building, that is to say, the use for which it is intended, and, secondarily, with the material in which the details are executed." "There remains one other consideration which underlies and interweaves with all the foregoing, and which is absolutely essential to good architecture, and that is the question of beauty.

. . . It is a matter of temperament, which we define by pointing to examples rather than by citing rules or precedents, but it ought to be looked for first, last, and always in the study of foreign buildings. The beauty can appear in the mass, it may appeal to one in the disposition of parts, it should be made apparent in the proportions, and it simply must be present in the details." The article is concluded by a detailed criticism of the Palazzo Farnese, Rome; the Cathedral of Notre Dame, Paris; and the Library of St. Mark's, Venice, to show the method of applying the principles. The illustrations in this number are not particularly interesting; the Science Hall of the Christian College in China, at Canton, has the appearance of an engineering workshop, with decoration badly copied from the traditional forms of Chinese architecture.

The American Architect for May 26th contains an illustrated article on the Paris Exhibition. The illustrations are the most interesting of the contents. The designs for cottages at Port Sunlight, by Messrs. Wilson and Talbot, seem neat simple little residences well suited for their purpose. The new palace for H.M. the Emperor of China is an appalling attempt at Classic; to support a verandah at the centre of the columns of the front and sides, is but one of the atrocities in this design. The temple for the Indianapolis Hebrew Organisation is a bold and impressive building, and it seems a great pity that it should have been marred by the paltry detail; the front entrance is not at all suitable. The competitive design for the United States Custom House at New York by Mr. Francis H. Kimball is grandly impressive in mass, but does not suggest what it is meant for; it looks more like a national opera-house. The number for June 2nd is also deficient in the matter of articles. An illustration is given of the St. John's, Hampstead, Public Library (Mr. Arnold S. Taylor, architect). This building is on the right lines, but the ugly ventilators on the roof, and the spiked ornaments on the gables and entrance porch, spoil the skyline. The smooth stone dressings seem needless, and give a patchy appearance. The House at Lennox, Mass., in the American Colonial style, is spoilt by the porch. The design for the competitive design for the U.S. Custom House, New York, by Mr. George Martin Huss, is not very successful.

La Revue de l'Art Ancien et Moderne for June contains articles on the illustrated prayer-book of the Constable of Montmorency, now in the Condé Museum; Jean Van Eyck's portrait of his wife; and the exhibitions of the French School of Painting, of medals, of metalwork, and the historical exhibition of renaissance art at the Paris Exhibition.

Berliner Architekturwelt this month has articles on social foundations of civic building, and Berlin architecture and art-work at the Paris Exhibition. The illustrations of modern German works of architecture and crafts are of the usual distressing type, the only things at all commendable being two chairs designed by Herr A. Blunck and made by Herr Lion Kiessling. A coloured plate is given of an hotel at Schwarzbürg. This idea of this hotel seems to have been derived from our modern half-timber work—and that is bad enough—but this German design is copied without understanding, with no thorough appreciation, and without common sense. This design will perhaps show the folly of using half-timber with other materials, here being used with stone. In the attempt after picturesqueness, the architect has also jumbled the various parts up in a perfect medley.

The Architectural Review this month contains a number of interesting features. Mr. Halsey Ricardo contributes the first part of an article on the late Mr. Butterfield, illustrated by examples of his work at Rugby School Chapel (illustrated on the next page); All Saints', Margaret Street; and St. Albans, High Holborn. We cannot too highly commend the system started by this magazine of criticising certain recently erected buildings; this wholesome criticism is badly needed, and will, we believe, stir the profession to consider something beyond the mere commission, and to take greater care with their buildings; however much a man may strive to realise his ideals and do his best, the knowledge of other persons' views must assist him and encourage him. With this number a *critique* appears on the new town hall and municipal buildings at Chatham. Mr. H. J. L. J. Massé writes on "Men who Worked in Pewter." The second part of the article on the life and work of Robert Adam by Mr. Percy Fitzgerald is given, as also the second part of Mr. J. P. Cooper's article on the picturesque and interesting old town and castle of Annecy. Miss Ethel Wheeler writes on "Decorative Crafts in Poetry," a fascinating subject we do not remember having seen treated elsewhere. The examples of current architecture illustrated are of work by Mr. Mervyn E. Macartney, Messrs. Ernest George and Yeates, and Mr. A. C. Blomfield. The Boarders' House at Bradfield College, Berks, by the first-named architect, is a simple, severe, symmetrical building. We are inclined to think it is too symmetrical in its windows judging by the plan. A most necessary point for the judgment of the plan has been omitted—the compass point. The bell turret seems stuck on. There is an amusing criticism of the architectural designs at the Royal Academy Exhibition, which, although light, is extremely pertinent; Mr. Belcher's designs at the exhibition have suffered much criticism, and the following aptly and slyly hits the mark in regard to his design for the proposed Eastern Telegraph Company's building: "In Mr. Belcher's drawings, Nos. 1818 and 1821, we find many old friends in new environments; they proved useful in our studentship competitions of many years ago. The beautiful group carrying the sphere, in the observatory gardens at Paris, has helped many a lame dog over a stile! Jean Goujon's panels from the fountain also; but we hardly expected to find them worked in as part of a design by a member of the Royal Academy. Surely there are sculptors among that august assemblage. Mr. Belcher's symbolism is a little difficult to understand. What are the nymphs of the fountain, for instance, intended to represent; and the boys perilously balancing, or trying to balance, themselves on spheres; are they supposed to be the imps of the electric current, or what? If they were joined together by electric wires they might appeal more directly to the realism of the man in the street. It is a matter for congratulation that Mr. Belcher has kept clear of the heavy blocked columns of his Accountants' Building, which, by the way, seems to have attracted Mr. Colcutt. The shade of the heavy entablature over the third floor windows will surely darken the rooms under; presumably the dome will be

seen from below." A photogravure of a drawing of Booksellers' Row by Mr. F. L. Emanuel is given as a special plate. A number of notes on matters of interest and several reviews of books complete an excellent number.

Scribner's Magazine this month has an article on the paintings of John McLure Hamilton, written by Harrison S. Morris. Mr. Hamilton in his portraits has not merely produced a likeness pure and simple of the subjects of his works, but has sought his subjects amidst their own natural surroundings, thus giving us not only the man but his accessories—the expression of the sitter as it lies about him in inanimate things. In this way these portraits become enhanced in value, and will doubtless last longer than the mere works of copyism that are produced on every hand. Mr. Hamilton's portraits in showing the personality of the subject will be of historic value to future generations. The article is illustrated by reproductions of the portraits of Professor John Tyndall, Mr. Gladstone, Mr. G. F. Watts, R.A., and Mr. Henry J. Thouron. Mr. John La Farge contributes a particularly interesting article on colouring statuary and architecture, which should be read carefully by architects and others who have to do with decorating buildings. Mr. La Farge shows how false is the attitude still sometimes taken up that sculpture and architectural forms should not be painted. We have now generally realised that the Greeks used a large amount of colouring on their sculptures and their temples, and intercourse with Japan and India have brought home to us the knowledge of the great successes in this line there to be seen. The writer of the article draws attention to the principle that in this kind of work the colouring should not be fanciful bits of æstheticism, but vital factors in the impression produced. In temples where the light is usually dim and uncertain, but at the same time liable to sudden breaks of sunlight, this heightening of form by colour is most appropriate, and helps the statues, &c., to come into proper relation to their surroundings. "In all of the better instances that I remember," says the writer, "in Japan there was no intention, apparently, of matching the original represented. Lips were not painted red, as are the lips of the ladies who keep up their youth perforce. Teeth were not made bright white enamelled bits of bone, but were gilded just enough to glitter and look as part of the living organism. All of this, of course, is the recognition of life as but the object of representation and the means of embodying an idea, so that there is no notion of realism in these finishings in the sense of a competition with nature, but only an idea of keeping the work in the key of the place where it is, and preventing the suggestion of death and arrest of vital meaning. Were a white marble statue placed in any rich and coloured surroundings, the first impression would certainly be that of petrification. Only the genius of the artist would be able to triumph over the physical impression. And so, in the twilight of the Greek temple, the Greek who was reasonable and highly sensitive to artistic necessities, and also respectful of ideas, painted and gilded his statues, and filled their eyes with precious stones, and made their flesh of ivory and their clothes of gold, and painted the walls and the carvings, and did apparently the reverse of what we ourselves do. But he had what we have not any longer—the respect of the idea for which the work existed. He was vain of his success, as are artists, but it does not seem that he wished a success in contradiction to the meaning which he had intended to represent. Of course, his coloured statuary must have melted more into the surroundings and shown less of the particular cleverness of touch and modelling than it would have shown if uncoloured, and exhibited in the light of the Salon at Paris. But may it not be the reason of his superiority, which is generally acknowledged, that he was willing to subordinate his cleverness to his idea?" Mr. La Farge clearly shows that colour can be used, and should be used to insist—what the French would call *appuyer*—upon the meaning.

The Century Magazine this month contains an article on "Painting Racial Types," by Mr. Charles De Kay, illustrated by reproductions from paintings by Hubert Vos. A remarkable article is contributed by Mr. Nikola Tesla on "The Problem of Increasing Human Energy." Mr. Archibald Butt writes on some early Spanish arches at Tlalmanalco, Mexico; it appears that these were erected by Aztecs under the direction of Franciscan monks, and were intended for a Christain cathedral of mammoth proportions. Every stone indicates that it was elaborately carved by an Aztec, for nearly everyone contains either an Indian head or an Aztec idol; moreover, each stone in each archivolt is complete.

posal of Sewage," "The History and Development of Motor Cars," "Modern Methods of Saving Labour in Gasworks," and "Pneumatic Rock Drills." A description is given of Ljungstrom's Crankless engine, a highly ingenious invention that may revolutionise the application of steam power. Mr. L. Lodian gives particulars of a remarkable phenomenon he has observed on the Siberian Railway—the expansion of iron rails at 40deg. to 50deg. below zero; previous to this the only phenomenon observed has been a contraction during moderate cold of, say, 25deg. to 40deg. below zero centigrade. Professor Victor C. Alderson contributes a paper on "Technical Education—an Economic Necessity," and Mr. George H.



RUGBY SCHOOL CHAPEL. THE LATE WILLIAM BUTTERFIELD, ARCHITECT.

(From "The Architectural Review" for June.)

The columns are all clustered, and bosses at the beginning of the spandrels evidently indicate that there was to be a groined roof. The date of the beginning of the work was probably 1521 or 1522. Mr. John Morley contributes a further part of his article on Oliver Cromwell, illustrated by some beautiful drawings by Mr. F. Luis Mora, Mr. Joseph Pennell, Mr. S. J. Solomon, A.R.A., and Mr. Maurice Greiffenhagen. The illustrations in this magazine are remarkable specimens of the best work of modern mechanical engraving, and in many cases are greatly enhanced by handwork on the half-tone plates.

The Engineering Times for June gives the continuation of the articles on "The Dis-

Frith writes on "The Comparative Values of Belt-Pulleys." The Diagonal and Universal Wood-working machine is described and illustrated.

The Clayworker (Indianapolis) for May is a particularly good number of this magazine. Articles are given on terra-cotta in brick construction, fire brick, brick pavements, a new paving brick testing machine, exact testing instruments for clayworkers, brick building in Cuba, the building interests in Greater New York, defects of glazes, Boston baked brick, smoke consumption and economy of fuel, clay in modern building work. Many other notes of interest are included.

The Quarry has illustrated articles this

month on the geology of the plain of Caen, cranes and other lifting and transporting machinery and appliances, the soapstone of the Arabs, and the mineral industry of Yorkshire. Mr. Edward C. R. Marks, A.M.I.C.E., writes on aerial cableways, a means of transporting materials that should be much more largely adopted; the system need not be used only for quarrying and mining, and we are sure many builders and contractors could make economic use of it.

Architectural Association Notes for this month has a review of Mr. E. S. Prior's book on English Gothic architecture, and articles on the Royal Academy Exhibition; Mr. W. Howard Seth-Smith, the new president of the Association, this being illustrated with a portrait; and on "The Soirée."

The Journal of Decorative Art contains nothing of particular interest this month. A large number of short paragraphs are given, and articles on "Some Recent Decorations at the Mansion House, Dublin," "Brushes and their uses and abuses," the Royal Academy Exhibition, exhibits of the Midland Railway Company at the Paris Exhibition, and on Mr. R. W. Essex, of the well-known firm of wall-paper manufacturers. A number of sketches by Mr. J. B. Gass, F.R.I.B.A., are illustrated, and a coloured plate of colour schemes for decoration of drawing-rooms is given. Of this last we need only state that it is of the usual form of house decorative (?) work.

The Decorators' Gazette and Plumbers' Review has a large number of practical articles and notes of interest this month. Further instalments appear of the articles on "Sanitary Plumbing and Drainage in Town and Country," answers to examination questions in plumbers' work by the City and Guilds of London Institute, "Cast-iron House Drainage," "The Progress and Development of English Glassmaking," "House Sanitation with reference to Drainage, Plumbing, and Ventilation," "Practical Paint-grinding," "The Manufacture of Painters' Colours," and "Oil Lamps." An article is begun with this number on the mechanical resistance of glass, and complete articles appear on the Bohemian sheet glass workers; the Registration of Firms' Bill; stains, staining and varnish; the Registration of Plumbers' Bill; the painter as decorator; the influence of pigments on the permanence of paint; and lacquers and paints from petroleum waste. This trade magazine is of a very practical character—just what is required.

The Pall Mall Magazine this month keeps up its reputation for providing something above the usual popular magazine matter. With this number is given, in addition to much of general interest, a coloured drawing by Mr. A. S. Hartick; a poem by Mr. Ernest Rhys, illustrated by Mr. Maurice Greiffenhagen; the third part of an article on arts and crafts in the sixteenth century, illustrated by some rare old engravings after Stradanus; and an article on Claude Monet, impressionist, by Mr. Wynford Dewhurst, illustrated with reproductions of paintings by this eminent French artist, so little known in England. Mr. G. W. Forrest writes on "Delhi: Past and Present." The architectural works of India are wonderful, and it is strange that comparatively little attention is paid to them by architects in this country, as likewise with the architecture of Japan. We have almost lost the examples of Gothic work both in England and abroad by countless restorations, and an ever-increasing number of students devote their time to Greek and Roman examples. The consequence is we see on every hand, and seem likely to see a greater proportion of future, buildings built in the Classic styles, making our country truly a cemetery—a resting place for the dead. Now, if India and Japan were consistently studied students would gain some insight into the varied development of architecture in different countries through the various needs of those countries, the inhabitants and the influence of tradition, and we believe they would be led to forsake the paths of copyism to the enrichment of this country and to the making of

human interest in the buildings. It is with this idea we are glad to welcome anything which is likely to draw attention to the subject. Mr. Frederick Dolman contributes an illustrated article on "Shipbuilding on the Clyde," which is of more than merely popular interest.

The British Clayworker keeps up its usual standard of excellence this month in the way of practical articles. The chief articles are on the brick earths of Great Britain, brick burning by gas, brick drying, how to prevent clay-slips, and the utilisation of blast furnace slag. A useful suggestion is made in an article on paving brick tests; these tests are usually most unreliable and the suggestion is made that the test should consist of abrading with a rubber of a uniform weight, studded with hard minerals such as corundum, a slab, say a yard square, composed entirely of bricks, properly set. The rubber, covering several bricks on the slab, might then be moved to and fro by crank action at a definite rate, and for a definite time. The value of this suggestion will be appreciated by any surveyor that may have had occasion to seek for definite and uniform results of tests on paving bricks.

ERECTING ADJUNCTS TO BUILDINGS.

AN INTERESTING CASE.

THE recent case of *Shoemith v. Dodd and Co., Ltd.*, heard in the Court of Appeal, was a building scheme case, and the sole question was whether the plaintiff had by his conduct precluded himself from insisting that the restrictions under which the property was sold should be observed. The facts were as follows:—In 1871, certain land at Halifax was sold by auction in lots for building purposes. Among the conditions of sale was the following: "All buildings shall be erected in accordance with the building line shown upon the plan, and all buildings, stables, and conveniences shall be placed on the westerly side of the lot." The building line was 60ft. from the road, which lay on the east side of the lot. At the auction the plaintiff bought the two lots at the south end of the land, and the lots adjoining the north side of those bought by the plaintiff were unsold. The condition above set out was incorporated in the form of a covenant in the conveyance taken by the plaintiff. The plaintiff built on his lots a house in accordance with the conditions of sale, and afterwards leased it for seven years, the lease to be determinable at the option of the tenant at the end of five years. In November, 1897, the plaintiff gave permission to his tenant to build a billiard-room, which he was to be at liberty to remove at the end of the term. In the course of the same month the billiard-room was erected. It was 32ft. long by 26ft. wide and 17ft. 6in. high, and it stood 10ft. back from the road. It had brick foundations, upon which were laid sleepers embedded in mortar, and upon the sleepers were timbers, which were secured to the foundations by bolts. Then wooden sides were erected in sections, and the whole was covered with a corrugated iron roof. Before the issue of the writ in this action the building had been removed. In 1898 the lots adjoining the plaintiff's lots were again put up to auction, and the plaintiff stated that the lots were subject to a building line covenant. The defendants bought the lots and took a conveyance containing a covenant similar to that in the plaintiff's conveyance. The defendants then expressed their intention of building right up to the frontage of the road, and the plaintiff brought the present action for an injunction to restrain them from erecting any buildings in front of the building line. The defence was that the plaintiff's action in permitting the erection of the billiard-room had disentitled him from obtaining that form of relief. The learned commissioner came to the conclusion upon the evidence that the defendants bought with full knowledge both of the

existence of the billiard-room and of the restrictive covenant, and that the plaintiff had not precluded himself from asserting his right to enforce the covenant. He therefore granted an injunction. The defendants appealed. The court dismissed the appeal. The Master of the Rolls said that it was clear that the intention of this building scheme was that the houses to be erected should be in the nature of suburban villas, having gardens fronting the road. It was suggested on behalf of the appellants that, inasmuch as the billiard-room was a permanent structure erected in breach of the condition as to the building line, and was in existence at the time of the sale to the defendants, the plaintiff was for ever prevented from enforcing the condition, either because he could not be compelled to pull down the building or because by keeping up the building or pulling it down he had an option to insist upon the covenant's being either disregarded or enforced. His lordship was unable to accept either view. If this structure was to be regarded as a building which, so long as it stood, was a breach of the covenant, he thought that the purchasers in 1898 could have obtained an order to have it taken down; but he was not sure that even that was absolutely necessary for his judgment. The defendants proposed to build a house which was admittedly a breach of the building line, and it was part of their scheme to erect a number of semi-detached buildings close to the road. Thereupon the plaintiff obtained the removal of the billiard-room and commenced this action. He thought that the learned commissioner was perfectly right in saying that nothing had been done by the plaintiff which was inconsistent with the main object of the condition, and that if anything of that kind had been done the defendants could have obtained the removal of the building. His lordship could not conceive that a breach of the condition in the past, not in itself inconsistent with the general scheme under which this property was laid out, would of itself be sufficient to preclude the plaintiff from insisting upon his right to have the character of the property preserved in accordance with the scheme. It would be extremely wrong to allow a house of the character which had been erected by the defendants to remain on this property. He, therefore, thought that the injunction was properly granted, and that the appeal should be dismissed.

Lord Rigby concurred. In his opinion the question was not whether the nature of the building to be removed was such that it was a breach of the covenant, but whether the plaintiff had intended to put himself in such a position that he could at his own option insist upon the breach or the performance of the covenant. There was nothing to show that the tenant had ever claimed the right to retain the building where it stood until the end of the term. In his lordship's opinion, he always knew that when the property was developed he would have to pull down the building, and that he was quite willing to do. Lord Justice Collins also concurred.

Castle for Sale.—Castle Fraser, Aberdeenshire, originally known as Muchells, is for sale. It is a fine old building, regarded as the best example in the country of Flemish architecture. The various parts of the fabric date from 1454 down to 1818.

Reconstruction of the Royal Exchange Front, Edinburgh.—At a meeting of the Plans and Works Committee of the Edinburgh Town Council on Thursday last, the City Superintendent of Works submitted two designs for the reconstruction of the entrance to the Royal Exchange Square, one of which was approved provisionally. It shows a plan for closing the present three middle arches with ornamental railings, the remaining four to be opened up, the two outside arches being used for foot passengers, and the other two for carriages. The same committee recommended for acceptance estimates amounting to about £3,000 for alterations to John's Coffee House and the Council Chambers, recently authorised by the Town Council.

ARCHITECTURAL CONGRESS.

THE FIRST MEETING.

THERE was a large and distinguished audience at the Conduit Street rooms of the Royal Institute of British Architects, on Monday evening last, when the president, Mr. William Emerson, held a reception in connection with the Architectural Congress being held this week. Among those present were:—Sir Lawrence Alma-Tadema, Sir Henry Howarth, Mr. Edward W. Mountford, Mr. and Mrs. Arthur Cates, Mr. Aston Webb, Mr. E. A. Gruning, Mr. R. Phenè Spiers, Mr. J. M. Brydon, Mr. F. C. Penrose, Mr. and Mrs. Carøe, Mr. Leonard Stokes, Mr. Thomas Blashill (late superintending architect to the London County Council), Mr. Hugh Stannus, Mr. Hoynes Fox, Mr. H. L. Florence, Prof. Aitchison, Mr. Beresford Pite, Prof. Neckelmann (hon. corres. member of the Institute at Stuttgart), Mr. Batchelor (Dublin), Mr. Bartlett, Mr. Carby Hall (president of the Leeds and Yorkshire Architectural Society), Mr. Frank Lee (Manchester), and Mr. Charles King (president of the Devon and Exeter Architectural Society).

The Presentation.

The feature of the evening was the presentation of the Gold Medal which is yearly conferred by Her Majesty the Queen (on the advice of the Institute) on some distinguished architect, scientist, or man of letters whose work is considered to be of great value, and deserving of royal recognition. This year it has been conferred on Professor Rodolfo Lanciani, of Rome, but, as he was unable to be present to receive it, Count Carrobio of the Italian Embassy in London attended on his behalf. Whilst the president was proceeding with his address a telegram was received from the learned professor saying that he was present in the spirit, and offered the Institute his heart-felt thanks. Since 1848, when the first presentation of the Gold Medal was made, this honour has been conferred on men of many nationalities, but only once (in 1849) on an Italian—Signor Canina. The work which has been done by the professor is so extensive that it would only be wearying to recapitulate it. Rome, which has been the scene of the greater part of his labours, was also his birth-place. He was born on January 1st, 1848, and after graduating at the Collegio Romano and then at the University of Rome he assumed, in 1871, the post of assistant director of excavations in Rome; later on he became director, retaining that position until 1890. With this he also combined the Chair of Topography at Rome.

His efforts in the various buildings in and around the great old Roman capital—in the Sacra Via, the Forum, and the emperors' villas, for instance—have met with great success, and the resulting discoveries have added much to archaeological and antiquarian knowledge. Not only has Prof. Lanciani devoted his attention to what the earth had to give, but he has made numerous documentary discoveries (there have been about 25,000 hitherto unpublished documents found in connection with the excavations) and has visited most of the libraries of Europe.

His writings are also voluminous, for down to the end of last year no less than four hundred had been published. His first work was a catalogue of the Castellani Etruscan collection in the Capitol, for which he was awarded a gold medal, while for his work on aqueducts he was presented with the royal prize of 10,000 lire. The plans of Rome prepared by him are of great value. The Professor speaks English very well; his "Ancient Rome" was written in English. There is a book of his called "New Tales of Old Rome" now in the press, and it describes the excavations that have been, and are still being, carried out in the Sacra Via and the Forum. Prussia, Russia and Italy, and our own Universities have conferred honour on him, and there is no doubt that he is the greatest of Roman topographers, besides being a great archaeologist, and those

who have criticised him so severely have themselves acquired a large portion of their Roman knowledge from the Professor; so that he is a most worthy recipient of the Gold Medal.

After the presentation had been made a series of lantern slides of ancient Greek buildings (made from photographs taken by Mr. Ernest George Spiers, brother of Mr. R. Phenè Spiers, a beautiful collection of whose water-colour sketches of Grecian ruins were ranged round the room) were thrown on a screen, and described in a graphic and impressive manner by Mr. Penrose.

R.I.B.A.

Election of Council, etc.

The following elections have been made for the 1900-1 session of the Royal Institute of British Architects:—

President.—Mr. William Emerson.

Hon. Secretary.—Mr. Alexander Graham, F.S.A.

Vice-Presidents.—Messrs. J. Belcher, A.R.A.; J. McKean Brydon; E. A. Gruning; J. Slater, B.A. Lond.

Members of Council.—Messrs. F. T. Baggallay; Thomas Blashill; G. F. Bodley, A.R.A., F.S.A.; James Brooks; W. D. Carøe, M.A. Cantab., F.S.A.; T. E. Colcutt; W. Milner Fawcett, M.A. Cantab., F.S.A.—John Alfred Gotch, F.S.A. (Kettering); E. T. Hall; H. T. Hare; E. W. Mountford; Beresford Pite; G. H. Fellowes Prynn; R. Phenè Spiers, F.S.A.; H. Heathcote Statham; Leonard Stokes; Paul Waterhouse, M.A. Oxon.; Aston Webb, A.R.A., F.S.A.

Associate-Members of Council.—Messrs. R. Shekleton Balfour; A. S. Flower, M.A. Oxon., F.S.A.; J. S. Gibson; H. V. Lanchester.

Representatives of Allied Societies.—David Barclay, Glasgow Institute of Architects; Sir Thomas Drew, R.H.A., Royal Institute of Architects of Ireland; William Glover, Northern Architectural Association; W. Carby Hall, Leeds and Yorkshire Architectural Society; C. King, Devon and Exeter Architectural Society; F. H. Oldham, Manchester Society of Architects; S. P. Pick, Leicester and Leicestershire Society of Architects; J. Smith, Sheffield Society of Architects; F. W. Wills, Bristol Society of Architects.

Representative of the Architectural Association (London).—Mr. W. H. Seth-Smith.

Auditors.—Messrs. W. H. Nash, Fellow; and H. A. Satchell, Associate.

Standing Committees: Art Standing Committee.—Messrs. J. Macvicar Anderson, G. F. Bodley, A.R.A., F.S.A., James Brooks, J. McKean Brydon, W. D. Carøe, M.A., F.S.A., T. E. Colcutt, Ernest George, H. T. Hare, E. W. Mountford, R. S. Balfour, J. S. Gibson, H. V. Lanchester, A. N. Prentice, W. H. Romaine-Walker, J. W. Simpson, Alfred Waterhouse, R.A., LL.D.

Literature Standing Committee.—Messrs. J. Bilson, F.S.A., Alexander Graham, F.S.A., B. Ingelow, A. S. Flower, M.A. Oxon., F.S.A.; W. A. Pite, G. H. Fellowes Prynn, Sydney Smirke, R. Phenè Spiers, F.S.A., J. Humphreys Jones, B.A. Lond., A. N. Prentice, R. Elsey Smith, H. Heathcote Statham, C. H. Townsend, Paul Waterhouse, M.A. Oxon., L. Waterhouse, M.A. Cantab., P. S. Worthington, M.A. Oxon.

Practice Standing Committee.—T. Batterbury, S. Flint Clarkson, T. Harris, W. H. Atkin-Berry, C. H. Brodie, H. Hardwicke Langston, G. Hubbard, F.S.A.; A. H. Kersey, J. Douglass Mathews, W. Hilton Nash, Sydney Perks, A. W. Tanner, Beresford Pite, J. Osborne Smith, E. Woodthorpe, M.A. Oxon.; W. H. White.

Science Standing Committee.—Lewis Angell, M.Inst.C.E.; Thomas Blashill, F. R. Farrow, H. W. Pratt, S. B. Beale, H. W. Burrows, Max. Clarke, H. D. Searles-Wood, P. G. Smith, A. S. Snell, B. J. Dicksee, M. Garbutt, W. C. Street, B. Tabberer, K. D. Young, G. Pearson.

The Parish Church of Great Missenden, Bucks. has been renovated at a cost of about £4,000. It was built in the twelfth century, and is one of the finest churches in the diocese of Oxford.

CARDIFF CASTLE.

LORD BUTE'S EXCAVATIONS.

DURING the past two years workmen have been engaged in pulling down the mound on the north side of Cardiff Castle and constructing a massive wall on the site of the Roman foundations, and now three-quarters of the northern rampart have been laid bare. The discoveries made serve to throw a great deal of fresh light upon the condition of Cardiff Castle in days when Roman legions, eighteen centuries ago, paced the Via Maritima, which passed from Gloucester, via Caerleon, Cardiff, Cowbridge, Neath, and Loughor, to far St. David's. In the excavations Mr. John Ward, F.S.A., curator of the Cardiff Museum, has had a free hand, and the chief discovery of the past few weeks has been the bringing to light of the Roman North Gate of Cardiff Castle.

In the first place it may be as well to mention that in South Wales and Monmouthshire there are three fine examples of different stages of development in Roman castramentation. Mr. Ward, who has made a close study of them, classifies them in the following way:—(1) Gelligaer, an early simple quadrangular fortress, with rounded corners and four great gates; (2) Caerwent, a fortress of similar type, with later added-on bastions, thus indicating a development of military art subsequent to the first erection of the station; (3) Cardiff, which was obviously rebuilt during the bastion period, the bastions being of one work with the walls. But this camp (i.e., the camp of the bastion period) rests upon the foundations of a camp of the early type. In Mr. Ward's opinion it is not surprising, as Cardiff represents the stage in which the defensive character had been developed, to find that the gates were only two, north and south, and were, indeed, smaller than the recently opened double one at Gelligaer, although a larger camp than the latter (see page 347 of last week's issue). The newly-discovered gateway is typical of Roman work during what may be termed "the bastion period" of their castramentation. It is a single gateway, little more than half the size of that recently unearthed at Gelligaer. The gateposts themselves are composed of massive blocks of Dundry stone from Somersetshire about 15in. deep. No trace of the sill of the gateway is to be seen, but the large flat stones containing the round hole in which the pivot of the doors worked are still in position on the inner side of the gatepost. Inside the gatepost is the recess into which the doors, which, of course, opened inwards, fitted. At each side is a guard room, the outer wall being curved on the inside, but angular without, standing upon a circular foot or set-off, forming a bastion. Through the centre of the inner wall of each guard room are to be seen the remains of a doorway leading into the interior of the camp. The further progress of the excavation works will be watched with interest, as there will, no doubt, be many more discoveries forthcoming.

Improvements at the Guildhall.—It has been decided to spend £850 on the general repair, decoration, and furnishing of the committee rooms, law courts, and lobbies at the Guildhall. Also, at a cost of £270, to erect a permanent ladies' gallery at the north side of the Guildhall leading to the crypt.

King's Lynn.—Messrs. Macmillan and Bowes, of Cambridge, will shortly publish Mr. Beloe's works, "Our Borough" and "Our Churches," with an afterwork on the art of the Renaissance in King's Lynn. The first-named book will cost 21s. net, and the second 25s. net; the editions will be limited.

Bontnewydd Orphanage, Carnarvon.—The estimates for the proposed orphanage to be erected at Bontnewydd were recently considered by the committee, when the tender of Mr. Richard Jones, Llanwnda, was accepted. The architect is Mr. T. Taliesin Rees, F.R.I.B.A., of Birkenhead, whose plans were placed first by the assessor in an open competition.

FLUSHING WATER-CLOSETS.

THE QUESTION AT HULL.

AT the meeting of the Water and Gas Committee of the Hull City Council held last week, the chief business was the consideration of the engineer's report on the question of flushing water-closets. The report included observations by members of a deputation representing the National Association of Master Plumbers, remarks by the architects of Hull, information and statistics from other towns and cities, and finally the engineer's own observations. The last summed up may be as follows:—"It will be seen that a 2gal. flush is prescribed and fixed in many large towns, and even in those where a larger flush is permitted the return states '2gal. flush in general use.' With the best appliances mechanical means are sometimes necessary to keep the pan in a perfectly clean condition, but an unlimited quantity of water will not keep improper basins clean. With a view, however, to leave a margin of safety the flush was increased in the Hull by-laws to 2½gal. This has now been approved by the Local Government Board, who, as the Committee are aware, are very careful in their actions, and jealous of sanitary efficiency; and after careful re-consideration, I am strongly of opinion that a 2½gal. flush (actually 2gal. when ball-cock delivers during flush) is sufficient. I therefore recommend that the Committee make regulations as addenda to the by-laws, such regulations being for the guidance of builders and plumbers as the conditions to be observed in work in connection with either existing or proposed supplies. This will be following the practice in several other towns, and I would take this opportunity, in order to dispel the misapprehension which some members of the Committee have, of stating that both the by-laws and proposed regulations are based upon the experience of other water undertakings, as shown in their by-laws and regulations, and the requirements proposed for Hull do not exceed, and are in some respects less stringent than, those in many towns."

The chairman moved, and the deputy chairman seconded, the adoption of the report and its recommendations. The Mayor expressed the strong opinion that a 3gal. flush should be given. The bulk of evidence quoted by the engineer was by water engineers and water companies who were financially interested. The engineer said that to increase the flush would be to put a premium on badly-designed closets and badly-laid house drains. He had the greatest respect for the chairman and the engineer for their desire to conserve the water, but he thought there was something which was paramount to the saving of water, and that was the question of public health, and he was prepared to say, from his experience, that 2½gal. was not an effective flush; 3gal. was not at all too much to ask for. There was no town that had to be content with a flatter drainage than Hull, and it would be a great calamity if they restricted the amount of the flush to 2½gal. He was not giving his own opinion only, but that of every architect in the city, and he claimed that they should know what was necessary in that respect as well as the Waterworks Engineer. They had also the opinion of the medical men of Hull, and there would be a requisition from them to the Council if the 3gal. flush was not agreed to that day.

After further discussion Mr. Hanger moved, as an amendment, that the by-laws be amended to read, "and the flush shall not be less than two nor more than three gallons." This was agreed to.

Ruskin's Grave.—It has been decided to erect a runic cross over the grave of John Ruskin in Coniston Churchyard, and the work of designing it has been entrusted to his biographer, Mr. W. G. Collingwood, who has prepared a design which will allegorically illustrate the great author's works. The cross, which is to be executed by a local sculptor, will be in stone native of the district, this being the late Mr. Ruskin's wish.

Bricks and Mortar.

APHORISM FOR THE WEEK.

Il faut pouvoir faire servir le trivial à l'expression du sublime; c'est là la vraie force.

Our Inset Sheets.

ISLE ABBOTTS, as it is now written, but which should be more correctly spelled Ile Abbotts (from the River Ile which flows close by), is a small village situated in the heart of the great plain of mid-Somerset. It lies about five miles to the north of Ilminster (the nearest railway station), and twelve miles east of Taunton. The church is dedicated to St. Mary the Virgin, and is remarkably fine. The tower is of the typical Perpendicular of the county, and possesses the additional merit of having all its niches complete with the original figures intact. The piscina is unusually large and curious in design. The sedilia is very beautiful and remarkable for being built in two very different kinds of stone. The upper portion above the necking of the columns is worked in a pure white stone (like the columns themselves), while the remainder (like the rest of the worked stone in the church) is of Ham Hill stone, the quarries of which are about a dozen miles to the eastward. The design of this sedilia has been reproduced in the modern church of Buckland St. Mary (near Chard), built 1853-1863 from designs by Benjamin Ferrey, gold medallist for 1870. Our drawings of the piscina and sedilia are by Mr. George J. Gillham, of Taunton.—Mr. Alexander M. McLellan is the designer of the eight lights illustrated. The titles are as follows:—Fig. 1, the last of the English landing in a boat; Fig. 2, on the pier at Calais, English party landing; Fig. 3, English nobles just landed mounting their horses to join in procession—Earl of Somerset in foreground; Fig. 4, Henry VIII., Sir Thomas More, the Earl of Arundel, and other English nobles; Fig. 5, Francis I., the Constable de Bourbon bearing the sword of State, other Bourbon princes and gentlemen in waiting; Fig. 6, the Queen of France with her mother and maids of honour surrounded by the Guard du Corps; Fig. 7, the Cardinal Archbishop of Paris with a Guard of Suisses. Before him are borne the relics of St. Genevieve carried by young nobles (the King's Chamberlain accompanies the relics) with an escort of the Guards du Corps; Fig. 8, the tail of the procession, the burghers of Ardres with their wives leaving the town to take part in the festivities. On the drawbridge stands a palmer with his scallop to collect alms. The windows were executed by Mr. George Wragge, of Wardry Works, Salford, Manchester, for the drawing-room of the Royal British Pavilion at the Paris Exhibition.

A Famous Greek Statue.

"THE HERA OF POLYCLEITUS" was dealt with by Professor Charles Waldstein at last Friday's meeting of the Hellenic Society. This famous statue came from the hand of the greatest artist of the day (for Phidias was dead) and was comparable with the ivory Zeus and the Athene of Phidias. The statue was placed in the Heraeum of Argos, which was built after fire had destroyed the old temple in 423 B.C. It was of gold and ivory, probably 22ft. high. By its side was a Hebe of later date. It was to be observed that the national evolution of Greek art was to rejuvenate its divinities, or to differentiate into a more youthful form some of the attributes of the original deity. Thus Hebe was a development in younger shape of Hera—Persephone of Demeter. Then, again, in the later ages Apollo and Dionysius, Artemis, and Aphrodite became younger under the sculptor's chisel. To return to the Hera—the Professor had been led to the conclusion, after four years' labour for the American Institute at Argos, that the bust in the British Museum which had been thought to be an Apollo or Dionysius was Polycleitan in character and represented Hera. It was no easy matter—and the most skilled might err—to distinguish the sex merely from the head,

while Overbeck thought it was impossible to identify the type with any extant work, though the Ludovisi and Farnese heads in Rome were at one time held to represent the Polycleitan ideal.

Ruskin Letters Wanted.

IN the event of a representative selection from the letters and diaries of the late John Ruskin being published, it is important that his literary executors should have knowledge of all available material. Certain collections of letters are, of course, already open to them; but a large number of letters must exist in various hands, and can be brought to their notice only by those who own them. They will be grateful, therefore, if any owners of letters will send them to Mr. George Allen, Ruskin House, 156, Charing Cross Road, W.C., to be inspected, and, if need be, copied, and may rest assured that any that are sent will be returned with no unnecessary delay. If the originals cannot be sent, carefully-made copies might be forwarded, and the sending of copies with the originals would ensure a still speedier return of the latter. Since the death of Mr. Ruskin there have been repeated applications by individuals for the necessary leave to publish single or small groups of his letters. But while the interest of a collection, characteristic and worthy of the writer, is clear, his literary executors cannot think that the scattered and indiscriminate publication of his correspondence is desirable, and they now hope that in place of applying for a permission, which cannot be generally granted, owners of letters will be content to assist the project above mentioned.

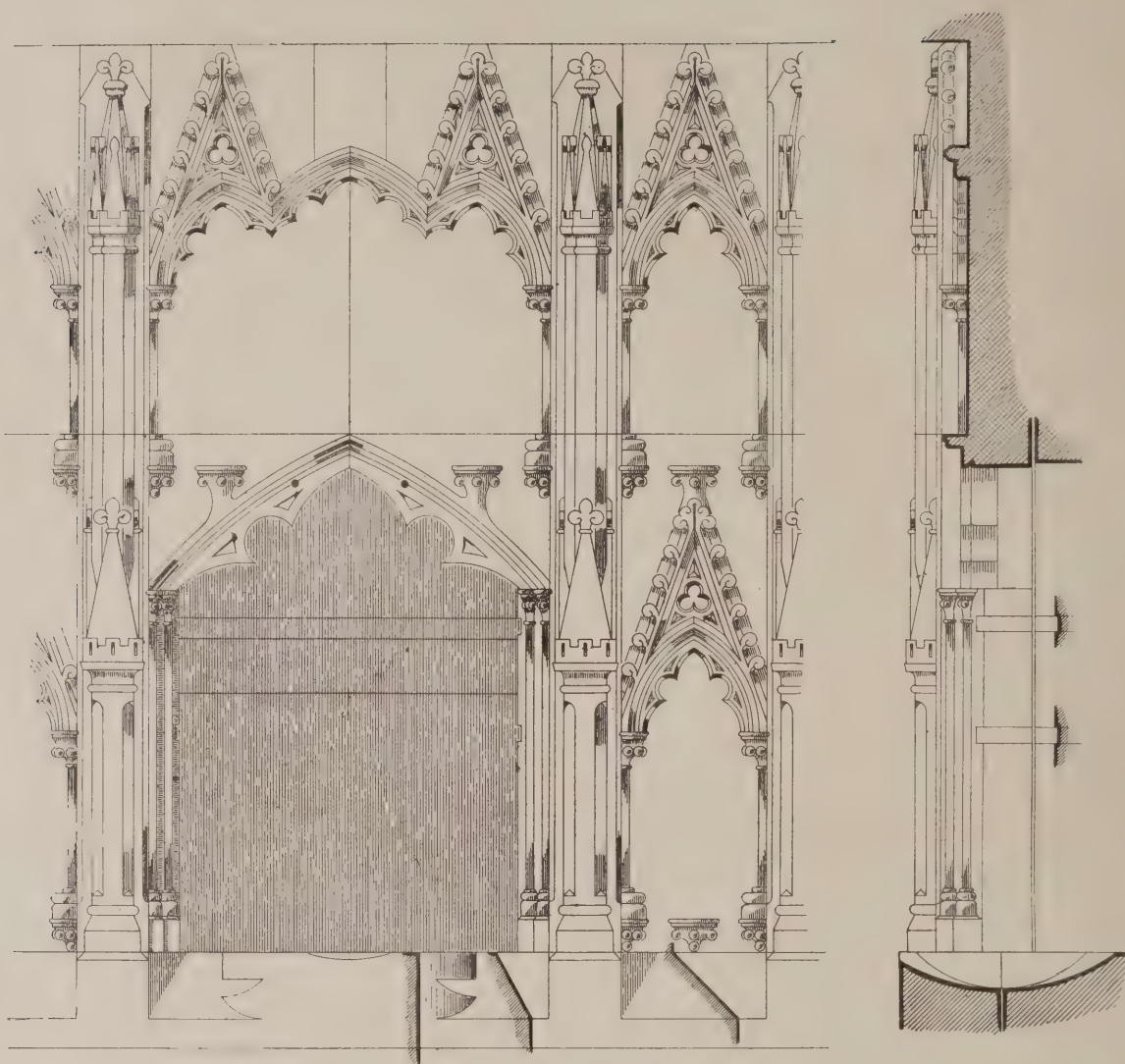
Birmingham's New Workmen's Dwellings.

THE newly-erected workmen's dwellings in Milk Street, Birmingham, came in for a great deal of criticism at a recent meeting of the Birmingham Trades' Council. The Housing Committee thought the houses were not in any way inviting as residences, as they are extremely squat in appearance, whilst there was an entire absence of anything approaching decoration. The balconies constructed to form the access to the upper storeys were a most unsuitable arrangement and would always be an eyesore, besides which they made it impossible for a ray of sunshine to penetrate more than a few feet into the living rooms. In the self-contained or through houses there was a good living room and one good bedroom, but the second bedroom could not take more than one small bed. Leaving out the cost of the land altogether, the average cost per room was £45 5s, or £10 5s. more per room than was paid by the Corporation for similar work in 1892. In the opinion of the Committee, the houses would only accommodate aged couples or young persons without families, or at any rate with not more than two children. Thus the object of the City Council to build houses for the poorest paid labourer with a family of even moderate size had been a failure so far as the present scheme was concerned. Mr. Thompson remarked that the balconies formed the ugliest structure that he had ever seen, and he hoped the experiment would never be repeated.

Decorating the Royal Exchange.

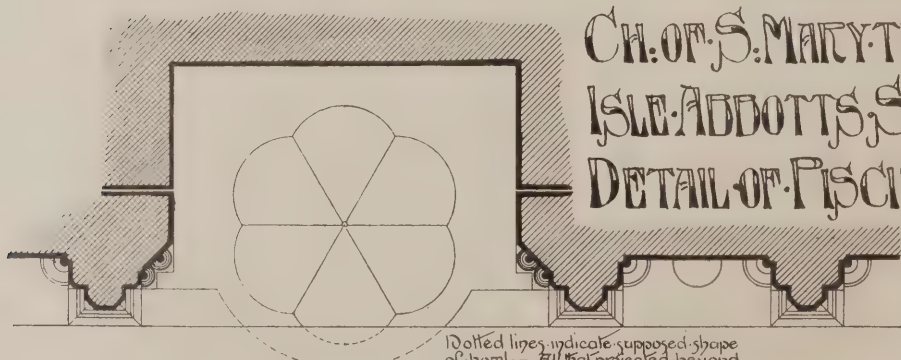
ONE by one the recesses of the arcading in the Royal Exchange are being filled with pictures, and when the work is completed the building will be greatly enhanced. As yet none of the younger Academicians have taken up the note of decoration struck by the late President; Lord Leighton's picture of the "Phoenicians Trading with the Early Britons on the Coast of Cornwall" remains in all respects the first of the series. The panel painted by Mr. Ernest Crofts, R.A., for the Mercers' Company represents the opening of the first Royal Exchange by Elizabeth, while the panel painted by Mr. Stanhope Forbes, A.R.A., for the Sun Fire Office, representing (appropriately) the Great Fire of London, is treated in quite a modern spirit, contrasting with the pictures preceding it, and especially with that of Mr. S. J. Solomon,

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ELEVATION.

SECTION.

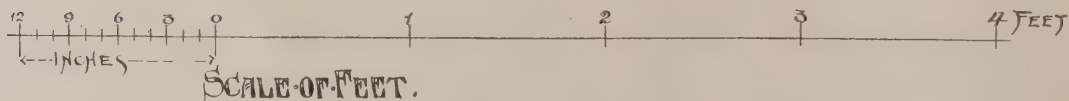


CH. OF S. MARY THE VIRGIN
 ISLE ABBOTTS, SOMERSET.
 DETAIL OF PISCINA.

Dotted lines indicate supposed shape
 of bowl — All that projected beyond
 face of wall below has been sawn off
 flush with wall — See Elevation II.

PLAN.

MEASURED & DRAWN BY
 GEO. J. GILLHAM.
 1899-1900.



SCALE OF FEET.

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FIG. 1.



FIG. 3.



FIG. 2.



FIG. 4.



FIG. 5.



FIG. 7.



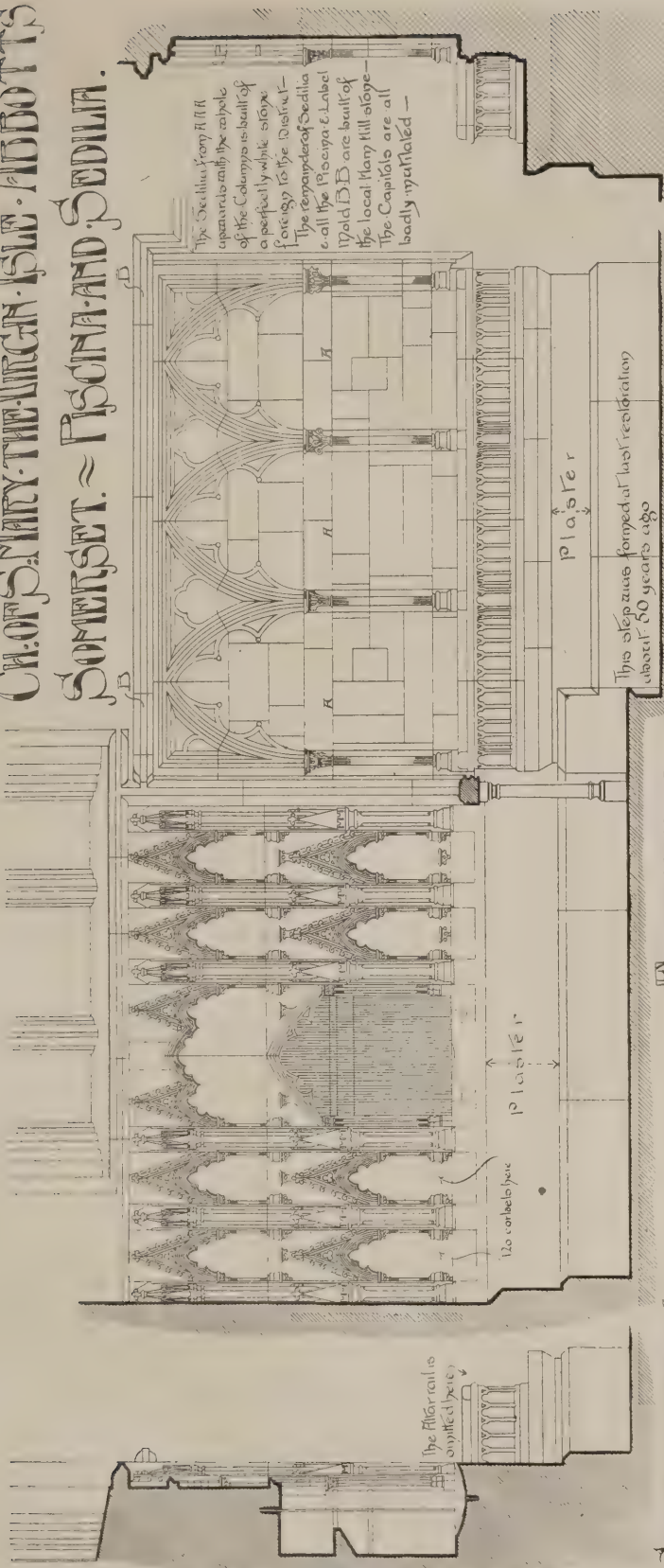
FIG. 6.



FIG. 8.

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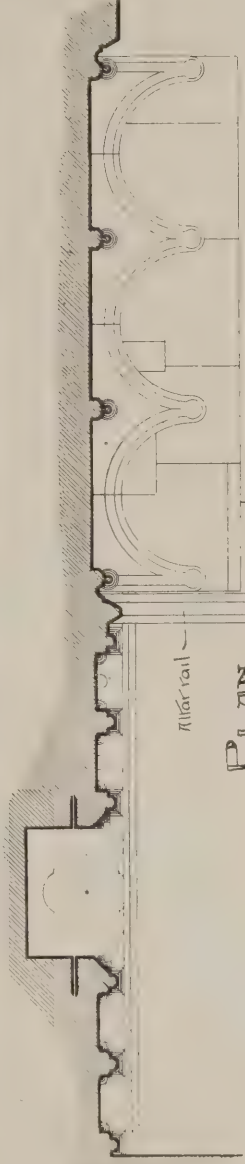
CH. OF ST. MARY-THE-VIRGIN-ISLE ABBOTTS SOMERSET. = PISCINA AND SEDILIA.



SECTION-THRO'
PISCINA.

ELEVATION.

SECTION-THRO'
SEDILIA.



PLAN.

10 FEET

SCALE OF FEET.

MEASURED & DRAWN BY
GEO. J. CHILMOTT
1899-1900.

LIBRARY
OF THE
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A.R.A., next to it, which by comparison seems a more distant sort of art—as in some sense it is. It would be interesting to know what the painters themselves think of their work at the Exchange now that it is done—whether they are satisfied with it, or whether they have come to the conclusion that it is one thing to paint an easel picture up to the standard of the Academy and another to aspire to decoration. To the critic it is clear that the painting of most admirable *genre* does not prepare a man to decorate a public building.

French Decorative Work.

AN article by Mr. Lewis F. Day, the well-known art critic, particularly in connection with handicrafts and decorative

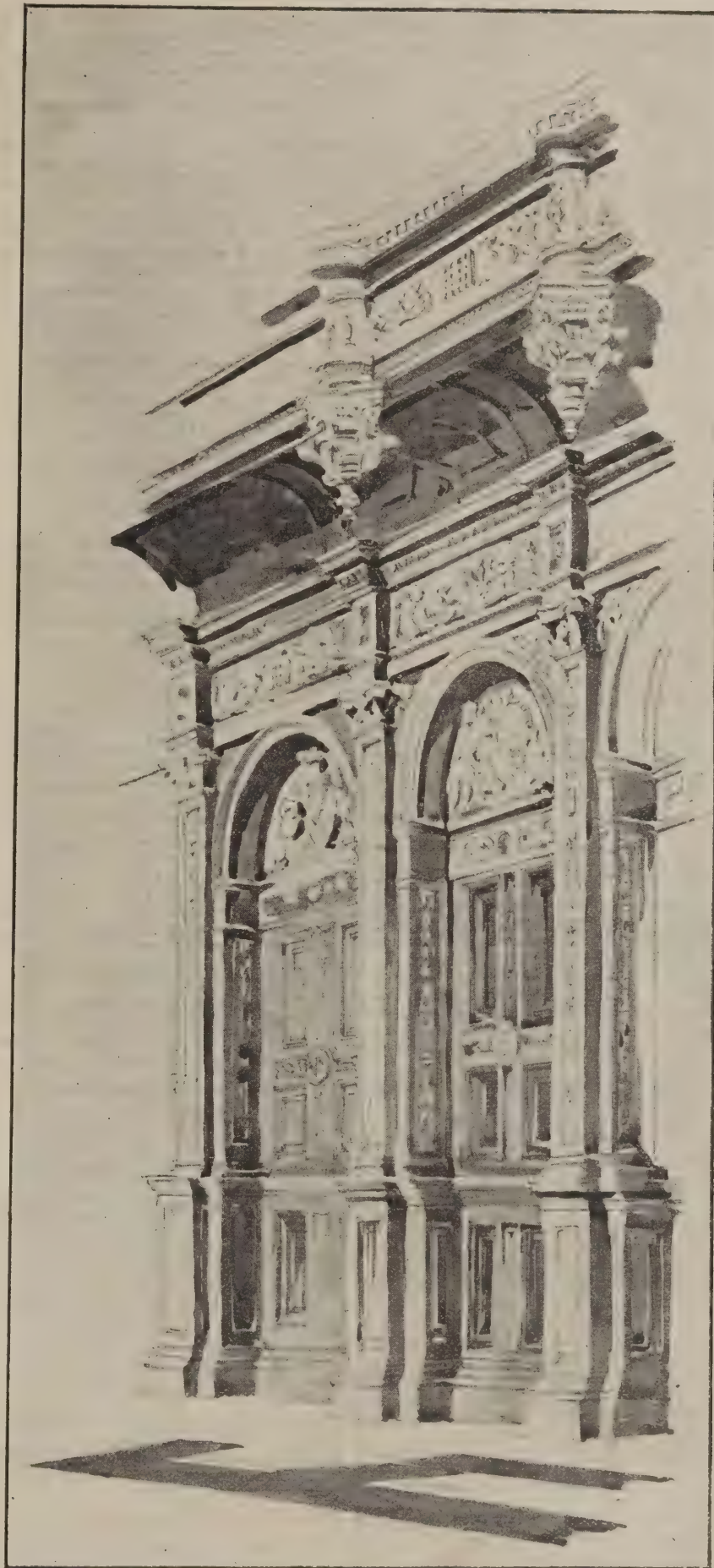
work, appeared recently in the columns of the "Manchester Guardian" on the decorative art at the Paris Exhibition. In the author's opinion by far the most imposing entrance is from the Champs Elysées. As you pass between the two permanent Palaces of Art, the façades of which have at least some architectural dignity, you see beyond the Bridge of Alexander III., the distant dome of the Invalides and the new Exhibition buildings designed to connect the two. The scheme is well planned, but the glaring white pinnacles decline to be dominated by the great grey dome, and what the eye sees is a restless up-rearing of flamboyant architectural detail: for the arts of peace are housed in plaster. There would be nothing to say against that if it had been used with reticence, but that is not a national characteristic, and the material is frightfully abused. It has never occurred to the architects to use it in a constructional manner, in frank combination, that is to say, with timber work or iron framing. They use it (rightly enough for temporary purposes) as a sort of scene-painting in the solid.

Some Examples.

You see that, for example, in Old Paris; but in the official buildings, both at the Invalides and at the Champ de Mars, the architect falls between the two stools of honest construction and well-sustained simulation. There is here in the façades such flaunting of detail as could not well be stone; the palatial effect is accordingly lost; one is reminded only of the frame-maker and of the plaster-image vendor. Still, the images are most skilfully done, and some of the buildings are further adorned with mural paintings of extraordinary skill. In fact, there are everywhere feats of accomplishment to which English decorators would not, under the circumstances, be anything like equal. We may criticise their work as not being according to our taste, but we could not have done it.

Bristol's Old Houses.

THE secretary of the Society for the Protection of Ancient Buildings has addressed a letter to the Town Clerk of Bristol with reference to certain old houses in King Street. The communication is as follows: "Sir,—The Society for the Protection of Ancient Buildings desires to approach the Town Council of Bristol upon the subject of the old houses remaining in King Street in your city. The Society understands that the Corporation is offering the site of these houses for sale, and therefore it desires to point out that this block of buildings is an object of great beauty, as well as being an important historical monument, showing the skill and beauty with which the men of Bristol built in days gone by. The Society is aware that Bristol has in recent years lost much of its antiquity, and therefore it wishes to call special attention to this block of buildings, and to respectfully ask whether the city cannot afford to allow them to remain? The Society realises that at present the buildings are in a bad state of repair. If they were built of brick or stone this would be a serious matter, but as they are constructed of timber there is no difficulty whatever in repairing and strengthening them. This being so, it is thought that the Corporation may be fairly urged to consider this course, in the belief that by so doing the Corporation would be best considering the interest and welfare of the city."



SCREEN, KING'S COLLEGE, CAMBRIDGE. DRAWN BY J. A. WOORE.

A.A. VISITS.

THE DEEPDENE, DORKING.

THIS celebrated estate and mansion at Dorking might very fitly be described from many various points of observation. In every direction there is such a vast quantity of good things, selected with an exceedingly fine taste and rare judgment, that they can appeal successfully to many tastes and pursuits, and at the same time give great pleasure to any visitor.

On Saturday last, June 16th, the first of the Summer Visits of the Architectural Association took place, when a large number of members—by the kind courtesy of the Duchess of Marlborough and Lord William Beresford, the tenants of the estate—were permitted not only to enjoy the beauty of the grounds, but to thoroughly inspect the magnificent contents of the mansion.

Dipden, or Deepdene, is a derivation from two Saxon words signifying a deep vale, and the name very significantly describes the configuration of the estate; owing to its very undulating nature the approach to the mansion and its surroundings are rendered very picturesque by immense masses of old trees: firs, beeches, elms, and oaks; these, with their June tints of green, form a strong background to the enormous masses of gigantic rhododendrons, now in full bloom, that must cover some hundreds of acres of hillside and valley. In whatever direction in any part one may chance to look, there are to be seen tremendous masses of these gorgeous plants, the usual deep mauve, a beautiful rich, semi-vermillion type, and the very rare white ones. In the midst of this wonderful setting is to be seen the great mansion, a building in dull greys and yellowish browns.

The first definite record that we have of the estate as a place of residence is to be found in Evelyn's Diary. "In 1655," he says, "I went to Dorking to see Mr. Chas. Howard's amphitheatre garden on the solitary recess, being 15 acres, environed by a hill. He shewed us divers rare plants, caves, and an elaboratory." We saw the cave on Saturday, a very curious grotto-like place, closed by an iron-barred gate. The interior seemed to be vaulted, and to contain as lumber a number of statues. Outside by the gate was a monumental tablet, setting forth, in the style of the eighteenth century, the merits of Mr. Charles Howard, who died in 1713. He inherited the estate from his father, the seventh Earl of Arundel, the estates having belonged to the Howards for many centuries. In addition there is the Great Cave; that, we were informed, contains statues to the value of £60,000, but we were unable to see them at the time.

Between 1777 and 1790 the house, as we can now only partially see it, was built around the older mansion by the tenth Duke of Norfolk; his son, the eleventh duke, sold it and the estate to Sir William Burrell, by whose son it was sold in 1805 to the celebrated Mr. Henry Thomas Hope; he, keeping the mansion as it stood, immediately commenced to enlarge it, and employed an architect named Atkinson to make the additions upon a large scale. This having been done, Mr. Hope, not being satisfied with the amount of space now at his disposal, or possibly with the architectural effect of the interior, became his own architect, and designed the enormous block that forms the present entrance front, containing the great hall and staircase, the billiard-room, the library, the Etruscan vase room, and a number of other apartments.

The entrance hall, approached by a very poor entrance and passage, is an immense square apartment running up through the building to the roof, and suggests that its *motif* is to be found in the courtyards that one may see in Roman and Florentine palaces; its treatment internally consists of two stages of orders, the lower one arcaded, and the upper one consisting of yellow Scagliola pillars with gilded caps, supporting a frieze and cornice, and a marble balustrading, forming on both floors a wide gallery, or loggia, on each

side; in the lantern stage is a smaller gallery.

The grand staircase leads from either side to the first floor. The details and decoration everywhere are very refined, but the general design, although the effect is very sumptuous, shows very clearly the hand of the amateur designer; it is in the cold manner of the lame classicism of the beginning of the century, pre-early Victorian, in fact, and the effect of the whole, despite its refinements, is only saved from the high-class mediocrity of the style by the very able and grand disposition of its magnificent paintings, &c., antique collections and gorgeous furniture. In fact, the whole interior is quite reminiscent of a grand storehouse of artistic objects, intermingled with which are the elegant things of to-day, that give to the whole place a touch of homeliness and comfort. The Etruscan room contains a magnificent collection of Etruscan vases of the best periods, arranged upon shelves and inclosed in glazed cases of a great height. The vases are of the usual familiar shapes and dull brownish red colours, with figures in black and white, and about the room are a vast number of rare Greek objects. In the adjoining chamber, decorated in a Pompeian manner, is a chryselephantine statue of Minerva, of large size, in white marble, attributed to Phidias, but from the disposition of its drapery, very suggestive of a Roman copy of a Greek statue; the treatment of the eyes, in some material like two varieties of white and dark green onyx, is very remarkable. There are also in this apartment many small Greek antique objects of very great interest.

The billiard room contains nothing of any particular architectural importance; it is, however, worth inspection owing to its magnificent marine paintings by Van de Velde, also a number of very fine Italian pictures. One of Martin's extraordinary compositions of architectural forms, tremendous skies, and terrified masses of people, attracted some attention; it is full of delicate colour, but, like his "Fall of Babylon," becomes slightly wearisome. A view of St. Alban's Abbey, as seen apparently from the old George Inn, and undoubtedly by David Cox, was much admired. A comparatively small room hung with exquisite old green silk brocade, and with a cornice quite 2ft. in depth, gilded in light gold, made a sumptuous and refined apartment, with paintings by Romney, Reynolds, and other early masters. The great drawing-room, a cleverly planned apartment, with its walls hung with old white silk brocade, and delicately painted ceiling, and furniture chiefly in white silk, embroidered in crimson, and with rich points of deep colour made by cushions, books, silver articles, etc., was very striking.

The saloon is a very large lofty apartment, with an elaborately coved and highly decorated ceiling. The general effect, however, is dull, heavy, and gorgeous. Here hang enormous masterpieces of the great Italian painters, Raffaele, Tintoretto, Giuliano, Paolo Veronese, and many others, but they are not seen to advantage. The Raffaele is remarkable, as its style, more akin to the work of earlier Italian artists, is utterly unlike the calm, stately dignity that one usually associates with this master's work. We noted the grand architectural effect produced by the use of lining a wall on the staircase with an entire mirror, in its way reminiscent of the effects seen on the grand staircase of the Paris Opera House. Descending to the hall again we examined many interesting antiquities, among which may be mentioned an exquisite white marble Greek sarcophagus, ornamented with the finest sculpture; another object, acting as a stand for a huge palm, is a most interesting and very large mediæval font, probably Italian, in a grey stone standing upon four carved legs.

Here we sat for some time, and then, possibly for the first time, having inspected a mansion built in a style that is supposed usually not to command admiration, and found that we could admire it for itself, and for its wonderful treasures—we passed out to enjoy the exceeding beauty of the park, and then back to London.

H. D. W.

COMPETITIONS AGAIN.

SOME time ago the Carlisle School Board announced its intention of receiving competitive designs for a new higher grade school to be erected in the city. "Instructions to architects" were issued in the usual way, and the competition was confined to Carlisle architects. The date fixed for receiving designs was March 12th, and after complete and mature deliberation the Board have announced the result of the competition. The premiums have been awarded as follows:—1st, Mr. Henry Higginson; 2nd, Mr. George Armstrong; 3rd, Messrs. Johnstone Brothers; 4th, Messrs. Oliver and Dodgshun. To assist them in coming to a decision they called in (at a fee of fifty guineas) Mr. Millar Reade, architect to the Liverpool School Board, who was instructed to select the four best designs, but not to place them in order of merit. This Mr. Reade did and prepared his report, a copy of which was sent to each member of the Board, with the intimation that its contents were to be regarded as strictly private. It now appears that the Board in its superior wisdom has entirely disregarded the assessor's recommendations and made its own selection. They further decline to produce the report, and hence have naturally aroused a good deal of indignation amongst the competitors. It is, of course, in every way commendable that a Board should pay fifty guineas to have the opinion of an assessor in an architectural competition and then disregard his recommendation altogether.

The Carlisle School Board indeed deserves a pat on the back—rather a hard one.

Enquiries Answered.

Testing Materials.

HARROGATE.—STUDENT writes: "Please name a firm who undertake to test samples of stone, both for strength and durability, and give the chemical constituents."

MESSRS. David Kirkaldy and Son, testing and experimenting works, 99, Southwark Street, London, S.E., will do what you require.

Architectural Assistants for South Africa.

WOLVERHAMPTON.—S. A. writes: "I should be glad if you could advise me as to the best means of obtaining a situation as an architect's assistant in South Africa."

We have had several enquiries on this subject from correspondents who seem eager to participate in the work of rebuilding and extension that must necessarily take place in South Africa. We would not advise haste, but the reverse. An article on building practice in Johannesburg appeared in our issue for March 7th last, and in the issues for March 21st and April 11th will be found further information on the subject. We cannot do better than refer our correspondent to these particulars.

Books on Plumbing.

PLYMOUTH.—STUDENT writes: "I should feel obliged if you would tell me the names and publishers of some text-books on plumbing, suitable for an apprentice."

"The Plumber and Sanitary Houses," by S. Stevens Hellyer, price 10s. 6d.; "Principles and Practice of Plumbing," by S. Stevens Hellyer, price 4s.; "Plumbing Practice: a Text-book for Plumbers," by J. Wright Clarke, price 6s.; "Plumbing," a text-book on the practice of the art of the plumber, by W. P. Buchan, R.P., price 3s.; "Lectures to Plumbers," by J. Wright Clarke, price 8s. The foregoing books are obtainable from Mr. B. T. Batsford, 94, High Holborn, W.C.

Professional Practice.

Baldovan, Dundee.—The foundation-stone of the new Asylum for Imbecile Children at Baldovan was laid on Wednesday last. Mr. J. T. Maclaren, of Dundee, is the architect. The site is free and airy, and the view obtained from the front is one of the best in the district, embracing all the lovely strath in which Downfield is so pleasantly situated. The buildings themselves will extend over about eleven acres, although at the present time it is only intended to complete the central portion, the outer pavilions to be added as occasion requires and finance allows. Accommodation for 200 children will be provided, which is a big advance on the possibilities of the existing institution. The various pavilions will be connected with each other by means of covered corridors. The first part to be undertaken will be the administrative section (the cost will be £10,000). It will contain the official's apartments, will accommodate twenty-four private patients, and provide hospital accommodation for twenty helpless children. The commissariat block is situated in the rear, and includes a dining room 71ft. by 32ft. and a separate dining room for private patients. The whole of the buildings will be heated by warm-air stoves and a low-pressure hot-water system. Electric light will be the illuminant. The cost of the work will be £25,000.

Bristol.—A new congregational church is to be erected on a site in Napier Road. Mr. George H. Oatley, F.R.I.B.A., is the architect. The building will comprise a nave and aisles, the arcading being of timber construction. The nave has an apsidal termination at the east end for the choir and organ, and there is a gallery at the back approached by a staircase in the low tower at the north-west corner. The upper storey of the tower is to form a classroom. The chapel is to seat 500 persons, and the church parlour, which is provided in the rear of the building, is to be hexagonal on plan, and will seat about one hundred. The style is fourteenth century English Gothic freely treated. It is proposed to use local stone with Bath stone dressings, the walls being lined internally with buff bricks. The roof is to be of open timber covered with Broseley tiles. The warming will be by a combined system of fresh warm air and hot water.

Colchester.—The school buildings erected in the grounds of the Eastern Counties' Asylum, Colchester, were formally opened on Thursday by the Marquis of Bristol. The schools and shops have been erected on the west side of the institution, and have been built and furnished entirely at the expense of Mr. Alexander Peckover, the Lord Lieutenant of Cambridgeshire, who has also built the connecting corridor and gateway, the total cost being £6,000. The block is 80ft. in length and 40ft. wide, and is built in white brick, to match the older part of the institution. There are two storeys, with a corridor running through the centre of each, and rooms on each side. These rooms are to be used as follows:—On the ground floor, tailor's, shoemaker's, carpenter's, matmaker's, and brushmaker's shops. On the first floor there are two classrooms for girls, three for boys, a wood-carving room, and a basket-making shop. There are lavatories at each end. The flooring of the corridors and lavatories is of Terrazzo pavement, and of the rooms wood blocks on concrete. The classrooms are divided by sliding partitions, on ball bearings. The top storey has been fitted up for storing articles used in the shops. The building is heated throughout by hot water, by means of a Keith's Challenge boiler in the basement, which supplies radiators in all the rooms. Lighting is by electricity, and ventilation by one of Blackman's fans, special ducts with openings from all the rooms being provided under each corridor, into which the vitiated air is drawn. The plans of the building were prepared by Messrs. Chancellor and Son, the honorary

architects to the asylum, and have evidently been arranged with great thought. The contractor for the building was Mr. Fred. Bennett, of Ipswich; for the heating, Messrs. Beckett, of Chelmsford; and for the electric lighting, Messrs. Christy Brothers and Middleton, of Chelmsford. Mr. F. J. Bugg acted as clerk of the works.

Conway.—The designs for interiors at "Nant-y-Coed," Conway, on this and the following page, are by Mr. Herbert Ogden, A.R.I.B.A. The work is painted ivory white, and has been carried out by Mr. William W. Freeman, of Chester.

Glasgow.—The new fever hospital erected by the Corporation at Ruchill has cost more than £250,000. The hospital includes thirty-four distinct blocks of buildings, the principal of which are sixteen pavilions for the reception of patients. Twelve of these are large pavilions, each having beds for thirty patients, or 360 in all; while the four smaller pavilions will each accommodate twenty patients, or eighty altogether. There is thus provided accommodation for 440 patients, allowing about 2,000 cubic feet to each bed. Much consideration has been given to the design and general arrangements of these pavilions, particularly in regard to ventilation and sanitation, and the systems adopted have met with general approval from those specialists who have had the opportunity of examining them. The experience gained in the earlier construction of Belvedere Hospital

has been invaluable, and all the features susceptible of improvement in that institution have been carefully investigated. Second in interest to the pavilions is the administrative block, a large building three storeys in height with a frontage of 240ft., the wing walls extending to 189ft. Bedrooms are here provided for 200 nurses, and ample provision has been made for the medical superintendent and the matron, as well as for the professional staff. Lavatories and bathrooms are arranged on a most complete scale. There is a large recreation room, sitting-rooms are provided for use during leisure hours, and four large sick rooms are available in the event of non-infectious illness occurring among the nurses. Fronting Bilsland Drive is the inquiry room. A large Dorcas store has been provided in the basement of this building, and the upper floors contain the recreation room, bedrooms for the male employees, a workshop, and telephone room. On either side of the inquiry block are the morgue and clearing-house blocks, the former being equipped with all the necessary appliances of laboratory, museum, lecture hall, post-mortem room, and funeral apartment; while the clearing-house has six separate bathrooms for males and females, with waiting and retiring rooms. The fire-engine station is placed in the middle of the clearing-house building, this position being the most convenient and central for the protection of the hospital. At the eastern extremity of the site are the wash-house, the laundry, the boiler sheds, the pump for raising the water supply into the tower, various workshops and



"NANT-Y-COED" CONWAY.
DRAWING ROOM INGLE NOK.
HERBERT OGDEN A.R.I.B.A. Architect.

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"NANT-Y-COED" CONWAY.
VIEW IN BED ROOM.
HERBERT OGDEN, A.R.B.A. Architect.

stables. In this position a railway siding affords the means of bringing in fuel and other supplies. On the south of the inquiry block, in the centre of the hospital, flanked on either side with pavilions, are placed the kitchen and stores block, the water tower, and the day workers' block. Besides the main kitchen, which will provide the food for the whole establishment, the building contains on the same level dining halls, stores, dairy, dispensary, and offices for the clerk of works and the house steward. On the upper floor there is store accommodation for the matron, and a sewing-room, bedrooms, and lavatory are also on this level. The water tower provides storage on four different levels, the upper tanks supplying the flushing cisterns in the administrative block. The day workers' block contains seventy-eight bedrooms, as well as a recreation room, napery stores, baths, lavatories, and other accommodation on a liberal scale. On either side of the entrance gateway in Bilsland Drive are houses intended for the house steward, the clerk of works, and other non-professional officers of the hospital. The lighting of the whole establishment is by electricity. All the buildings will be regulated in temperature by the circulation of hot water, although open fires are provided in the pavilions and in certain of the dormitories. The style adopted is a free treatment of Elizabethan architecture. The administrative block, the gate-house, and the cottages in Bilsland Drive are built of Dumfriesshire freestone. The pavilions, the tower, the

kitchens, and the other erections are built with a combination of Scottish terra-cotta, brickwork and freestone facings, the colouring giving warmth of tone and enhancing the general aspect of the buildings. Mr. A. B. M'Donald, city engineer, was the architect.

Holywell, Flints.—On Thursday last the foundation-stone was laid of a new wing to the Franciscan Capuchin Monastery of St. David at Pantasaph, Holywell, the addition being intended for the accommodation of novitiates. The new building, like the main building of the monastery, will be in the fifteenth century Perpendicular style of architecture. It will be 112ft. long, 34ft. wide, and 54ft. high. The walls will be built of local limestone, with Talacre stone dressings. One corridor will run the length of the building, and will be so constructed as to be a continuation of the corridor in the existing main building, thus giving one corridor 220ft. long. On the ground floor will be the community room, library, workroom, storeroom, and offices. On the first floor there will be twelve cells, built according to the latest sanitary improvements; the second floor will contain seventeen cells. The total cost will be about £7,000. The architect is Mr. T. Richmond Donneley, of Coventry, and the builders are Messrs. Foster and Dicksee, Rugby, who hope to complete the work within eighteen months.

Nottingham.—The new church of St. Bartholomew at Blue Bell Hill, now in course of erection, was designed by the late Mr. J. L.

Pearson, R.A., and is being carried out under the supervision of his son, Mr. F. L. Pearson, Mr. J. Hutchinson, of Gordon Road, Nottingham, being the contractor. The building will be of a simple character, in the thirteenth century style, and will consist of a nave of four bays 70ft. by 26ft., with side aisles each 10ft. wide, a chancel 40ft. by 20ft., a quasi-transept on the north side of the chancel with organ chamber over it and vestries to the east, a chapel 36ft. by 16ft. on the south of the chancel, and a south porch: it is proposed to add a tower in a corresponding position on the north side. The principal entrances are by a western door and the south porch. The west end stands up boldly with massive buttresses and three single lancets high up in the gable, whilst the aisles have coupled lancets in each bay. The nave arcades are comparatively low with a lofty clerestory over, lighted by tall lancets. The chancel is somewhat less in height than the nave, but is of the same general character; three lofty lancets which pierce the east gable are its most striking feature. The chapel, which is of smaller proportions, has an apsidal termination, and is lighted by a series of triplets. The walls will be faced externally with stone, with dressings of Bath stone. The roofs will be of Baltic timber, and will be framed with trussed rafters, with curved pieces, and tie beams to the nave roof only. The walls inside will be plastered. The church will be seated with chairs, and when completed will accommodate 650 worshippers.

New Patents.

These patents are open to opposition until July 24th.

1899.—Edging for Paths.—10,588. E. W. HILL, 69, Bartholomew Close, London, E.C. At short distances apart iron stakes are driven into the ground. Each of these has a projecting piece to support the board which forms the edging to the path. The edging can thus be renewed or repaired with ease.

Gas Burners.—10,616. H. W., and I. DARBY and J. H. PUNCHARD, all of 249, Pentonville Road, King's Cross, London, W.C., and W. C. PUNCHARD, 151, Cannon Street, E.C. The light given from this burner has a similar appearance to the incandescent gas light, but no Bunsen burner and no mantle are used. The effect is produced by the combination with an Argand burner of a hood, a button spreader, and a restrictor; these devices deflect the flame and heat the air with the result mentioned.

Metallic Lathing.—10,664. M. HILTON, Mossell Street, Cheetham, near Manchester. The object of this invention is the utilisation for building purposes of the scrap or blanks produced in the manufacture of bicycle chains, or in the gun, pistol, sewing machine, or similar trades. The perforated strips are fixed to the joists with nails or staples, and are then plastered over to the required thickness.

Bricks.—10,671. W. W. PILKINGTON, The Hazles, Prescott, and W. E. ORMANDY, 124, Windlesham, St. Helens. According to this invention, bricks are made from the sand and other materials that have been used to grind plate glass. The mixture is pressed into moulds, and is then heated until the glass slightly fritt and causes the grains of sand to unite. When cooled, a tough annealed brick is obtained. If a very dense brick is required, clay, chalk, or spent lime is added.

Conduits.—13,257. M. H. SMITH, Albany Buildings, 47, Victoria Street, Westminster, S.W. This invention is an improvement on that described in patent No. 5,025 of 1894. It consists in forming beneath the electric tramway route a culvert containing the service truck and the gas, sewer, and other pipes and wires.

Pipe Joints.—14,571. S. JENNINGS, Palace Wharf, Stangate, Lambeth, S.W. This invention relates to joints in which the ends of

two adjacent pipes are surrounded by a coupling made in halves. This coupling is pierced with holes which become filled with the cementing material and also afford an outlet for air or surplus liquid.

Flap Valves for Sewers.—14,869. G. S. MORGAN, Llantrisant Road, Pontyclun, Glamorgan; and W. WILLIAMS, Bryn-Derw, Plymouth Road, Penarth. Instead of making the flap rigid, it consists of about three parts hinged together so that the second does not open till the sewage has reached a certain level, and similarly with the third. The escape of sewer gas is thus controlled.

Braces.—15,425. W. H. C. HARRISON, Torrens Road, Woodville, South Australia. This is an improvement on patent No. 1,562 of 1899. A rotatable tool-holder or sleeve is mounted on the lower arm of the brace, and the tool required has only to be turned on its hinge and fixed in the socket in order to be ready for use.

Asphalt Paving.—16,827. H. D. BLAKE, 6, Mount Adon Park, Lordship Lane, London, S.E. The composition (which consists of natural mineral bitumen, 15 parts; fine sand or limestone powder, 65 parts; and mineral rock asphalt powder, 20 parts) may be used in three different ways—as a compressed, a mastic, or a block bituminous asphaltic pavement. In the first case the mixture is heated to a semi-plastic state, laid down, and rolled until cold. In the second case it is made up into blocks weighing about 56lbs. each, which, when cold, are broken up, re-melted, and laid in a liquid state on concrete foundations. And in the third case it is made into paving blocks, having a groove around them to form a key for the fixing material.

1900.—Saw-Sharpener.—2,875. P. LORD, 11, Uxbridge Street, Worcester, Mass., U.S.A. For sharpening a saw a file is used which has a certain number of ribs with a pitch corresponding to that of the saw teeth. This facilitates and quickens the operation.

Earth-Closets.—5,700. M. J. ADAMS, Park Lane Sanitary Works, Leeds. The object of this invention is to produce a very simple form of earth-closet which shall be self-contained. The body of the closet is practically an enlarged bucket, and is preferably made of sheet-iron. The seat may be made removable. At the back end of the body the earth-box is hung on pivots, to one of which a handle is attached. If the handle is raised rather quickly the earth or other deodoriser will be shot out of the opening at the front of the box.

The following specifications were published on Saturday last, and are open to opposition until July 30th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—8,408, HALDEJAER, machine for production of sanitary tubes. 10,904, SCHULTHESS, process for the production of compressed artificial sandstones. 11,256, AYOTTE and CHARBONNEAU, machines for the manufacture of bricks. 12,242, OTT, manufacture of metallic dust or bronze powder. 13,053, SANDERS, anti-vibrating springs for incandescent lamps. 13,054, SANDERS, holders for globes and shades of gas and electric lamps. 13,665, HEYDEN, process for producing artificial marble. 13,996, VERITYS, LTD., and RIDINGS, electric arc lamps. 14,325, BROOKER, machinery for rolling metal forms. 14,941, HOWARD-SMITH, rail joints of tramway permanent ways and securing rails to underbed. 15,026, COCHRANE, cement. 15,119, GRAUTOFF and FRITZ, burners for gas lighting by incandescence. 15,132, POTTER, manufacture of cement. 15,405, MCKINNON, windows. 16,006, GETTING (Olivero), flushing cisterns. 16,781, ZSIGMONDY, enamels or colours for earthenware and glass. 17,471, ADAMS, continuous burning kilns for bricks. 20,377, BEECH, construction and formation of building bricks. 21,372, MAYER, furnaces for heating and melting metals. 23,987, GAEFKE, plumbing, levelling, and angle-measuring instrument for use in building. 24,733, HUGHES, blind roller action.

24,946, STOBBS and THOMPSON, combined road cleaner, elevator, and dirt cart.

1900.—2,876, MORGAN and TAYLOR, overhead travelling cranes. 5,790, BARRON, air pumps and smoke-generating machines for testing drains and general sanitary fixtures. 5,885, GARCHY, manufacture of ceramic stone. 6,191, McLENNAN, agitating tanks for mixed paints. 6,634, BLACKWELL, door holder. 6,698, HAYLOCK, heating and ventilating of rooms and buildings. 7,116, MARBURG, rotary pumps. 7,139, HURRY and SEAMAN, process of manufacturing Portland cement. 7,401, RAWLINGS and RAWLINGS, ventilator. 7,528, ALLISON (P. H. and F. M. Roots Co.), rotary pumps. 7,552, JENKINS and HUDSON, construction of weatherproof coverings for shelters, tents, tramcars, etc. 7,750, PRYKE and PALMER, eaves gutters.

Surveying and Sanitary Notes.

Scoria Bricks for Middlesbrough.—The Middlesbrough Council have decided to borrow £8,860 for paving several streets with scoria bricks.

Mr. H. Victor Prigg has been appointed resident engineer in connection with the Plymouth main drainage works at a salary of £300 a year.

A Desirable Improvement.—It has been decided to purchase property at North Hill, Plymouth, at a cost of £1,400, to enable the access to Greenbank Ward to be greatly improved by widening Clifton Place at its junction with North Hill.

A Scarborough Street Improvement.—The improvement in St. Thomas Street, the main thoroughfare between the North Cliff and the centre of the town, is being pushed forward, and the Council have approved the proposal to purchase five houses from Mr. J. W. Jackson for £3,500.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on June 13th the following gentlemen were elected:—As Fellow: Mr. T. G. T. Wright (Southend-on-Sea). As Members: Mr. R. Clarke (Dawlish), Mr. E. Collard (Herne Bay), Mr. H. H. Oakes (Bridlington), and Mr. W. Whur (Southend-on-Sea).

Grimsby Borough Surveyorship.—Mr. Henry Gilbert Whyatt, deputy borough engineer of Salford, has been appointed as borough engineer and surveyor of Grimsby, at a salary of £400 per annum. There were more than one hundred applications. The new surveyor is thirty-nine years of age, and is the son of a late leading architect of Manchester.

A Mistake about a Footway.—At the meeting of the Bath Town Council held last week the Joint Committee having conducted the negotiations regarding the new hotel in the Orange Grove presented their minutes. These showed that a difference had arisen with Mr. Holland, the lessee, as to a mistake made in the laying-down of the foundations under the direction of the city architect, by which the public footway on the west and north of the hotel, which was arranged to be 20ft. wide, would only be 13ft. Although advised by counsel that they could insist on the 20ft. being observed, the Committee decided to allow the curtailment.—Alderman Jolly moved:—"That Mr. Gill, having reported upon the plans of the new hotel, they be approved subject to the following stipulations: (1) That the East, or Lott Gate, be not interfered with; (2) that provision be made for escape in case of fire, either by means of an external staircase, as required by the Licensing Justices, or by an additional internal staircase if approved by the Justices; (3) that in case of any difference of opinion arising between Mr. Gill, as acting for the Corporation, and Major Davis, as acting for the lessee, with reference to giving effect to the foregoing stipulations, or any other question of difference which might arise, the matter be referred to an archi-

tect to be appointed by the Institute of British Architects, whose decision shall be binding on both parties, but without prejudice to the jurisdiction of the Surveying Committee." This was carried unanimously.

A Carriage-way across Trafalgar Square.—The Commissioners of Her Majesty's Office of Works have consented, with certain provisos, to allow a carriage-way to be made across Trafalgar Square during the building of the Charing Cross Station of the Baker Street and Waterloo Railway. The roadway will run past the Nelson Column and Gordon Statue, but it is stipulated that the railway company must, on the completion of the building of the station, so repair the square as to put it in its present condition.

New Sewage Scheme for Chester.—A Local Government Board enquiry was held last week into the application of the Chester Corporation to borrow £36,000 for purposes of sewage disposal. The scheme is based on a dry-weather flow of 1½ million gallons per day. The sewage would flow into a large circular sump well, would then be pumped and mixed with chemicals, and would flow into precipitating tanks. Then there is an intermediate process of rough filtration, so as to ensure a perfectly clarified effluent before passing on to the polarite filter, of which there would be sixteen. The effluent, after passing over the land, would flow into the river.

Street Improvements at Leeds.—A number of resolutions as to street improvements were adopted at last week's meeting of the Leeds City Council. It was agreed to exchange land in connection with the improvement of East Street, by which the Corporation convey 4 sq. yds. of land to the Leeds Estates Company, and the company dedicate to the street 28yds. The Council also approved the following purchases:—Premises at the junction of Camp Road and Meanwood Street, containing an area of 188 sq. yds. for £1,400; three cottages in Balm Walk, Hunslet, for £375; six cottages and outbuildings in Balm Walk and Low Balm Yard, for £650; 40 sq. yds. of land in Holbeck Lane, with the buildings thereon, for £200; 4,464 sq. yds. of land in Brown's Lane, at 5s. per yard; 168yds. at 10s. per yard; 781yds. at 12s. 6d. per yard; 54yds. of land required for the widening of Tempest Road, Hunslet, at 20s. per yard; 1,795yds. for the widening of Easy Road, at 10s. per yard; 843yds. for making a new approach from Pontefract Lane to Easy Road, at 12s. per yard; 20yds. for the improvement of Meanwood Road, at £4 per yard. For works in connection with these proposed improvements the Council voted a further sum of £3,624.

Manchester Sewage Question.—At the monthly meeting of the Mersey and Irwell Joint Committee held on June 11th, the report of the Consulting Sub-committee stated that in reply to the resolution passed at the last meeting of the Joint Committee a letter had been received from the Town Clerk of Manchester, in which he said: "The Rivers Committee are most anxious to comply with the requirements of the Mersey and Irwell Joint Committee. Under the direction of the Council they have had a scheme prepared by experts, at very considerable cost, which they would at once carry out were they permitted to do so. The Rivers Committee are now having plans and estimates prepared both in regard to the experts' scheme and also that based on the requirements of the Local Government Board, and will at the earliest possible moment lay these before the City Council, that they may consider the same, as well as the communication expected from the Local Government Board. The Rivers Committee will then ask the Council to arrive at a definite decision either to carry out the views of the Local Government Board, or to apply for Parliamentary powers to carry out the scheme of the experts. The Rivers Committee are unanimous in their desire to act promptly, and give effect to the recommendations of the experts." The reports of the experts will be found in the supplements to our issues for January 31st and November 22nd last.

Builders' Notes.

The death is announced of Mr. James Leith, of Aberdeen.—About fifteen years ago, having in the meanwhile extended his granite trade, he acquired Persley Quarries, and also, at a later date, Dunecht Quarries.

Tender for new Schools at Beckingham.—The Beckingham (Lincolnshire) School Board have accepted the tender of Mr. Greenwood, of Gainsborough, to erect new schools and schoolmaster's house for £2,631.

Tadcaster Board School: Tender for Extensions.—At the last meeting of the Tadcaster School Board the various tenders for the enlargement of the school were considered, and that for the building was secured by Mr. R. Brelsford, of East Keswick. The estimated cost of the alteration is £1,680. Additions to the school premises in 1892 cost £1,134.

Stone Quarrying and Dressing.—Messrs. E. Turner and Sons, Penarth Road, Cardiff, have leased several tracts of land in the Forest of Dean, and purchased several existing quarries, where they have for some time carried on their quarrying operations with plant of the most improved kind. In addition, they have leased land where buildings have been erected and machinery and railway sidings laid down similar to those at their Eldon Road Works, Cardiff. For the supply of Bath stone, quarries have also been opened at Box.

What is a "Workplace"?—This question arose in a recent case at the Guildhall, where a contractor named William Brass was summoned for failing to comply with a notice served upon him to make certain alterations in accordance with the Public Health (London) Act, 1891. Mr. T. G. Vickery, who prosecuted on behalf of the Sanitary Committee of the Corporation, said that the summons referred to the third and fourth floors of a building in Threadneedle Street, the lessees of which employed a number of female typists. The two questions to be decided were, whether this was a "workplace," and, if so, whether the person summoned was answerable? Although a "workshop" had been defined, there appeared to be no definition of a "workplace." The complaint was that the sanitary arrangements on these premises were not only inadequate, but were provided for the use of all persons without distinction. Mr. Vickery's contention amounted to this, that these young ladies being mere "mechanical machines," the place where they were employed was a workplace. Mr. Alderman Alliston: This is a most important question, but I hold that this place does not come within the meaning of section 38 of the Public Health (London) Act, and therefore the summons is dismissed.

Fire Tests with Floors.—Nos. 45 and 55 of the publications of the British Fire Prevention Committee deal with fire tests with floors. The first was with a floor and ceiling erected by the Mural and Decorations Syndicate, Ltd., of London, the floor being 10ft. square, with an area exposed to the fire of 77ft. 6in.; it was loaded with bricks weighing 4,536lbs., equal to a distributed load of 56lbs. per sq. foot. Eight weeks (winter) were allowed for construction and drying. The following is a summary of the effect:—A considerable portion of the plaster ceiling fell during the test, some of the lathing being bare before the test closed. The floor cracked at each side to the extent of $\frac{1}{2}$ in. and dropped $\frac{1}{2}$ in. When water was applied smoke, steam, and sparks came through cracks in the top of the floor. One of the joists carrying the ceiling was entirely destroyed, two partially so, and one, though discoloured, was practically sound. The test lasted an hour and a quarter. The object of the test described in publication No. 55 was to record the effect of a two hours' fire on a floor of deal joists and coke-breeze concrete, with expanded metal and plaster ceiling. The floor was 10ft. square and was loaded with 100lbs. per foot distributed; four weeks (winter) were allowed for construction and drying. The following is a summary of

the effect:—In twenty-eight minutes plaster began to fall in patches from the ceiling, and continued to fall at intervals till the end of the test, when water was applied and further plaster was washed away. No other effect of the fire was noticeable, and at the conclusion of the test the floor was intact and carried its load. This test was undertaken in connection with the series of so-called Building Act floors under investigation.

Engineering Notes.

Electric Light for Kilmarnock.—The Kilmarnock Town Council has decided to borrow money for an electric lighting scheme estimated to cost £26,000.

Additional Water for Manchester.—The new works in progress in the Longdendale Valley in connection with the water supply of Manchester have been well advanced during the last few months. The idea is not only to increase the supply from the reservoirs, but also to further purify the water delivered from Derbyshire.

Proposed Groynes for Swanage.—Considerable opposition was raised at a Board of Trade enquiry at Swanage on Friday last with respect to the proposal of the Urban District Council to erect twenty-six groynes, each about 173ft. long, on the foreshore, which, it is contended by the promoters of the scheme, is in danger of being swept away.

Big Electricity Supply Scheme for Yorkshire.—An influential syndicate proposes to supply electricity to the manufacturing portion of the West Riding of Yorkshire. The scheme is somewhat on the lines of the Lancashire electric power supply scheme, the Bill in connection with which has passed the second reading in the House of Commons, and is now before the Select Committee.

Extension of Paisley Waterworks.—In connection with an application by the Paisley Water Commissioners to the Secretary for Scotland for a provisional order to borrow £200,000 for the purpose of extending the waterworks of the town, an enquiry was held last week. Mr. Lee, Master of Works, explained in some detail the nature of the work to be undertaken, such as increased piping over eight miles of country, to make the supply from Camphill to Rowbank reservoirs 20 millions instead of 3½ millions; the provision of extended filtration; to make the water more wholesome; the augmentation of the supply to Johnstone; and the renewal of old mains and the laying of new ones.

To Connect New York with Brooklyn.—The bridge now under construction for connecting New York with Brooklyn will have a bicycle path, covered with asphalt, carried at a certain height above the tracks for trolleys and for carriages. This bicycle track is to be for the exclusive use of wheelmen, and the opposing streams of traffic will be carefully divided. Beneath it is a footway for pedestrians, and above it the track for the elevated railway. On each side are double trolley tracks affording accommodation for four cars abreast, while the outer sides of the bridge are reserved for carriages and vehicles going the same way, so that the traffic will be as little impeded as possible. The bridge is to be 7,200ft. long, or nearly a quarter of a mile longer than the present bridge, most of this increased length being taken up by the approaches.

Electric Traction.—At a meeting of the Society of Engineers held on June 11th, Mr. Henry O'Connor, president, in the chair, a paper was read on "Electric Traction" by Mr. Algernon Hamo Binyon. The author first compared the London traffic, with that of New York, and gave figures of its distribution by various channels. He stated that the underground railways in London took only 19 per cent. of the total traffic as against 81 per cent. conveyed by omnibuses and tramways—horse and cable. He favoured the overhead trolley system, as used in nearly all English towns, as being the most efficient and economical, and he advocated the side trolley system, which obviates the unsightliness of

very long brackets. The author expressed the opinion that the London United and the London County Council tramways would in time force railway companies to adopt electric traction, even for suburban traffic within a radius of between 10 and 25 miles round London, that being probably the range within which competition would be strongly felt; beyond that a steam locomotive would beat its electric rival. In combining lighting and tramway plant, Mr. Binyon advocated completely separate dynamos and mains.

Dockisation of the Avon.—The report of the three experts appointed to consider the practicability of docking the river Avon has now been made public. The scheme, they think, is practicable, and it would include the diversion of the Avon from a point below Pill Ferry, Bristol, to a new outfall across Flatness Rocks, at a point about 1½ miles above the pier of Portishead Dock. The estimate is as follows:—Diversion of river Avon and construction of reclamation embankment, £765,000; dock works, including deep-water quays, lock, graving dock, etc., £1,446,000; allowance for sheds (525,000 sq. ft.) and buildings, £172,000; railways and sidings (twelve miles) and passenger station, £42,000; cofferdams, temporary watercourse diversions, and compensations, £50,000; capitalised cost of working sluices and dealing with floods, £100,000; land and Parliamentary expenses, £100,000; sundry expenses and engineering, £100,000—total, £2,775,000. Sir John Wolfe Barry's estimate of the work in 1896 was £1,880,000, exclusive of the diversion of the sewage and of improvement works at Bristol. The substantial addition is due partly to the increase in late years of the cost of labour and materials, and also to the proposed diversion of the river.

Masters and Men.

The Keighley Joiners have been granted an advance of 3d. on the wage rate of 7½d. per hour, making 8d., and the masters have further agreed that 49½ hours shall constitute a week's work instead of 48.

The Fair Contracts Conference in Bradford was held last week, Mr. James Watson (president) being in the chair. The Spen Valley and Shipley delegates reported that in their respective districts little propagandist work had been attempted since the conference last met, with the exception that all obtainable literature was being systematically circulated with a view to creating further public interest on the question of fair contracts. The following officers and committee were elected:—President, Mr. G. Holmes (Building Trades Federation); vice-president, Mr. C. Henderson (Spen Valley Trades Council); secretary and assistant secretary, Messrs. A. F. Paine and J. T. Hart (Typographical Society); committee, Messrs. William Hardaker (Joiners, No. 2 Branch), J. F. Atkinson (Ironfounders), H. Wells (Shipley Trades Council), and a delegate to be appointed by the Stanningley Trades Council.

Strike of Birmingham Bricklayers.—In consequence of a dispute which has occurred at the Nechells Gas Works between fifty and sixty bricklayers engaged in building the new retorts have come out on strike. The trouble appears to have arisen over the time at which the men are paid. It is laid down in the society's rules that all members shall be paid at one o'clock on Saturday. It has, however, been the custom at the gas works to pay bricklayers and their labourers at five o'clock on Fridays. In deference, however, to the wishes of the society the Gas Committee issued instructions for the outside men engaged on the new retort work at Nechells to be paid on the Saturday. But this does not appear to have satisfied the society, and because all the bricklayers in the service of the Gas Committee are not paid on Saturdays they called the men at Nechells out on the Saturday morning and the others at Sattley Works out on last Monday week. Many of the men prefer being paid on Friday evenings. Altogether nearly one hundred bricklayers are affected by the dispute.

Keystones.

A new Organ at Ranmoor Church, Sheffield.—Has been built at a cost of about £1,500 by Messrs. Brindley and Foster.

New Clinical Laboratories to Westminster Hospital were formally opened last week. The cost has been (together with other hospital improvements) £10,000.

New London Music Hall.—The foundation-stone of the new Euston Theatre of Varieties was laid last week. It is situated immediately opposite St. Pancras Station.

Abdie Parish Church, near Newburgh, Aberdeen.—A new stained-glass window has been erected in this church. It was designed and executed by Mr. N. Bryson, of Edinburgh.

Hull's New Library.—The new Central Library which is being erected in Albion Street, Hull, is to cost £17,211. About £2,500 will be spent on furnishings, and £1,500 on new books.

Kirkstall Abbey in 1793.—A painting of interest from an antiquarian point of view has just been presented to the Leeds Art Gallery Committee. It depicts the ruins of Kirkstall Abbey as they were in the year 1793.

New Infectious Diseases Hospital for Colne.—It has been decided to erect a infectious diseases hospital at the Old Earth Farm, near Colne, at a cost of £6,750. The land (four acres and a half) will cost £1,780.

Newcastle School Board: New Buildings.—It has been decided to borrow money from the Public Works Loan Commissioners for the erection and furnishing of the new Board Offices and Pupil Teachers' Centre (£13,552), and to complete the purchase of North View School (£6,850).

New Church-tower Clock in Leeds.—A new clock has been placed in the tower of St. Mark's Church, Woodhouse, Leeds; it was fitted by Messrs W. Potts and Sons, of Leeds, and has four dials, which will be lighted by electricity. Extensive alterations to the tower were needed in order to enable it to receive the clock.

At St. James's Church, Toxteth, Liverpool, a new chancel has been erected from designs by Mr. J. H. Havelock Sutton. It is built of red Ruabon bricks, and has an elaborate encaustic tile floor, with mosaic tiling inside the communion rails. The tiling was executed by Messrs. Swift and Co. Mr. William Wood was the general contractor.

A new Church at Preston, Sussex, to be called the church of St. John the Evangelist, is proposed to be built. The late Sir Arthur Blomfield prepared designs for a building to seat 1,000 worshippers, the cost being £12,000. It is proposed to erect the western portion of the church first, capable of seating 600 persons, and for this purpose a sum of £5,500 must be raised before the contract is signed.

A Soldiers' Memorial.—The Princess Louise, Duchess of Argyll, last week unveiled the memorial which has been erected in Canterbury Cathedral to the memory of Second Lieutenant Monsell and 111 non-commissioned officers and men of the Buffs who fell during the operations on the North-West Frontier of India during 1895-98. The monument, which has been executed by Mr. Thomas Rudge, of Clapham Common, is in the Early Decorated style.

Proposed Municipal Buildings for Leigh.—At last week's meeting of the Leigh Town Council the Surplus Lands Sub-committee reported that they had carefully examined the estimate and plans prepared by Mr. J. C. Prestwich for the municipal buildings proposed to be erected on land in Market Street and Market Place, and were of opinion that the cost for land, buildings, furniture, fixtures, painting, and decorating would be £40,000, including £25,000 for the cost of the building. They stated that after further consideration they were of opinion that it was desirable to erect a court-house in conjunction with the proposed buildings. After discussion the report was adopted.

Princes Risborough Church, Bucks.—The tower and spire of this church are to be restored at an estimated cost of £1,800.

A new Board School at Woodhouse, Sheffield, has been built by Messrs. Pinder Brothers, of Intake, from plans prepared by Mr. J. D. Webster, architect, of Sheffield. It has accommodation for 580 children—420 in the mixed department and 160 in the infants'—and, including the site, has cost about £6,673, or at the rate of £11 10s. 1d. per child.

Bridgegate Parish Church, Glasgow.—The new Bridgegate Parish Church in Commercial Road, Glasgow, is being built from plans prepared by Messrs. W. Baird and James Thompson, architects, of Glasgow. Its front elevation in Commercial Road is built of red sandstone, and the building extends backwards to Wellington Lane; it will accommodate 700 worshippers.

The Imperial Memorial to Sir George Grey is to take the form of a bust to be placed in the crypt of St. Paul's Cathedral, and a portrait to be hung in the National Portrait Gallery. Professor Herkomer has agreed to paint the portrait, and Mr. E. Onslow Ford to execute the bust. The Governments of Cape Colony, New Zealand, and Australia have subscribed to the fund; and amongst private subscribers Mr. Cecil Rhodes has given £50.

The Prehistoric City of Tikal in British Honduras is proposed to be explored under the direction of the Marquis of Granby, who is the president of the British Archaeological Association. The city is situated in an almost direct line sixty miles west of Belize. There is plenty of work to be done in the cities of the Aztecs, for terraces, temples and columns comprising invaluable archaeological remains are still to be seen above ground. Americans representing different learned and archaeological societies are very busily engaged in exploring the Aztec cities in Spanish Honduras.

Buildings for Consumptives.—In the report on consumption which the medical officer of health has presented to the Vestry of the parish of Hammersmith it is stated that fireplaces should not be closed up, and bedroom windows should be kept open, night and day, except when the weather is too damp and cold; also, where practicable, electric light should be used for lighting purposes in dwelling-houses and other occupied buildings, as nothing tends more to the production of consumption than the breathing of an atmosphere charged with the products of combustion, whether such products are the result of overcrowding or otherwise.

Church Extension at York.—The new church of St. Luke, Burton Stone Lane, York, now in course of construction, has been designed by Mr. Brierley, architect, of York, and will cost £8,000. Accommodation will be provided for 800 persons. At present it is intended to build only the vestries, chancel, and aisles, which will accommodate 300, with a temporary west end, which can be taken down when the remainder of the work is proceeded with. The building is being erected of brick with Ancaster stone dressings, and the roofs are to be covered with green Westmorland slates. The contract has been let to Mr. Ullathorne, of Selby, and the estimated cost of the section under construction is £2,600.

Suggested Public Baths for Scarborough.—At last week's meeting of the Scarborough Town Council a deputation from the Scarborough Amateur Swimming Club attended to urge the Council to utilise the Empire Buildings—often styled the Exhibition Buildings—on the South Foreshore Road, which were bought last year with the St. Nicholas House estate, for the purpose of municipal sea-water swimming baths. The club had gone thoroughly into the matter, and presented a report with plans prepared by Mr. H. Ascough Chapman, showing how the building could be adapted to provide ladies' and gentlemen's swimming baths, Turkish bath, and slipper baths, at a cost of about £6,000. The memorial and report were referred to the Corporation Property Committee.

New Wesleyan Schools at Workson have been erected from designs by Messrs. Flockton and Gibbs, of Sheffield, at a cost of £2,097. Messrs. Rawson and Son, of Tickhill, were the contractors.

Ossett Sewage Extension Works.—The Ossett Town Council have authorised the purchase of about thirty acres of land near the riverside at Healey for the extension of the southern outfall sewage works.

New Drinking Fountains.—Mr. Passmore Edwards has offered to present to the Metropolitan Public Gardens' Association two drinking fountains to be placed in the grounds of the church of St. George the Martyr, Southwark.

A new Mission Chapel at Canworthy Water, Cornwall, which is about ten miles from Launceston, has been built from the designs of Mr. Edmund Sedding, architect, of Plymouth. The builder was Mr. F. Nicholls, of Polyphant.

Sheffield's new Fire and Police Station.—The building of the new police and fire station in Westbar, Sheffield, is approaching completion. The fire department is larger than that for the police, which is to the left and contains a charge office, telephone room, search room, inspector's private room, waiting room, and four cells.

New Church at Muswell Hill, N.—The foundation-stone of the new church of St. James, Muswell Hill, was laid on Wednesday last. The architect is Mr. J. S. Alder, of Arundel Street, Strand, and the design is in the Perpendicular style. The church is to be built of Ancaster stone, with Bath stone dressings, at a cost of £13,500; it will have a spire 170ft. high.

The Granville Hotel, Ramsgate, has been considerably enlarged and entirely remodelled. Facing the sea there has been constructed a new central entrance which leads into a large hall well furnished with lounges. On the left of the hall is the reading room and library, and further on is the smoking room, decorated in Oriental style. The ground floor also contains two new dining-rooms, a large billiard-room and a spacious ballroom. The total number of rooms is about 300, and of these 70 have been added in the rebuilding.

Isolating the National Gallery.—In the House of Commons on Friday last Mr. Akers-Douglas said: "The fire which occurred on May 30th last in premises adjacent to the National Gallery tested the arrangements hitherto made for the protection of the Gallery against fire, and the result was in the main satisfactory. In the opinion of Her Majesty's Government the risk at the present time is slight, but in order to reduce it to a minimum negotiations have been commenced with the owners of the adjacent property with a view to the isolation of the western end of the National Gallery. Should these negotiations fail—which, I hope, may not be the case—Parliament will be appealed to in the usual manner to furnish powers to the Government for the immediate acquisition of the property in question."

Court of Common Council: The New Sessions House.—At last Thursday's meeting of this Council the report of the City Lands Committee with reference to the designs for the new Sessions House in the Old Bailey came up for consideration. As we stated in our issue for June 6th, the design recommended was numbered 4, while that numbered 6 was spoken of with praise. The Council adopted their committee's recommendation. No. 4 is by Mr. Edward W. Mountford. Of the remaining five designs, No. 1 is by H. T. Hare, No. 2 by Mr. H. L. Florence, No. 3 by Mr. J. M. Brydon, No. 5 by Mr. Frank Bagallay, and No. 6 by Mr. John Belcher. In accordance with the resolution of the Council, the drawings were on view at the Guildhall at last night's conversazione of the Royal Institute of British Architects, and they can now be inspected by the public. We shall publish a critique of the designs next week. Mr. Mountford designed the Battersea Town Hall and the Northampton Institute, Clerkenwell.

BUILDING TRADES' GIFT TO THE NATION.

THE following further subscriptions have been received by the executive of the Gift:—

	£	s.	d.
Kidderminster Association of Employers in the Building Trades, per Mr. Jas. Jones	11	0	0
Workmen of Messrs. Shanks and Co. Limited (Barrhead, Glasgow)	9	17	0
Collected on Cards by Mrs. Laura Haggas (Yorks.)	5	4	6
Mr. John Stewart (Peckham)	5	0	0
Mr. J. H. Haggas (Yorks.)	5	0	0
Mr. J. Sugden (Yorks.), per Mrs. Laura Haggas	5	0	0
Messrs. W. J. Mitchell and Son and Employees	2	11	0
The Civil Workmen in the Royal Engineers' Office (Shorncliffe), per Mr. W. Leach	2	9	2
Workmen of Messrs. Val de Travers Asphaltic Paving Co.	1	13	8
Workmen of Messrs. T. Rider and Son, per Mr. Chas. Parfitt	1	8	0
Workmen of Messrs. Barnes and Co. (Shoreditch)	1	6	7
Mr. F. D. Moore (Yorks.), per Mrs. Laura Haggas	1	1	0
Mrs. F. D. Moore (Yorks.), per Mrs. Laura Haggas	1	1	0
Mrs. Laura Haggas	1	0	0
Mrs. Sudgen (Yorks.), per Mrs. Laura Haggas	1	0	0
Miss Sugden (Yorks.), per Mrs. Laura Haggas	1	0	0
Employees of Mr. William Smith, jun. (Wolverhampton), per Mr. W. Vincent Vale	1	0	0
Miss Cockshott (Yorks.), per Mrs. Laura Haggas	10	0	0
Mrs. Holdsworth (Bradford), per Mrs. Laura Haggas	10	0	0

New Companies.

Wall-Paper Cleaning Syndicate, Limited.

This company was registered on June 7th with a capital of £2,000 in £1 shares to carry on the business of builders, decorators, cleaners, manufacturers of the preparation known as Kumoff, &c.

Poole and District Mutual and Beneficial Plate-Glass Insurance Co., Ltd.

This company was registered on May 26th with a capital of £1,000 in £1 shares to insure against injury or damage of any description to glass or other articles liable to breakage. The first directors (to number not less than four nor more than seven) are F. J. Bacon, C. Burt, T. Miles, W. B. Parrott, H. Saunders, H. Wakefield and C. J. Woodford. Registered office: 102, High Street, Poole, Dorset.

South Tankerton Estate, Limited.

This company was registered on May 26th with a capital of £5,000 in £100 shares to adopt an agreement with the Lands Syndicate, Limited, for the acquisition of certain lands and property at Whitstable and Swalecliffe, Kent, and to carry on the business of builders, contractors, decorators, &c. The first directors (to number not less than two nor more than four) are E. Bond and C. E. Newton-Robinson.

St. Margarets-at-Cliffe Brickfields, Ltd.

This company was registered on June 9th with a capital of £3,500 in £1 shares to acquire the business carried on by J. H. Bushell at St. Margarets-at-Cliffe, near Dover, and to carry on the business of brick, tile, and pipe manufacturers, &c. The first directors (to number not less than three nor more than six) are F. Rose-Innes, E. W. Philpott, W. S. Emden, F. E. Beeton and J. H. Bushell.

Thomas Woods, Limited.

This company was registered on June 8th with a capital of £2,000 in £1 shares to adopt an agreement with Martha E. Woods, Dorothy Woods and Sarah E. Woods for the business carried on at Turton, near Bolton, as Thomas Woods, and to carry on the business of coal, coke, lime, gravel and slate merchants, &c. The first directors are T. W. Kniveton, William Reay and J. H. Fielding.

Sites Development Company, Ltd.

This company was registered on June 6th with a capital of £7,500 in £1 shares to

acquire any lands and property in Middlesex or elsewhere, and to carry on the business of builders, contractors, brick, timber and hardware merchants, &c. The first directors (to number not less than two nor more than five) are R. F. Sandon, jun., W. Rolfe and W. Judd.

Prestatyn Bricks, Limited.

This company was registered on May 31st with a capital of £6,000 in £1 shares to acquire the business carried on at the brickworks, Prestatyn, Flint, and to carry on the business of brick, tile, pipe and earthenware manufacturers, &c. The first directors (to number not less than three nor more than five) are J. Jones, jun., G. Jones, A. Foulkes-Roberts, J. Williams and G. E. Jones. Registered office: Prestatyn, Flint.

Acetylene Dry Generation and Residues, Limited.

This company was registered on May 30th with a capital of £35,000 in £1 shares (5,000 preference) to adopt an agreement with G. J. Atkins, to acquire any patents relating to the manufacture of acetylene, &c., and to carry on the business of gas, electrical and general engineers, gas makers, chemical manufacturers, &c. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

Goole Estates Company, Limited.

This company was registered on May 24th with a capital of £5,000 in £10 shares to acquire a plot of freehold land at Sticker Lane, Bowling, Bradford, Yorkshire, and to carry on the business of land and property owners and agents, builders, contractors, &c. The first directors (to number not more than five) are to be appointed by the subscribers. Registered office: 23, Boothferry Road, Goole, Yorkshire.

R. Taylor and Co., Limited.

This company was registered on May 24th with a capital of £20,000 in £50 shares to acquire the business now carried on by Edward Taylor, G. Taylor and J. Taylor at Littleborough, Lancashire, as E. Taylor and Co., and to carry on the businesses of builders, contractors, miners, colliery owners, brick makers, stone merchants, ironmongers, timber merchants, &c. The first directors (to number not more than five) are E. Taylor and G. Taylor (governing directors), each of whom may retain office so long as he holds £5,000 shares.

B. J. Forder and Sons, Limited.

This company was registered on May 25th with a capital of £280,000 in £1 shares, of which 140,000 are preference shares, generally to carry on the business of manufacturers of cement, lime, plaster of Paris, whiting, &c., quarries for chalk, flint, gravel, &c.; and, further, to deal in stone, clay, sand, ballast, and other minerals or mineral products; as brick, tile, and terra-cotta manufacturers, pottery manufacturers, makers of artificial stone. The first directors (of whom there shall be not less than four nor more than ten) are H. Stewart (chairman), B. J. H. Forder, A. McDougall, A. J. Keeble and P. M. Stewart.

Meldrum Brothers, Limited.

This company was registered on May 12th with a capital of £125,000 in £1 shares to acquire the business of engineers and iron-founders as now and hitherto carried on under the style of Meldrum Brothers at Atlantic Works, City Road, Manchester, by J. J. Meldrum, T. F. Meldrum and J. W. Meldrum; in particular to carry on business as manufacturers of and dealers in furnaces of all kinds, mechanical stokers, refuse destructors, steam jet apparatus, and other engineering specialties; and, generally, to carry on business as engineers, crane-makers, girder-makers, machinists, iron, steel, and brass founders, boiler-makers, &c. The first directors (of whom there shall be not less than three

nor more than ten) are J. J. Meldrum, J. W. Meldrum and T. F. Meldrum. Qualification, £500. Remuneration, £1,500 per annum, divisible. Registered office: Atlantic Works, City Road, Manchester.

CURRENT PRICES.

FORAGE.			
		£ s. d.	£ s. d.
Hay, best	per load	8 10 0	4 0 0
Sailor mixture	do.	8 15 0	4 5 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 6 6	1 7 0
Straw	per load	1 4 0	1 10 0

OILS AND PAINTS.			
Castor Oil, French	per cwt.	1 8 0	1 11 6
Colza Oil, English	per cwt.	1 9 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	per cwt.	1 2 10	—
Do. red	per cwt.	1 0 4 1/2	—
Linseed Oil	per cwt.	1 14 8	—
Petroleum, American	per gal.	0 0 6 1/2	0 0 6 1/2
Do. Russian	per gal.	0 0 6 1/2	—
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	8 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 5 0	1 7 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 18 0	—

METALS.			
Copper, sheet, strong	per ton	84 0 0	—
Iron, Staffs.	do.	10 0 0	11 10 0
Do. Galvanised Corrugated sheet	do.	14 0 0	—
Lead, pig, Spanish	do.	17 2 6	17 7 6
Do. do. English common brands	do.	17 12 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut, 4in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Stuffs, Girders and Angles	do.	8 15 0	9 5 0
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	188 10 0	189 0 0
Do. English ingots	do.	142 0 0	—
Zinc, sheets, Silesian	do.	25 0 0	—
Do. do. Veille Montaigne	do.	25 17 6	—
Do. Spelter	do.	20 7 6	21 5 0

TIMBER.			
Soft Woods.			
Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 0 0
Do. Pitch	do.	8 18 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 4 1/2	0 1 5
Deals, Archangel and 1st per P. Std.	do.	12 15 0	13 0 0
Do. do. 4th & 3rd	do.	12 15 0	14 15 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	16 10 0
Do. do. 2nd	do.	8 15 0	14 10 0
Do. do. Unsorted	do.	14 5 0	—
Do. do. White	do.	11 5 0	—
Do. Swedish	per P. Std.	16 15 0	13 0 0
Do. White Sea	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 10 0	10 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	9 5 0	10 15 0
Flooring Boards, 1 in. prepared, 1st	per square	0 10 6	0 10 9
Do. 2nd	do.	0 9 6	—
Do. 3rd &c.	do.	0 8 9	—

HARD WOODS.			
Ash, Quebec	per load	8 17 6	4 10 0
Birch, Quebec	do.	8 12 6	8 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4 1/2	—
Do. Honduras	do.	0 8 23/32	—
Do. Tobacco	do.	0 4 1/32	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo Honduras	per ft. sup.	0 0 4 15/16	—
Do. African	do.	0 0 3 13/32	—
Do. St. Domingo	do.	0 0 6 7/32	—
Do. Tobacco	do.	0 0 4 11/16	—
Do. Cuba	do.	0 0 6 27/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 6	0 3 5

New Libraries for Leeds.—Two new branch libraries are to be erected in Leeds, one at the junction of Marshall Street and Nineveh Road, Holbeck, and the other in Hough Lane, Bramley. For the former, competitive designs are to be invited from local architects.

General Hospital Competition, Glasgow.—In this competition the following awards have been made:—First (£200), Messrs. Schultz and Howard, 14, Gray's Inn Square, London, W.C.; second (£150), Messrs. Thomson and Sandilands, 241, West George Street, Glasgow; third (£100), Messrs. Hopkins and Walker, 5, Staple Inn, London, W.C.; fourth (£50), Messrs. McWhannell and Rogerson, 58, West Regent Street, Glasgow.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
June 22	West Hartlepool—Church	Urban Sanitary Authority	E. and W. Richardson, Park-road, West Hartlepool.
" 22	Gt. Yarmouth—Dwellings	J. W. Cockrill, Town Hall, Great Yarmouth.	
" 22	Kinross—Offices	Royal Bank of Scotland	D. Smart, Architect, Perth.
" 23	Egremont, Cheshire—Conveniences	Wallasey Urban District Council	W. H. Travers, Public Offices, Egremont.
" 23	Helmshore, Lancs.—Stores	Co-operative and Industrial Society, Limited	J. B. Thornley, Architect, Market-street, Darwen.
" 23	Horsham—House	Rev. D. Davis	W. Buck, Architect, North-street, Horsham.
" 23	Llangennech, Wales—Church		E. M. Bruce-Vaughan, Architect, Cardiff.
" 24	Constantine, Penryn, Cornwall—Cattle House		W. Bowden, Main Poll, Constantine.
" 25	Wolverhampton—Shops	Markets Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 25	London, N.—Public Offices	Hendon Urban District Council	T. H. Watson, 9, Nottingham-place, W.
" 25	Leeds—Library	Library Committee	P. Robinson, 72, Albion-street, Leeds.
" 25	Northfleet—Schools	School Board	S. J. Adam, Weston-chmbrs, Weston-rd., Southend-on-Sea.
" 25	Bourne, Lincs.—Bridge	Rural District Council	C. W. Bell, Clerk, Bourne.
" 25	Castle Hedingham, Essex—Room	Managers of National School	W. Hart, Correspondent to School Managers, Castle Hedingham.
" 25	Huddersfield—Stores	Industrial Society, Limited	J. Berry, 9, Queen-street, Huddersfield.
" 25	Leeds—Extension of Sheds	Tramways Committee	City Engineer, Municipal-buildings, Leeds.
" 26	Sutton Coldfield—Electricity Buildings	Corporation	Horough Surveyor, Town Hall, Sutton Coldfield.
" 26	Hull—Additions	School Board	Brodrick, Lowther, and Walker, 77, Lowgate, Hull.
" 26	Carmarthen—Station	Great Western Railway Co.	Engineer, G.W.R. Station, Neath.
" 26	Midsummer Norton, Bath—Police Station Works		W. J. Wilcox, 1, Belmont, Bath.
" 27	Cymmer, Wales—Gasworks	Glyncoerwg Urban District Council	Engineer, Gasworks, Neath.
" 28	Frome—School	Urban District Council	Silcock and Reay, Octagon-chambers, Milcom-street, Bath.
" 28	Bradford—Stabling	Provident Industrial Society	Ryecroft & Firth, Bank-buildings, Manchester-rd, Bradford.
" 28	Buncrana, Ireland—Premises	P. Porter	J. P. McGrath, 23, Carlisle-road, Londonderry.
" 28	Heckmondwike—Buildings	Urban District Council	J. Saville, Surveyor, Oldfield-lane, Heckmondwike.
" 30	Brighton—Villas	Freeholders of the Madeira Estate	J. M. Ferguson, 8, Quality-court, Chancery-lane, E.C.
" 30	Witham—Bridge	Essex County Council	Chief Surveyor, County Offices, Chelmsford.
July 2	Bury, Lancs.—Hospital	Health Committee	Pole and Little, 9, Gray's-inn-square, London, W.C.
" 3	Bristol—Alterations and Additions	New Streets Committee of the Corpor.	T. H. Yabbicom, 63, Queen-square, Bristol.
" 4	Ellesmere, Salop—Shelters	Urban District Council	H. E. Lloyd, Clerk, Ellesmere.
" 5	Cork—Dwellings	Corporation	H. A. Cutler, City Engineer, Cork.
" 5	London, S.E.—Offices	Guardians of St. Saviour's Union	G. D. Stevens, 13, King-street, E.C.
" 9	Bexley, Kent—Farm Buildings	Asylums Committee of the L.C.C.	Clerk, Asylum Committee, 6, Waterloo-place, S.W.
" 16	Hellingly, Sussex—Asylum		R. Blaker, 211, High-street, Lewes.
" 21	Bodmin—Farm Buildings	Visiting Committee	R. P. Edyevean, Clerk, Bodmin.
ENGINEERING—			
June 22	Uxbridge—Filters	Rural District Council	Bailey, Denton and Co., Palace-chambers, Westminster, S.W.
" 22	Walthamstow—Hydraulic Plant	Urban District Council	G. W. Holmes, Town Hall, Walthamstow.
" 23	Glasgow—Mains	Corporation	J. M. Gale, Engineer, City Chambers, 45, John-st., Glasgow.
" 23	Oswestry—Reservoir	Rural District Council	Shayler and Jones, Engineers, Oswestry.
" 23	Newcastle-on-Tyne—Wiring	Corporation	J. E. Sisling, 7, Park-terrace, Newcastle-on-Tyne.
" 25	Blackburn—Bridge	Tramways Committee	W. Stubbs, Municipal-buildings, Blackburn.
" 25	Newcastle-on-Tyne—Trolley Wires		C. Hopkinson, Messrs. Hopkinson and Talbot, 26, Victoria-street, S.W.
" 25	Dublin—Bridges	Great Northern Railway Co. (Ireland)	Engineer, Great Northern Railway Station, Dublin.
" 25	Wolverhampton—Abattoir Fittings	Markets Committee	J. W. Bradley, Town Hall, Wolverhampton.
" 26	Wolverhampton—Tramway Track	Tramways Committee	J. W. Bradley, Engineer, Town Hall, Wolverhampton.
" 26	Barnet—Precipitating Tanks	Urban District Council	W. H. Mansbridge, 40, High-street, Barnet.
" 26	Salford—Calorifiers	Baths Committee	Superintendent, Blackfriars-road Baths, Salford.
" 26	Salford—Hydro-Extractor	Baths Committee	Superintendent, Blackfriars-road Baths, Salford.
" 26	Mitcham, Surrey—Boiler	Guardians of the Holborn Union	J. Buley, Suffolk House, Laurence Pountney Hill, E.C.
" 26	Nelson, Lancs.—Reconstructing Bridge	Lancashire and Yorkshire Railway Co.	Engineer, Hunts Bank, Manchester.
" 29	Hartlepool—Reservoir		Martin and Fenwick, 1, Park-place, Leeds.
" 29	Hull—Bascule Bridge	Corporation	City Engineer, Town Hall, Hull.
July 1	Alexandria, Egypt—Generating Machine	Corporation	Controller-General, Ports and Lighthouses, Alexandria.
" 5	Taunton—Filters	Spanish Government	Borough Surveyor, Taunton.
" 7	Madrid—Electric Tramway	Parish Council	Commercial Department, Foreign Office, S.W.
" 17	Trimdon, Durham—Lighting		T. W. Wilkinson, Parish Council Offices, Trimdon Hall, Trimdon.
" 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5, East India-avenue, E.C.
" 23	Kolbergmunde, Germany—Dredger	Harbour Superintendent	Der Hafenbauinspektor, Harbour Works, Kolbergmunde, Germany.
IRON AND STEEL—			
June 23	Redwelly, Tredegar, Mon.—Pipes	Urban District Council	J. H. Lewis, Surveyor, Blackwood, Mon.
" 25	Blackburn—Ironwork	Highway Committee	W. Stubbs, Municipal Offices, Blackburn.
" 25	Leeds—Ironwork	Tramways Committee	City Engineer, Municipal-buildings, Leeds.
" 25	London—Fencing and Gates	County Council	Parks Department, 11, Regent street, S.W.
" 27	Christiania—Axles	Norwegian State Rlwy. Adminstratn.	Commercial Department, Foreign Office.
July 10	London, S.W.—Lamp Standards	London County Council	Engineer, County Hall, Spring-gardens, S.W.
PAINTING—			
June 22	Leeds—Painting	School Board	W. Packer, School Board Offices, Leeds.
" 25	Blackburn—Painting	Guardians	Mr. Ruddle, Union Offices, Carlisle-place, Blackburn.
" 25	Stratford-on-Avon—Painting	Town Council	Borough Surveyor, Stratford-on-Avon.
" 26	Hull—Painting	Kingston-upon-Hull School Board	Clerk, Board Offices, Albion-street, Hull.
" 26	Norwich—Painting	School Board	C. J. Brown, Cathedral Offices, Norwich.
" 27	Warrington—Painting	Sanitary Works Committee	J. Deas, Bank House, Sanky-street, Warrington.
" 29	Wolverhampton—Painting	School Board	F. H. Fleeming, 102, Darlington-street, Wolverhampton.
uly 4	Gravesend—Redecoration of Town Hall	Town Council	E. J. Bennett, 189, Farrock-street, Gravesend.
ROADS—			
June 25	Alfotts—Flagging	Urban District Council	W. Wilkinson, Surveyor, Council Offices, Alfotts.
" 25	London, E.—Paving	Limehouse District Board of Works	Clerk, Board Offices, White Horse-street, Commercial road East, E.
" 25	Londonderry—Setts	Corporation	City Surveyor, Guildhall, Londonderry.
" 25	Richmond, Surrey—Making-up	Town Council	J. H. Brierley, Town Hall, Richmond, Surrey.
" 26	Barnet—Paving	Urban District Council	W. H. Mansbridge, 40, High-street, Barnet.
" 26	Dover—Street Improvements	Town Council	H. E. Stilgoe, Town Hall, Dover.
" 26	London, N.—Road Works	Hornsey Urban District Council	E. J. Lovegrove, Southwood-lane, Highgate, N.
" 27	Ramsgate—Paving Flags	Corporation	T. G. Taylor, Broad-street, Ramsgate.
" 27	North Walsham, Norfolk—Granite	Urban District Council	E. J. Simpson, Surveyor, North Walsham.
" 29	Gorle—Street Paving	Urban District Council	F. Chambers, Council Surveyor, Gorle.
" 29	Wisbech—Materials	Walsoken Urban District Council	J. Kerridge, Club-chambers, Old Market, Wisbech.
SANITARY—			
June 22	Uxbridge—Sewerage Works	Rural District Council	Denton and Co., Palace-chambers, Westminster.
" 25	Newmarket—Sewerage Works	Urban District Council	S. J. Ennion, Deva-chambers, High street, Newmarket.
" 26	Barking, Essex—Sewerage Works	Urban District Council	C. F. Dawson, Council's Surveyor, Barking.
" 26	Donford—Drainage Works	Rural District Council	J. Simmons, Bank-chambers, Doncaster.
" 27	Litherland, Lancs.—Sewer	Urban District Council	W. B. Garton, 25, Sefton-road, Litherland.
" 27	Shrewsbury—Sewers	Corporation	Taylor, Sons, & Crump, 27, Gt. George-st., Westminster, S.W.
" 28	South Shields—Sewers	Corporation	S. E. Burgess, Engineer and Surveyor, Chapter-row, South Shields.
" 30	Macclesfield—Sewer	Rural District Council	J. Thorpe, 19, King Edward-street, Macclesfield.
ly 2	Rotherham—Sewers	Sewage Works Committee	R. E. W. Berrington, Bank-buildings, Wolverhampton.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
July 30	Rivers—Villa for Sir William Ingram ...	£78 15s., £26 5s., £5 5s. ...	"Architectural Review."
July 16	Falmouth—Sewerage Scheme ...	£100, £50, £25 ...	J. H. Genn, Town Clerk, Falmouth.
Aug. 1	Sunderland—Church ...	£105 ...	William Wilson, 7 Azalea-terrace, South Sunderland.
Aug. 25	Cardiff—Asylum ...	£105 ...	Borough Engineer, Town Hall, Cardiff.

TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BECKINGHAM (Gainsborough).—For the erection of Board schools and master's house, for the School Board. Messrs. Eyre and Southall, architects, Retford. Quantities by the architects:—
Bee and Son ... £3,097 0 | J. Furniss ... £2,919 0
Rowell ... 2,986 0 | T. Hopkinson ... 2,910 0
G. Hopkinson & ... 2,982 0 | C. Greenwood, ...
Brown and Son ... 2,974 0 | Gainsborough* ... 2,631 12
J. Woods ... 2,964 0

* Reduced and provisionally accepted.

BLYTH, RETFORD.—For the erection of Wesleyan chapel and schools, for the Trustees. Messrs. Eyre and Southall, architects, Retford. Quantities by the architects:—
T. Hopkinson ... £2,420 | T. H. Harrison, ...
G. Hurst ... 2,420 | Scrooby* ... £1,186

* Accepted.

CROYDON.—For alterations and decorations at The Mount, Duppas Hill, Croydon, for Mr. W. F. Knight. Mr. H. Fuller Clark, architect, 28, John-street, Bedford-row, W.C.:—
Hayward and Son ... £1,395 | J. and C. Bowyer ... £1,249
Wm. Smith and Sons ... 1,255 | W. B. Simpson & Son* 1,100

* Accepted.

LONDON.—For the electric wiring of Archbishop's residence, Westminster, S.W., for Cardinal Vaughan. Messrs. O'Gorman and Cozens-Hardy, consulting engineers, 82, Victoria Street, Westminster, S.W.:—

	Section A.	Section B.	Section C.	Reduction.	Lump sum for A, B, & C, if placed together.	Schedule Prices.			
						Flex.	Elec. Pt.	Bell Pt.	
Tamplin and Makovskit ...	£2,053 5 9	£299 2 9	—	nil	—	3/0	55/0	45/0	
Eastlake, Ltd. ...	1,236 0 0	101 0 0	1/9 & 2/3	nil	£1,437 0 0	—	£2 17 6	£1 4 0	
Middleton and Co. ...	910 10 0	166 9 0	£56 15 0	nil	1,140 6 0	2/10	29/0	31/3	
Tyler and Duncan ...	958 16 0	92 19 0	56 15 0	nil	1,108 10 0	2/2	22/0	15/0	
Slater and Co. ...	915 0 0	120 15 0	54 10 6	nil	1,090 5 6	3/0	58/6	36/0	
Drake and Gorham ...	878 0 0	138 15 0	64 5 0	£290	1,051 0 0	3/0	35/0	27/6	
Glover and Co. ...	809 10 0	99 15 0	1/7 & 1/5	—	966 0 0	1/6	£1 17 0	17/6	
F. Hodgson and Co. ...	886 16 0	65 0 0	64 0 0	24% = £20 7 6	795 8 6	1/6	34/6	20/0	
Donnison, Berlyn, Sillem and Co. ...	580 5 0	98 10 0	60 0 0	—	888 15 0	—	30/0	22/6	
A. M. Wood ...	587 0 0	74 0 0	65 0 0	—	845 0 0	2/6	30/0	25/0	
W. J. Fryer and Co., Ltd. ...	538 0 0	49 0 0	54 0 0	£19	610 4 0	1/10	28/0	16/0	

* Accepted.

Section A. House Wiring.

† Cannot quote for lamps.

Section B. Bells.

‡ Not to specification.

Section C. Lamps.

LONDON.—For erecting a three-storey factory and other alterations at Crosby-row, Bermondsey. Mr. Edward Crosse, architect:—
G. Parker ... £2,050 0 0 | J. Chalkley ... £1,659 0 0
J. Young ... 1,697 0 0 | Newton ... 1,644 13 11
H. J. Williams ... 1,683 0 0 | Wells and Son* ... 1,615 0 0
F. and H. Higgs ... 1,670 0 0

* Accepted.

LONDON.—For erection of stabling for Messrs. Tilling and Co., at Lee, S.E. Mr. A. L. Guy, architect:—
Derman ... £6,622 14 | Staines ... £3,500 0
Daly ... 5,880 0 | Faulkner ... 5,583 0
Havell ... 5,798 0 | Jerrard ... 5,561 0
Courtney ... 5,697 0 | Kennard Bros.* ... 5,533 0
Leng ... 5,622 0

* Accepted.

LONDON.—For alteration to the "Princess Alexandra" public-house, Barking-road, London, E. Mr. Herbert Riches, architect, 3, Crooked-lane, King William-street, E.C. Quantities supplied:—
Courtney & Fairbairn £1,205 | T. Osborn and Sons* £1,067
Sheffield Bros. ... 1,156 | T. Welsh ... 925
W. J. Maddison ... 1,142

* Accepted.

† Withdrawn owing to error.

COMING EVENTS.

Wednesday, June 20.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Mr. E. W. Mountford, Sir William Richmond, K.C.B., R.A., and Mr. Roscoe Mullins on "The Collaboration of the Architect, the Painter and the Sculptor," 11 a.m. Visit to the new Westminster Cathedral, 3 p.m. Mr. Halsey Ricardo, Mr. W. D. Caroe, the Earl of Meath, and Mr. T. Stirling Lee on "The Ideal City—Streets and Bridges; Public Monuments; Public Gardens and Open Spaces," 8 p.m.

SOCIETY OF ARTS.—Conversazione at the Natural History Museum, Cromwell Road, S.W., in the evening

SOCIETY FOR THE PROTECTION OF ANCIENT BUILDINGS.—Annual Meeting in Society of Antiquaries' Rooms, Burlington House. 5 p.m.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Annual General Meeting at Cardiff (Second Day). Mr. Alfred J. Jenkins, A.M.I.C.E., on "The Relationship between the Cost of Water Wasted and the Cost of Detection," 10 a.m. Visit to the Corporation Waterworks, 2 p.m. Annual Dinner at the "Esplanade" Hotel, Penarth, 7.30 p.m.

CHURCH SANITARY ASSOCIATION.—Annual Meeting at Church House, Westminster. 5 p.m.

Thursday, June 21.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Visit to University College Hospital Extension, Gower Street, W.C., 12.30 p.m. Visits to Stafford House and other large houses, 3 p.m. Mr. Reginald Blomfield on "The Education of the Public in Architecture," 8 p.m.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Annual General Meeting at Cardiff (Third Day). Mr. Archibald Elliot, D.Sc., on "The Strength of Bricks and Brickwork," 10 a.m. Visits to Lewis Merthyr Collieries, at 1.45 p.m., and to Barry Docks, Waterworks, &c., at 3 p.m.

SOCIETY OF ANTIQUARIES OF LONDON.—Meeting. 8.30 p.m.

Friday, June 22.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Annual Dinner at the Whitehall Rooms, Hôtel Métropole, 7.30 p.m. (General Architectural Congress).—Business Meeting. Mr. Lacy W. Ridge on "Uniform By-laws"; Mr. Charles Hadfield and Mr. A. E. Sawdry to move the following resolutions: (1) That in the interests of architecture it is inexpedient that buildings of a municipal character be designed and erected by engineers or surveyors having no architectural training; (2) That as a matter of sound finance and in the interests of rate-payers it is desirable that the duties of the borough engineer and surveyor should not include work of an architectural character; (3) That it is detrimental to the interests of the architectural profession that buildings of a municipal character should be designed and erected by the borough engineer and surveyor, 11 a.m. Visits to Messrs. James Powell and Sons' Glass Works, Whitefriars, E.C.; and Messrs. Holloway Bros. Works, Westminster, 3 p.m.

Saturday, June 23.

ROYAL INSTITUTE OF BRITISH ARCHITECTS (General Architectural Congress).—Visit to Greenwich.

Tuesday, June 26.

INSTITUTION OF ELECTRICAL ENGINEERS.—Conversazione at the Natural History Museum, Cromwell-road, 9 p.m.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.—Special meeting for the election of an orphan.

Wednesday, June 27.

INSTITUTION OF MECHANICAL ENGINEERS.—Annual Dinner at the Hotel Cecil. 7.45 p.m.

TIMBER TRADERS' BENEVOLENT SOCIETY.—Festival Dinner at Trocadero Restaurant. 7 p.m.

SOCIETY OF ARTS.—Annual General Meeting. 4 p.m.

Thursday, June 28.

INSTITUTION OF CIVIL ENGINEERS.—Dinner to Sir Douglas Fox, president, by the Council and Officers of the Institution, Grand Hotel. 8 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Annual Dinner at Frascati's Restaurant. 7.30 p.m.

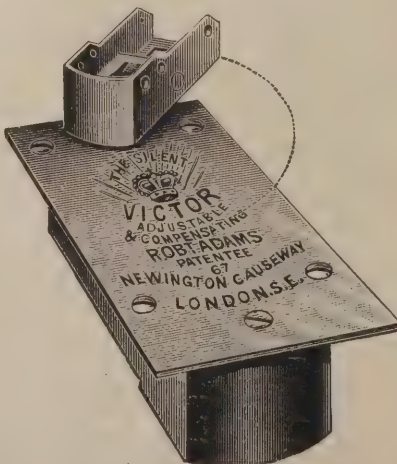
Saturday, June 30.

ARCHITECTURAL ASSOCIATION.—Second Summer Visit to Christ's Hospital, Horsham.

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THE BUILDERS' JOURNAL ARCHITECTURAL RECORD

JUNE 27, 1900.
No. CCLXXXI.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

The New Sessions House. THE competition for the new Sessions House for the City of London is of the first importance, and Mr. E. W. Mountford is to be congratulated on having been successful against such distinguished competitors.

In many ways the result of this competition is a great disappointment. The competitors were presumably chosen as being the best, but we feel that they have not done themselves justice, and that the outcome is not the best the profession could produce. Whether better results could have been obtained from an open competition, or by a different selection of competitors, is a debatable point.

When one thinks of the possibilities of such a building as this; of the great results that might, and have, elsewhere been obtained; of the overpowering and painful human interest of the subject, and the atmosphere of sordid tragedy that surrounds it; one cannot but regret that so fine and rare an opportunity for poetic expression has been neglected. This may not be altogether the fault of the architects.

The practical problem to be solved was by no means easy, for the scheme suffers—as London schemes too often do suffer—from an insufficient and cramped site. So much is this the case that there was no chance to set the building out in a fine monumental way, on good architectural lines. The consequence is that none of the designs can lay claim to be considered as a complete artistic conception, in the real meaning of the word. The City Fathers do not seem to have realised that such a building as this is more than a mere convenience for adequate disposal of criminals; that it is also a public monument—a work of art—of the first importance, and, as such, that it needs an open and isolated site. Some day, we suppose, this will be understood.

In this case the restricted site has caused all the competitors to place their courts on the first floor, so as to get a floor below them for other necessary accommodation. This is wrong in idea, and would never be done where space was sufficient. It destroys the monumental effect and tends to rob the building of character. It also creates the difficulty of dealing with the space below, and of lighting it adequately, which difficulty none of the competitors seem to have entirely overcome.

Under these circumstances it is not easy to say exactly how these designs should be criticised, and from what point of view they

should be regarded. As monumental creations they are out of court, and they will not for a moment compare even with such buildings as the Horse Guards.

If we wish to judge them solely from the point of view of convenience of arrangement, it is taking a very low standpoint and ignoring the one quality that distinguishes architecture from convenient building; and even then, it is difficult to arrive at a right judgment without access to all the information which was at the disposal of the competitors, and without taking time to master

and made the best of the circumstances; and how far the different designs lend themselves naturally to an artistic treatment.

Speaking generally, it must be regretted that none of the designs have any special and distinctive character. Not one of them looks like a Sessions House, and this, from the artistic point of view, is the first and most important feature. As a matter of fact most of them look much more like Government or municipal offices, or large hotels. No one could guess, from the outward appearance, what they really are. It seems a pity that dis-



NEW SESSIONS HOUSE: HALL ON FIRST FLOOR. BY EDWARD W. MOUNTFORD, F.R.I.B.A.

all the conditions, and weigh the pros and cons of the various arrangements. The competitors have, perhaps, taken months to work out these designs, and the arbitrator as many weeks to judge them; it is too much to expect the critic in as many minutes to set them all right, and tell them all about it, especially in a case like this where the scheme is large and rather complicated, and the designs are, generally speaking, of fairly equal merit. But what is possible is to notice how far the designers have taken advantage of whatever opportunities the nature of the programme afforded them to obtain a true and characteristic effect; how far they have modelled and grouped their different arrangements towards this end,

and how far the different designs lend themselves naturally to an artistic treatment. There may be practical disadvantages in placing the courts at the front—such as the noise from the street—but it still might have been possible to keep the courts back, and yet show them over the tops of the lower corridors or small rooms surrounding them. The large hall, too, might have been more clearly emphasised on the outside. However, it is of no great importance what method is adopted to obtain a characteristic effort, so long as the method is truthful and the effect is there.

As regards the style adopted, there is no great effort at progress, or any real origin-

ality. The designers have been content to take a certain phase of the Renaissance and to produce a study in this particular style, treating it severely and plainly for a criminal court, as they would treat it elegantly and freely for a theatre.

This seems to be the limit to their endeavours to express the character of the building. Of course, no architect deludes himself with the idea that this sort of antiquarian exercise constitutes a real living art, but the danger is that the public may so understand it, unless it is distinctly informed to the contrary.

With regard to Mr. Mountford's successful design, the plans we publish will explain the arrangements on the two principal floors, and so render any detailed description unnecessary. The second floor is occupied by the counsels' robing-room, and various rooms for the solicitors, clerks, the Press, &c. The lower ground floor contains cells, record rooms, &c.

This design appears to be most practical, workable, and generally convenient. The author wishes it to be regarded as a sketch, capable of modification and improvement. It is to be hoped that plenty of time and encouragement will be given him by the Corporation to reconsider and improve it. A few months delay will mean little loss to the public, but it will mean a great deal to the building, if the architect makes the most of it.

It seems to us that much could be done to this design to give it more expression without disturbing the general idea. From this point of view most distinctly do we object to the curved line of the frontage to Newgate Street. It expresses nothing of the inside arrangements; on the contrary, it distinctly misrepresents them. It leads to awkward shapes on the plan, it gives no added accommodation of any practical value inside, while the space it occupies would be invaluable outside, if thrown into the pavement of the street. It means added expense without corresponding advantage, either in convenience or appearance, and the effect in the perspective view reminds one of a man with a swollen face.

On comparing the ground and first floors one is struck immediately with the large amount of wasted masonry in the entrance hall. The great thickness of walls here make the rest look weak. On comparing this with Mr. Baggallay's plan the contrast is ludicrous. One would naturally expect to see these walls going up to a great height, but they disappear on the first floor, with the exception of the piers for the tower, and we find the semi-circular recesses in the hall only carry the floor of the courts above. It is rather a defect of this scheme that the ground and first floors have not sufficient relation one to the other.

As a matter of taste the front entrance doorway seems out of proportion and out of keeping—it does not fit in very well; and the windows each side, which light the circular recesses to the hall, seem too wide and somehow out of scale. We think the dome might be improved, or left out altogether.

The adoption of a mezzanine floor in a building where large and small rooms have to be on the same floor is a good idea to save space, and it permits a more economical treatment, though it often leads to difficulty or deception in the elevation.

Taking this design as a whole, it seems to us to be the most complete and harmonious as far as it goes. The drawings which illustrate it are good, the elevations have a nice quality, although they would have probably looked better still had the tinting been graduated off lighter towards the bottom of the drawing. The detail which is ruled over in lines with light ink, to produce the effect of a flat tone, seems to be a great waste of time, especially for a competition drawing.

A. R. J.

On Reflection.

A New Art Museum.

THE work of converting Hertford House, Manchester Square, from a private residence into a national gallery has been going on for some time. There were doubts and misgivings as to whether it would not have been better to provide a new place altogether than to attempt what has been done, but the result has made it perfectly clear that no better course could have been adopted, and the public from this time forward may regard as its own the truly magnificent building to which it was admitted last Monday. There was fortunately room enough at the rear to admit of plans for additional galleries being set forth on a liberal scale. We may now at the close of the century, and with a great deal of pride in the act, take stock of the nation's art galleries. The builders of this and the Tate Gallery have shown what should have been done long ago with the South Kensington shambles. The National Gallery and British Museum with their parental air of authority have a serenely classical aspect befitting their age and purpose, and taking them altogether we may be thought to be rich in art galleries. In Hertford House there is a liberal allowance of space to everything that deserves it, and none of the restraint that is felt in such a ridiculously ill-fitted place as the house in Lincoln's Inn Fields, containing the miscellaneous accumulations bequeathed by Sir John Soane to the nation "on condition," &c. The most illiberal thing in the world is a bequest with any condition attached, and we have examples more than sufficient to prove what a nuisance it may become, but there is none of this feeling here. In the columns of a builders' paper one is not expected to say much about pictures; but let it be said generally that whereas in the National Gallery the makers of the French school are hardly represented at all, their works are here in such numbers as to suggest that it would be possible to have rather more than enough. But no serious student of art would be inclined to say this for a moment. The greatest names are the best represented, and the addition to our store is invaluable. This is true of pictures, and it is true of French art altogether.

The Education of the Public.

THE General Architectural Congress, held during last week, has, on the whole, been most successful. As Mr. Brydon pointed out last Thursday evening, the first three papers naturally led up to that great subject treated of by Mr. Blomfield, "The Education of the Public in Architecture." Now, although that paper was fruitful of a remarkably good and interesting discussion, it certainly led to no clear definition of principles. The only result it had, perhaps, was to show the great divergence of opinion among architects. Now it has become a truism to say that architecture is merely refined building, but this view still wants insisting upon. As Mr. Mountford said at the second meeting for the consideration of papers, architecture is not dependent upon painting or sculpture. True also was Mr. Pite's statement that the qualities of good architecture were chiefly mass and void, proportion, light

and shade, the true application of mouldings, and the application of colour. We have all seen the lamentable effect of archaeological study in furthering copyism, and something above this can only be achieved by attention to the elements of architectural effect as pointed out by Mr. Pite—that is, we must have refined building. Sir William Richmond in his paper put this point very aptly. When success has been achieved in this direction, then only can attention be turned to the bringing in of other arts to enrich the skeleton structure. The first thing, as all recognised, is for the architect to educate himself. It is hopeless to expect—at any rate in the near future—to educate the great mass of the public to any intimate appreciation and knowledge of what is good architecture; all it will do is simply say it likes this or it dislikes that.

Architecture and Economics.

WE are inclined to believe the whole point of the matter lies in the question of social economy. When men evolved the system of dependence on one another for necessities they at once began to study economy; and tracing the course of this movement in architecture we see how the guilds of builders were the only persons doing such work in the age they existed in, and therefore, being the only builders, were the cheapest to obtain work from. Of course, then as now, economy was not studied particularly in public buildings. When the guilds were becoming effete from various causes the Renaissance architects forced their designs upon the craftsmen, and this system has developed in the present day into the system of designers and contractors, neither knowing much of the other's work, and, to meet the need for economy, the speculative builder. Nowadays, instead of the speculative builder being an artistic designer as in the days of the guilds, he is merely a purveyor of cheap frippery. As Mr. Pite pointed out the most highly ornamented goods are generally the cheapest at the present day, contrary to commonsense. This should not be so. If our designers would but come into the market, offer a better thing to the public at nearly the same cost, and an unornamented work at as cheap or a cheaper rate than modern "trade" stuff, the public would be appreciative. The public would be quite prepared to pay slightly more were it proved to them that this was true economy, in obtaining a better and more lasting article. These are the lines, we would say, along which progress may be hoped for in architecture: let the architect decide to abandon imitation; let him learn the practical and commercial side of the question. Do not let the economic side remain in the hands of capitalists without artistic feeling, but let us have artistic speculative builders. When architects have once again become the actual builders, the general public—always indifferent to things that they do not understand—will be insensibly forced to take the old line, and the architect could return to that true system, as under the guilds, of designing in detail upon the actual work while it is being erected and not on paper. Such a measure of the Guild system would virtually constitute Architects' Registration. The advantage that would accrue to the architect we need not enlarge upon. Of course the man of smaller capital, and perhaps greater artistic genius, would not lose any part of his living at present gained—there would still remain the non-speculative work for him to undertake.



MR. EDWARD W. MOUNTFORD, F.R.I.B.A.

SESSIONS HOUSE DESIGNS, Nos. 4 and 6.

THE ARCHITECTS' REPORTS.

IN the particulars accompanying his design (No. 4) Mr. Mountford says:—In the design generally, impressiveness and dignity have been considered of primary importance, and ornament has been sparingly used. The north-west corner of the building has not been rounded off, as suggested—it seemed to detract

from the dignity of the building—but the same result has been obtained by curving the whole of the Newgate Street front, which would at once produce a pleasing effect of light and shade and would overcome the difficulty of the awkward break in the building line at the eastern extremity of this front. I would ask you to regard my design as a sketch still capable of considerable improvement in matters of detail with more time at command and opportunity for consultation with your various officials. The difficulty has been to provide all the accommodation required in an impressive and dignified manner, the area of the site being somewhat limited for its purpose. In a monumental building spacious halls and corridors, well lighted throughout, are of great importance, and a sufficient height must be obtained for the principal rooms. It has appeared to me that the only satisfactory method of meeting these requirements is by a system of mezzanine floors, which allows considerable height for the larger rooms and offices without the waste of space incurred by giving the same height to the smaller rooms. My drawings will fully explain this, and it will be observed that the arrangement has the additional merit of bringing the various rooms and floors into closer connection with each other. The principal entrance to the building is from the Old Bailey, and is 14ft. wide; immediately facing it is the chief staircase, 13ft. wide, the entrance hall being about 100ft. by 40ft. The large central hall on the court floor has (exclusive of corridors 10ft. wide) an area of about 3,000ft. super., there is also one court having an area of about 2,494ft. super., another court about 2,088ft. super., and two more courts each about 1,218ft. super. The walls to be built of brick and faced with Portland stone. The courses of the stonework of the principal elevations have been made of the same height as those in the present external walls of Newgate, with the idea of using as much as possible of the old stonework, should it prove to be sound. The area will be lined with glazed bricks and the floors of the hall and main corridors will be laid with black and white marble. The courts and the principal rooms will be of wainscot oak and

the ceilings of fibrous plaster. The framework of the dome will be entirely of British steel, and I should propose to cover it externally with copper. The courts are lighted entirely from the roof, the outer skylights being of rough plate glass, while the inner domes would be glazed with white cathedral or window glass. The space between would be warmed in order to prevent draughts. All the private offices and rooms, including the Lord Mayor's suite, have open fireplaces. The courts, central hall and entrance hall will be heated by hot air and the offices and corridors generally by steam ventilating radiators. The two large courts are 35ft. high to the top of the main cornice, above which the dome gives an additional 5ft. The two smaller courts are 19ft. high to the cornice and 25ft. to the crown of the arched ceilings. The following is the estimated cost of the building:—

Main building, 2,387,326 cubic feet, at 1s. 6d. per cubic foot	£179,049
Dome above main building, 128,995 cubic feet, at 2s. 6d. per cubic foot	16,124
Fittings in the two large courts, £3,000 each	6,000
Fittings in the two smaller courts, £1,500 each	3,000
Fittings in offices	1,500
Fittings in refreshment rooms	1,000
Panelling, &c., in Lord Mayor's rooms	1,500
Lifts	1,000
Electric lighting and fitting	3,000
Heating and ventilating	6,000
Sculpture	3,000
Contingencies, say	4,000
	£225,173

In the particulars accompanying design No. 6 Mr. Belcher says:—The exterior of the building to be of Portland stone and the walls of areas to be of glazed brick. The entrance hall and great hall would be partly constructed in Bath or Caen stone, and the walls and ceilings finished in Keene's cement. The fittings and panelling in each court to be in oak, the upper part to be treated in plaster. Heating to be by steam at or below atmospheric pressure, with radiators, and ventilation of the courts to be on the "plenum" system, the whole arranged so that each court is independently heated and ventilated. Van Kannel revolving doors to be used. Ventilation of the offices on the exhaust system. Estimated cost of buildings, £217,000.



ELEVATION IN OLD BAILEY

GENERAL ARCHITECTURAL CONGRESS.

THE NECESSITY FOR CONTROLLING CITY ARCHITECTURE.

AT the second meeting of the General Architectural Congress, held on June 19th, Mr. William Emerson, President R.I.B.A., read a paper on "The Necessity for Official Control over Architecture in our Towns and Cities." He said: The period of the most extraordinary and spontaneous revival in the art of architecture during the fourteenth and fifteenth centuries, known as the Renaissance, had been preceded by a wave of great interest in the advance of learning, culture and knowledge. The century now at its close has

metropolis and large provincial towns were ever to be worthy of the great British Empire. But the public interest in architecture is evidenced by the quality of the designs they appear to be contented with, and is exemplified by the numerous extraordinary conceptions seen in our streets and public places. Nevertheless, there is an undoubted undercurrent of interest in, as well as growth in knowledge and appreciation of, artistic architecture, which is fostered by many of the artistic and building journals. These reflections cause one to consider how it is that, with all our increase of knowledge, all our growing interest in art, and all our opportunities of study and travel in other countries, our streets should be so replete with staring incongruities, uglinesses, ignorances, and want of refinement.

Reason Why Bad Architecture Exists.

One cannot help feeling that the following have been some of the reasons of this anomaly:



MR. WILLIAM EMERSON, PRESIDENT R.I.B.A.

been one also of unprecedented advance in all branches of learning, culture and science. It has also been marked by many indications of a revived interest in architecture.

This interest seems, however, to have been confined mainly to individuals, or small associated bodies of cultivated architects, archaeologists and artists. In fact, since the Renaissance in England, which followed hard on the heels of that in Italy, architecture seems to have been steadily on the decline. The strong classical movement in the earlier years of the century, and the enthusiastic outburst of Gothic revival later on, were, however, indications of the existence of some amongst us who recognised the importance of a fitting national architecture being evolved if our

(a) Ignorance and want of proper education of the public and the architects in artistic matters; (b) lack of public interest in the subject, causing unwillingness to spend money on architecture, and the mercantile desire to build as quickly as possible, in order to avoid pecuniary loss from rent or otherwise; (c) lack of control by competent educated authorities, either governmental or municipal, or estate agency, whereby at least the erection of palpable architectural enormities might be prevented.

In regard to (a) and (b), degeneration in architecture may have set in with the dying-out of the art and craft associations which in former years, both under the Church and guilds, exercised authority in architecture and

art knowledge, and so carried out many of the important buildings in almost every country. These guilds handed down from father to son in successive generations what was known of the arts—as, in fact, takes place in the East at the present time.

This system died, and with it the traditional art knowledge declined. Coming to our own times, undoubted improvement in regard to education in art is taking place every day. The Royal Institute of British Architects' examinations now promote study on the part of the rising members of the profession, while the education of the general public is so many-sided nowadays that even architecture claims some attention. But it is the third point, as to the desirability of control in respect to the design of our new buildings, to which I wish mainly to draw attention.

Could ancient Rome ever have developed the magnificence in architecture that its works reveal had there not been some sort of control over the artistic as well as the constructive side of their buildings? If Augustus boasted that he found Rome of brick and left it of marble; and if the magnificence of Vespasian, the genius of Trajan, and the cultivated taste of Hadrian conceived and accomplished the noble works of their reigns, they evidently exercised a certain control over the embellishment of the imperial city. History tells us that it was the duty of the Pro-consuls in ancient Rome and the provinces of the Empire to supply the deficiencies of the citizens in their building operations, to direct their taste, and sometimes to moderate their emulation with one another. The emulations of our citizens scarcely require much moderating in this respect now. The Romans were, however, apparently uncontrolled in regard to their private houses, and the modest simplicity of these proved their freedom in this respect.

The Buildings that Need Control.

In our day it is also not so much in private dwellings that artistic control seems necessary as in semi-public buildings and business houses in our streets. During the Renaissance public taste and opinion had a controlling influence over architecture and art, for even the production of a new statue, if fine, was made the occasion of public ovation and rejoicing.

Public taste and opinion now have but little influence; but the necessity of some competent control over the art of architecture is felt not only by many in England, but also in all parts of the civilised world. And as a proof of this feeling in France, a book by a French architect, M. Gustav Kahn, is now, I understand, being published on this very subject; also the matter is to be discussed at the International Congress at Paris. Most countries have control over the designs and construction of their public, governmental and municipal buildings, but over private buildings facing on public streets and places it appears that in no country is there any other control than that affecting constructive or hygienic matters, or widths of streets and general heights.

The question is how some efficient control—affecting not only the constructive, but the artistic design of public as well as private buildings—could be obtained, and whether or not such a control would be advantageous.

French Methods.

In France (to quote the words of our late secretary, Mr. William H. White) the Council of Building in Paris, the principle of which was first initiated by Colbert in 1663, has existed in some form or other since his day. In 1798 this Council, under another name and in altered form, took for a time the name of "Assemblée Centrale des Architectes," and consisted of seventeen architects. Later on a Councillor of State was appointed president, but the vice-president was always an architect. In 1838 this Council was extended to twenty-four in number, of whom fifteen were architects, and their duties were increased. The members of the Council were not permitted to design or execute new works under the administration. They had the final judgment as to designs submitted in competition for public buildings. They also advised as to the selec-

tion of architects for new public works; and since then this Council has had the supreme control of all public works, there being numerous divisions—which I need not now go into—for the efficient control of the various departments of works. All were placed under the charge of a minister at the head of the *Maison de l'Empereur et des Beaux-Arts*. The responsible chief of each division of public works was advised by committees of experts. I believe, unless any alteration has been made lately, the functions of Supreme Director of Works are divided between (a) the Minister of Public Instruction and Fine Arts, (b) the Minister of Justice and Public Works, (c) the Prefect of the Seine, and (d) the Prefect of Police. The Minister of Public Instruction and Fine Arts, the Minister of Justice and Public Works, and the Prefect of the Seine are all advised in the matters of architecture and building by councils or committees, of whom a large proportion are architects. The Prefect of Police, whose duties are mainly in connection with the safety of the public in respect to buildings in public streets, &c., is assisted by a number of architects, the Inspectors-General being men of high distinction in the profession.

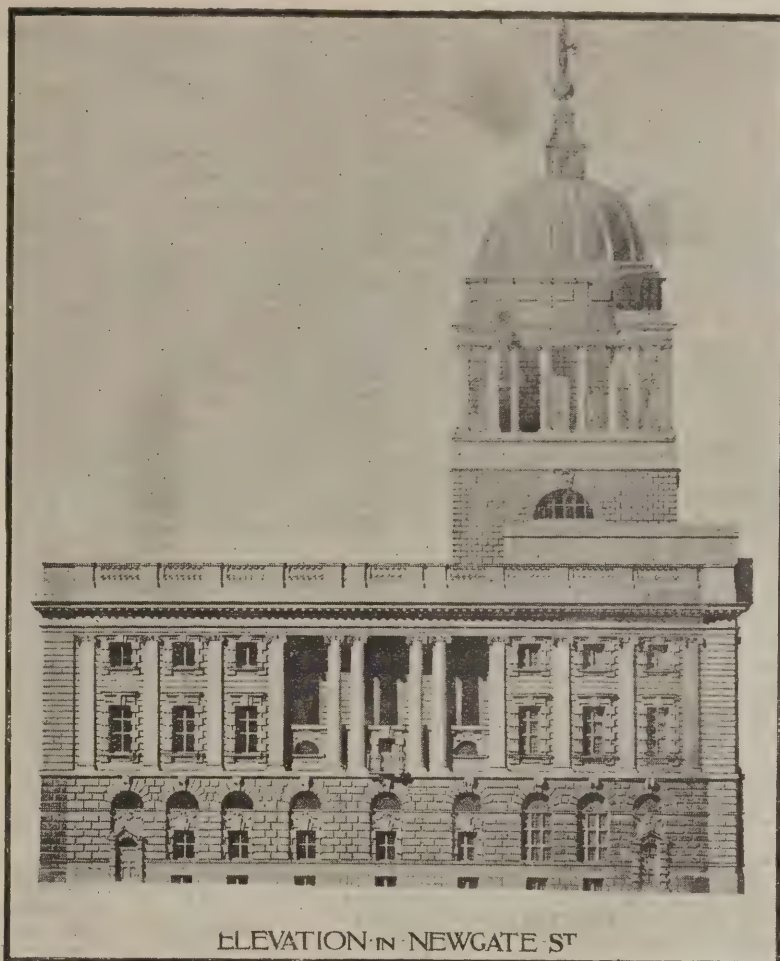
This systematic organisation has been responsible for some of the best and most beautiful buildings in Paris, and appears, in respect of public edifices, to give satisfactory results; it has undoubtedly influenced the national architecture of France. This control is exercised always over a design for a building which has to be carried out with the aid of funds contributed wholly or in part by a public body; but in France, when it is a question of private buildings, the control of municipal authorities is only extended over such matters as widths of streets, heights of buildings, and hygiene, but in no way over artistic matters. In fact, M. Lucas informs me of a case some years ago proving how little voice the authorities have in such matters. The story is as follows: A house-owner at Chantilly, wishing to force the owner of a house situated opposite his own upon the public road to quit the district, painted the façade of his own house black, with death's-heads and cross-bones picked out in white. This led to a series of actions and appeals in courts of law, with the result in the end that the owner of this grisly façade had to wipe it all out and repaint it in the usual manner. But the judgment had nothing whatever to do with the question of art in regard to street architecture, or in reference to public taste, but solely on the ground of damage done to his neighbour by the hindering of the letting of his premises.

German, Austrian, and Danish Methods.

In Berlin, and Germany also, though I believe there is Government control over public buildings, and though there are building regulations and legal restrictions in the matter of private construction of buildings, these have nothing to do with æsthetic considerations. Every proprietor has a right to occupy his property with buildings or alter his buildings, but no building is permitted to the damage or the insecurity of the public or the disfigurement of towns or open spaces. In regard to the word "disfigurement," in legal proceedings which have been taken to prevent the erection of unsuitable edifices the judges have invariably dismissed the cases, on the ground that matters of taste are purely individual. But I am informed by one of the leading Berlin architects that this defect is felt very much and will shortly be remedied, for counsel is being taken as to the scope of such legal restrictions. This matter, which is under consideration, can scarcely be brought to a conclusion this year.

In Austria I find there is no control over new buildings in respect of their æsthetic properties—only over construction.

In Denmark there is also no control over taste or design—only in construction and other kindred matters; and the lawyers there strongly uphold the unlimited right of an owner to build whatever he pleases, provided it is in conformity with the law. But the disregard of the public's just claim for beauty of design has been severely censured in the



ELEVATION IN NEWGATE ST

SESSIONS HOUSE. DESIGN BY EDWARD W. MOUNTFORD, F.R.I.B.A.

Common Council of Copenhagen; and the opinion expressed there has influenced the magistracy to such an extent that now in most deeds of conveyance whereby the community sells land for building purposes the stipulation is made that the drawings for the exterior of their buildings are to be submitted to the magistracy, who then seek the opinion and advice of the city architect, and generally decide according to his advice.

To this scheme there are many drawbacks. When the community is the greatest land-owner, as in Copenhagen, it may affect many, if not most, of the buildings; but even then, when incompetent architects are chosen by the building owners, and the design is submitted after the sale is completed, very little can be gained by the alteration and correction of unsatisfactory drawings, or by the absolute refusal of them; and their approval, if the alterations, as is usually the case, involve more outlay of capital, naturally raises objections on the part of the building owners. Were it possible for the designs to be submitted previous to conclusion of the bargain for the land, a much more effective control over the design could be exercised. Lately this has caused a movement for a revised building Act, which shall have clauses giving power to the building commission to refuse consent to the carrying out of a design that would disfigure the street or place in which it is to be erected. But whether such a clause will be carried is uncertain, for there again the question must arise as to what disfigurement entails or means.

Regulations in Italy, Russia and America.

In Italy control of buildings is a municipal affair. Each city elects a council, called the "Commissione Edilizia," whose mission is to examine every building project, whether for a new construction or for an alteration to an existing structure, and to uphold the interests of the public from the standpoint of beauty. They have to examine the plans from an æsthetic point of view, and if in their judg-

ment the execution of the project would disfigure the city they are bound to refuse their sanction to it. This committee, the "Commissione Edilizia," has also the power to grant exemption from the building regulations in case what is termed the "ornato pubblico" should require it; for instance, in the matter of heights. The Pope's Government has always desired to go one step better to secure improvements in the aspect of the city. Leo XII. granted that whoever should build, or rebuild, or restore, a house from designs approved by the St. Luke's Academy of Fine Arts should be exempt for thirty-three years from an increase in property tax—a most just and wise measure for the encouragement of citizens to erect handsome buildings.

In Russia I learn that every governing institution has its own building officer and architects, who are responsible for their buildings. The latest innovation is that designs for all important buildings requiring artistic skill shall be examined by the Council of the Academy of Art; but until now many exceptions are made to this rule, and, in consequence, I am told that barbarism often reigns in many of the buildings.

In America, in New York and Boston, art commissions exist, consisting of persons appointed by the mayors, and of those who hold positions at the head of certain public institutions, and the law provides that no work of art shall be accepted by the city government or erected in the streets or public places without the approval of the respective commissions. This applies, however, more to fountains, statues, monuments, and such like, than to buildings, excepting that within certain limits a building paid for by public funds may be altered, modified, or controlled by the commissions.

It seems, therefore, that Italy alone has any real control in the public interest over the artistic design of buildings, and this is exercised by committees in each city.

A Growing Desire.

There can be no doubt that in England, as

well as in all other civilised countries, great and important steps have been taken of late years in the direction of control over building operations in matters affecting the public welfare, such as constructive details, hygiene and sanitary questions, and possibly it is to be expected that these should take precedence over matters of taste and beauty. But the more educated public seems now to be justly discontented with the effect of many of our buildings and the way in which town improvements and public works are conceived and carried out; and there is no doubt a growing desire that some sort of control as to the æsthetic side of architecture should be exercised by competent authorities, at least in respect of our public streets and places. But how to exercise such a control is a very difficult question. So long ago as the year 1881, when the late Mr. George Edmund Street was President of this Institute, he drew attention to a number of flagrant cases of mismanagement in regard to our national monuments, and to the selection and arrangement and laying out of certain public buildings, bridges, streets, and their approaches, and he then argued that all pointed to the necessity for the creation of a Government Ministry of Fine Arts, which should have a supervising eye and control over all our national monuments and collections, and also over new edifices, city improvements and re-arrangements. The late Lord Leighton stated that much might be said in favour of some scheme for checking the production of ugliness in this country, but feared that many and grave difficulties would beset the carrying out of any such scheme, and I have reason to believe that one of the chief difficulties he saw was that, in the event of such a ministry being established, and having by chance a dictatorial head, it might eventuate in one man's architecture, resulting in a monotonous effect in our towns.

This subject constantly recurring and attracting the notice not only of architects, sculptors, and artists, but also of some of the educated public, seems to show that it is a measure which must eventually find its way into practical politics; and surely, as it is of Imperial interest and would undoubtedly be for the good of the greatest number, it ought to do so.

Pros and Cons.

Let us consider for a moment some of the points for and against such a high authoritative control. A few of the points in its favour would be:

I. That such a controlling body, composed of fully qualified men of artistic perception, would prevent the erection of new public buildings, such as our Law Courts and the Admiralty, on sites insufficient, not only as regards the requisite accommodation, but as regards æsthetic effect, in the interest of what the Italians call the "ornato pubblico."

II. That the laying-out of open spaces, public places, and their approaches would be considered by properly qualified and competent experts and judges, rather than, as is often the case, by incompetent persons, often under the orders of uneducated tradesmen who for the moment may fill the seats of our councils, vestries, or local governing bodies.

III. That such schemes as the two bridges at Blackfriars, erected on totally different principles and lines, within a few yards of each other, would be rendered impossible, and, when necessary, proper designs for new bridges—engineering and architecture going hand in hand—would be assured.

IV. That when schemes for new streets, &c.—such as the Strand improvements lately before the public, or the Northumberland Avenue, or Charing Cross Road, or Shaftesbury Avenue—were under consideration some general plan and design would be arranged, and the talent of our best men obtained, under fair remunerative terms, and they would be responsible to such a controlling power for the proper carrying-out of the architecture of the scheme, and tenants would be unable to erect whatever ugliness and incongruities their uneducated tastes might prompt.

V. That the taste of the public would gradually be elevated and improved, and the

man who wished to disfigure the town for selfish ends would be reprobated, and eventually our town architecture would become the glory of our nation, and architects who were not artists also would gradually cease to obtain work.

VI. That the more education increases, the more a definite control of some sort seems necessary, because posterity has some interest and right in the taste of its forefathers, and we should build not only for the present, but for the future.

VII. That such a control need not mean, under a properly constituted Ministry or Commission, monotonous uniformity of design—one man's architecture; but the juxtaposition of inharmonious designs, materials, and colours would be prevented, and a general harmony with plenty of variety might be ensured.

VIII. That at present architects' powers are often limited in dealing with strong, self-willed, and selfish clients who have no feeling for the fitness of things and are deficient in taste, which should not be the case. For example, should an architect refuse to erect a huge stone building apparently entirely supported by plate-glass windows for such a client, he would be punished by losing the work, and some less conscientious person would unhesitatingly do it. Such a thing would, under control, be out of the building owner's power; the architect would be able to say, "Such a design would not be able to pass the Ministry of Fine Art; therefore it is useless my attempting it."

The Opposition that would be Encountered.

Some of the points that might be urged against such a control are:

I. The politician would probably say this would be collectivism as against individualism, and would interfere with and limit the rights of owners in regard to their properties, and, on the ground that there is no accounting for taste (*de gustibus non est disputandum*), might have some show of reason on his side. But if this were for the national good in matters of taste I cannot see that it would be worse than interfering with freedom in construction and hygienic matters for the good of the public safety and health.

II. It would be urged that it would increase the difficulties of letting land for building purposes in the endeavour to force a tenant to carry out a certain design; but were it the general rule such a complaint would soon cease, and the inevitable would become the good.

III. At present many boroughs and corporations give their architectural work to their engineer or surveyor, and therefore would object to this control. Often these men are quite incompetent for the proper carrying-out of such buildings; but as the arrangement saves an architect's fee the public love it, and the ratepayers vote for it, in their ignorance not understanding that eventually they will be the sufferers.

IV. Some architects might raise objections to such a control as involving the trouble of getting their designs passed, not only by one set of authorities on constructive and other matters, but by another body on the ground of "ornato pubblico." (I use the words for want of an English phrase equally expressive). This might be a serious difficulty to many who profess to be architects without possessing the needful artistic taste. That class would die out under such a régime.

V. The ratepayers would object to it as adding to taxation; for such a controlling body of experts should be highly remunerated.

VI. Then, again, it may be urged that it has never been the custom to interfere with personal tastes in regard to building on private property, though in our public streets and thoroughfares.

But though custom has been against such a control it may have been merely the antiquity of error, as Cyprian said in speaking of custom, that the fact of its being the custom is no warrant for its existence. The increasing aggregation of population in large centres needs increasing regulation in all matters of

public and social interest; and if customs have grown up of which time has proved the folly, then, however ancient, let them be eradicated.

There probably are many other points both in favour of and against such a control which could be pointed out. But on the whole it seems to me that if the larger considerations of public education, culture, Imperial demands, and our national character and taste as it will appear in the eyes of posterity, are weighed in the balance of common sense with the smaller considerations of individual right in matters of taste or property or greed, cost to ratepayers, custom, or inconvenience to the inferior architect, the latter will easily kick the beam.

The Controlling Body.

But were such a control established, the question arises, How should such a body be constituted? Clearly there should be a responsible head of the department, were he a Government Minister or not, and he should be chosen not only for his administrative or political capacities, but for his known possession of cultivated taste, large Imperial ideas, and love of art, combined with practical common-sense; and he should not have the power to overrule the decision of the committee over which he would be president.

It goes without saying that the committee should be formed of the best men amongst our Royal Academicians, Royal Institute of British Architects, and other artistic societies. The view of a majority of such a council should be final in all schemes, public or private, which affected the "ornato pubblico."

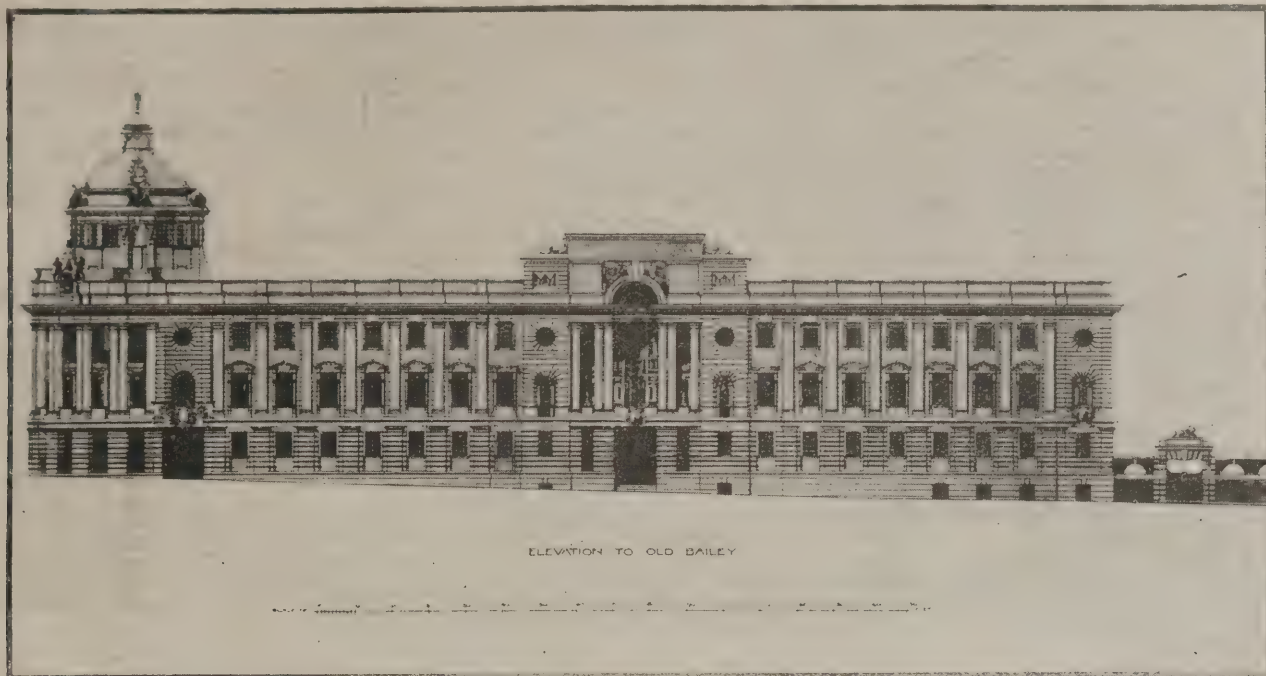
For our Metropolis, in which the whole Empire is interested, such a controlling body should, I imagine, be a Government Ministry of Fine Arts; while each provincial town or county council should have the right to elect their own committee. I suppose each such body should be paid from rates raised in the district over which they exercised control. But these are details apart from the large general question of necessity for control.

These suggestions, however crudely put my ideas may be, please to understand I have made solely with the view of eliciting discussion, and with the sincere hope that our governing authorities at no distant date may see their way to inaugurate the new century with some project whereby the future architecture of our country may not be left to mere chance or the caprice of irresponsible individuals; but under a wise control the architecture of the greatest Empire the world has yet seen may not in the future have to suffer by comparison with that of other civilised countries of the present times, or, indeed with that of nations of bygone ages.

The Discussion.

Sir John Taylor, of H.M. Office of Works, said that for years past he had been connected with the control of national buildings, and, whilst sympathising with the suggestion made by the president, he had grave doubts whether it would be any improvement on the method that the Government had adopted with regard to new official buildings—that of availing themselves of the advice of the Royal Institute of British Architects. In reference to the statements made that the Law Courts and the new Admiralty buildings had been erected on insufficient sites, he said the site for the latter was quite sufficient if properly used, and he drew attention to the fact that buildings of this class had primarily to serve specific practical purposes, their architectural merit being a secondary consideration.

Mr. William Woodward, A.R.I.B.A., F.S.I., could not agree with Sir John Taylor that the tribunal proposed would differ very little from the present custom in relation to the Office of Works, for it would include not only the governmental buildings, but the whole of those in the main streets of the city. If the site of the new Admiralty buildings were sufficient, certainly the artistic merit of the building was far from satisfactory. Had there been a tribunal such as that proposed, could it be thought that such eyesores as the railway bridge at the foot of Ludgate Hill, the King's



NEW SESSIONS HOUSE. DESIGN BY JOHN BELCHER, A.R.A., F.R.I.B.A.

College addition, or the Queen Anne's Mansions would have been permitted? He spoke strongly against the railway companies, and said that they had done more than anyone to disfigure London.

Mr. William Young, F.R.I.B.A., joined with the preceding speaker in declaiming against the railway companies, who were the greatest sinners of all, and gave it as his opinion that control, if obtained, should be imposed as little as possible on the architects themselves. If we established the position of Minister of Fine Arts individually in design would be hampered, and there might come a time when the minister in power would be a one-man minister, and that would be most undesirable.

Mr. E. W. Hudson, A.R.I.B.A., F.S.I., thought the president had struck the right note when he said there was no accounting for taste. What was taste? and who was to decide when the doctors disagreed? Regent Street was an example of controlled architecture—but were we to take it as a model? In his opinion it was variety that gave charm.

Mr. Z. King, F.R.I.B.A., referred to the fact that in Nuremberg it was stipulated that when an old building was pulled down the one erected in its place should possess the same character, thus preserving the beauty of the architecture.

Mr. Hippolyte J. Blanc, R.S.A. (Edinburgh), feared it would be most difficult to control the architecture, and he looked for a cure in the education of the public. He suggested that the tribunal should consist of architects and laymen, and should advise rather than dictate; but he would not include painters.

Mr. Ernest Day, F.R.I.B.A. (Worcester), appreciated the proposal of educating the public in architecture, and said that good work in this direction could be done in our schools and institutes; while Mr. F. R. Kempson, F.R.I.B.A. (Cardiff), agreed with Mr. Blanc's views.

Mr. Joseph Smith, F.R.I.B.A. (president of the Sheffield Society of Architects and Surveyors), supported the president's suggestion. No one was satisfied with the present régime, and though we had considerable control in many ways we did not possess it in regard to the design side of architecture. To place the control in the hands of local authorities as at present constituted would be a mistake, for they had often approved designs which were simply monstrous; but a selection of men of taste might be made with good results.

Mr. Arthur Cates, F.R.I.B.A., F.S.I., gave it as his view that however desirable the president's aim was, under existing circumstances it was somewhat Utopian. If the

history were written of the Government buildings in Whitehall, he said, it would be one of wasteful economy and profligate parsimony, and he agreed with Sir John Taylor in his *apologia* for the Office of Works, which was not alone answerable for the existing short-comings.

In replying to the foregoing criticism, Mr. Emerson said he had been somewhat misunderstood, for he meant his remarks to apply particularly to the buildings in the public streets. He felt sure that good would result from the establishment of such a committee as he suggested; but if it had only power to suggest and no authority to enforce its suggestions, little improvement would be effected.

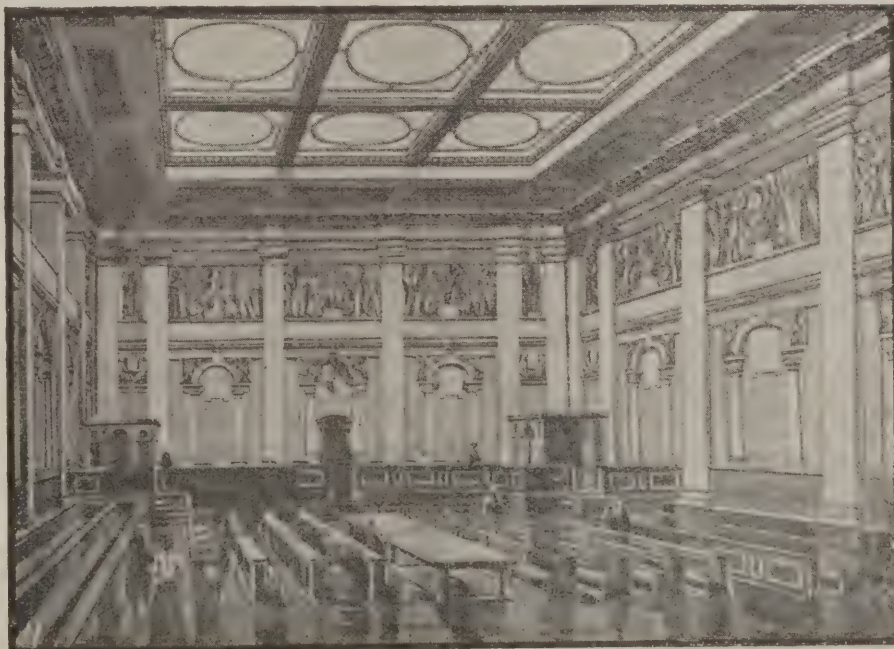
THE CONVERSAZIONE.

On Monday evening a largely attended *conversazione* was held at the Guildhall, an ideal place for the purpose. The Guildhall itself, which was tastefully decorated with palms and flowers, presented a very animated appearance. Here, for more than an hour, Mr. and Mrs. Emerson received a continual stream of guests, who included most of the best known architects in London and many

from the provinces, with their wives and other lady friends. Music was provided at intervals throughout the evening by the band of the Royal Artillery. In other parts of the building there were other attractions; many wandered into the picture gallery, where the loan collection of pictures is still on view, others attended a capital vocal concert in the Council Chamber. In the library rare books and MSS. were displayed, and in the corridors and lobbies there was a collection of architectural drawings, including the designs for the new Sessions House, which were examined with much interest. The crypt was converted into a refreshment room, and in this, as in other departments, the comfort and enjoyment of visitors was liberally catered for. Altogether the affair was a great success; it is estimated that at least 1,500 visitors were present.

COLLABORATION OF ARCHITECT, PAINTER AND SCULPTOR.

On Wednesday morning the third meeting of the General Architectural Congress was held to hear and discuss papers by Mr. Edward W. Mountford, F.R.I.B.A., Sir W. B. Richmond,



THE COURT ROOM IN MR. BELCHER'S DESIGN.

K.C.B., R.A., Hon. Assoc. R.I.B.A., and Mr. E. Roscoe Mullins, on "The Collaboration of the Architect, the Painter and the Sculptor." Mr. William Emerson, President R.I.B.A., was in the chair. The first paper was read by Mr. Edward W. Mountford as follows:—

For some considerable number of years it has been the custom at meetings of the Royal Institute of British Architects, when we are honoured by the presence of eminent representatives of the allied arts willing to give us their valuable opinions upon matters of mutual interest, that an architect should produce a kind of brief preface or introductory note. This explanation is undoubtedly necessary to account for my having ventured to accept the invitation of the Congress Committee to address you on a subject upon which I have no kind of claim to be considered an authority.

The collaboration of the architect, the painter and the sculptor is not only a matter of great importance, but one which is daily becoming more and more deserving of our consideration. There is reason to believe that the public—or, at least, the more educated part of it—is awakening to the fact that good art is both desirable and attainable in our buildings, and that even though this may increase their cost the money is well invested.

The art of architecture is not to be considered as dependent for its perfection upon the assistance of sculpture and painting, as some would have us believe. It is well known that many of our most admired ancient buildings are destitute of either, and the work of our greatest living architect is conspicuously free from any such assistance. Colour of the most beautiful kind may be obtained from the materials used in our work, and it is quite possible to invest buildings with some interest and richness of effect without calling upon the sister arts.

But we shall probably be perfectly agreed upon the great desirability of inviting the aid of our brethren of the brush and the chisel to beautify and embellish our buildings whenever it is possible to do so—which means, in the first place, when it may please our clients to provide the means. This is still one great difficulty, because we must have really good sculpture and fine painting, and, like most other good things, these are expensive. It is the unhappy fate of most architects to have their designs and intentions very much cramped or cut down by the want of the necessary money to realise them; and we have to be content to keep our buildings absolutely plain because bad pictures or bad carving defile a building, and must be shunned like other sins.

Supposing, however, that we have been entrusted with the erection of a building for which there are ample funds, so that we may with a good conscience invite an eminent sculptor and an eminent painter to help in making it as beautiful as we know how. Then we begin to understand that there is some enjoyment in life after all, and we proceed to our work with even more than the usual enthusiasm. At the earliest possible moment—that is to say, so soon as the first rough sketches are completed—we shall desire to consult our chosen fellow-workers; and from that time until our joint creation stands accomplished, the more frequent our intercourse the better for our building. It must not be forgotten that

The Building is the Thing,

and that the architecture is not to become a mere background for the painting or sculpture; they are means to be employed for giving additional interest and beauty to the building, explaining its purposes, its uses, and its history or the history of its builders, becoming part of the architecture itself, and not to be thought of otherwise.

The work of the sculptor and painter in relation to a building bears some resemblance to the illustrations of a great book, of which the architect is the author; and just as the illustrator of a book must make himself acquainted with its contents and the intentions of its author, so should they enter into the scheme of the architect and help to make his meaning clear. As some books do not

require illustrations, while in others they are of great importance, some buildings are complete without the painting and sculpture which in others strongly appeal to people who are quite unable to appreciate the architecture, and take no interest in it. The resemblance is certainly by no means perfect. An architect in consultation with the sculptor and painter will provide in his buildings fitting opportunities for their work, plain spaces for frescoes or sculpture, or niches for statues, and will, if necessary, arrange or modify his detail to meet their views. Harmony of purpose and oneness of interest between all three artists is absolutely essential, or the work must suffer. It seems to me possible that the architect and sculptor may have more in common than the architect and the painter, working, as they both do, in the round; and though colour also enters largely into the work of an architect, it is not usually the colour of the painter. In any case there must be harmony of style and purpose, and not less essential are breadth and simplicity. These latter qualities have been so much spoken of, written about, and discussed lately, that one feels it necessary to apologise for again mentioning them. But important as they are in all designs, they are even more so in connection with this subject, so they must come in again. How many buildings have one seen spoiled by over-much carving, often poor stuff that has no meaning, except to cover the poverty of the architecture; but even of good work it is possible to have too much upon a building. It is not difficult to spoil an interior by too much colour decoration, be it painting or mosaic. Without

Complete Sympathy

with the architect, a painter may, no matter how great his skill or how good his intentions, do much to spoil a work of architecture either by concealing features the architect may wish emphasized, painting out the construction as it were, or emphasizing others which the architect would prefer to have left in modest retirement. The appearance of mouldings may be quite altered by their treatment in colour, or spaces which were necessarily left plain for the desired architectural effect may be painted with a design, possibly very good in itself, but quite undoing the intention of the architect.

It is not for me to suggest here anything as to the manner or methods of the painter. Every architect will have his own views as to the decoration in colour of his own building, and would fully explain them to the painter entrusted with the work. Very possibly these views may be quite mistaken, and the painter, if able to convince him of this, is rendering him a very great service. May I say that to me the pictorial treatment of a flat ceiling seems a great waste of sense and skill? It is not usual in good society to lie upon the floor, and yet this is the one position in which a ceiling so painted can be properly seen. Even then the positions of any figures in the painting are impossible and absurd, unless the painter has represented them flying in mid air, with the soles of their feet and other portions of the body not usually seen made unduly conspicuous—which treatment, however skilful, is hardly pleasing. It is hardly necessary to maintain that a painter, by bringing atmosphere into his mural work, treating his subject in a thoroughly realistic manner, simply destroys the architecture. Happily most English painters understand decorators' work too well now to do such a thing, except in specially prepared panels. A considerable amount of conventionality must be employed.

With the sculptor the architect has to discuss, not only the subjects of his work, but the materials, the scale, the amount of relief, and even the jointing of the stone. The small scale models which the sculptor will prepare may be most usefully extended to embrace as much of the surrounding architecture as possible, and the architecture will probably greatly benefit if this course be followed.

Sculpture

I regard as being much more a necessity for

important buildings than colour decoration, which is rather a luxury seldom to be attained. Moreover, being much less appreciated by the general public than painting the cost is less. Probably to every hundred people that are "fond of pictures," less than twenty take any interest in sculpture, and certainly not more than five care anything about architecture. And the Royal Academy, as well as Her Majesty's Ministers, exactly reflect public opinion in this respect, which accounts for many things.

There is one small point with respect to the use of sculpture, which is worth a little consideration. It is not unusual for a statue, large or small, to be placed upon the summit of a tower or the apex of a lofty gable, but the result is often not happy. A plain moulded terminal would generally look better and cost a great deal less, while the money so saved could be used with much better effect upon some less elevated part of the building. My objection does not apply so much to figures placed along the parapet of a building of moderate height, which can be seen only from the front, although even here a background of masonry is better than one of sky. But isolated figures at a considerable height from the ground nearly always look unsatisfactory from at least one point of view.

As regards the use of both sculpture and coloured decoration, I have a strong suspicion that many of the old buildings of Italy and elsewhere that we now so justly admire must have aroused quite different emotions in us had we seen them when fresh from the mason's hand.

In conclusion, may I be allowed to express my appreciation—which is shared, I am sure, by all architects—of the manner in which Sir William Richmond referred to the art of architecture in his recent speech at Bath? It would be well for all kinds of art if his opinions were more generally held, and one cannot but wish that his fellow Academicians should read and understand all that he said.

Sir W. B. Richmond's Paper

succeeded that by Mr. Mountford, and was as follows:—A paper written to be read in ten minutes should, I think, be both terse and suggestive; it certainly cannot pretend to be exhaustive. Its object should be the promotion of intelligent, even warm, discussion. If this paper is abrupt in its transitions as well as in statement of my views, the foregoing reasons must be my excuse for such defects. We all desire closer union than now exists between the three great arts, as well as a more intimate conjunction with them of the lesser arts and crafts.

It is the wish of all of us that the spirit of the true artist should preside over all our labours, great or small—a spirit which induces spontaneity of design, and which prompts sincere endeavour to carry it out with clearness, which shall be the expression of ourselves, and therefore with style. Style is what is wanted, and is so often absent—the impression of the mind and the hand of the artist. Of "styles" most of us weary; their use, more often than not, implies absence of invention, and is but an attempt to revitalise corpses. Rather than follow them ought we not to be bound by the requirements of our age?

The collaboration of the architect, sculptor and painter ought not to be difficult. To be successful the architect should not interfere with the sculptor or painter, *qua* their designs; this he will not need to do if his style is his own, for if they are true artists, all of them, they will give and take according to the requirements of their arts as well as of each other's art. They will each respect the other's province, that of the architect as the designer—or builder (as Wren is named upon his tomb)—of the structure, of the sculptor as the designer and carver of effigies, ornament and their attendant parts, of the painter as the designer and executant of the pictures, their borders, &c., and their colour scheme.

But both sculptor and painter must give way to the architect upon matters of scale, of proportion of part to part, so that their work shall be harmonious in scale with his; of quantity; of projection whether in the round

or relief; of the fairness or depth as to tone, of the painter's scheme. So will they labour in harmony.

While architects insist upon

"Styles"

they will get no first-rate sculptors or painters to aid them or to work with them. For the adornment of "styles" they have to continue to go to "firms" where they can be provided with as many shams as they require, all quite lifeless and hopelessly out of touch with the movement of this, or for the matter of that, with any period, because they do not reflect it. As long as "styles" are abjectly adhered to, art must remain dead! No artists, as far as we know, imitated the work of their predecessors; they wrought in the vernacular of their environment. In recent times Viollet-le-Duc, admirable antiquarian and voluminous writer, has given us an example of the inevitable failure which must attend upon "styles" of decoration in many of the churches of France. Witness his cartoons in the Louvre and its wall paintings in Notre Dame, about which nothing can be said but that they are wholly uninteresting.

Santa Maria Novella in Florence is a nest of anachronism according to the modern standard. The wall paintings there by Cimabue, Gaddi, Giotto, and Ghirlandajo, and by later painters also, are side by side. Ghirlandajo did not paint in the style of Giotto; he painted as his period dictated. The west circular window contains glass of the early fourteenth century; the west window is late fifteenth in the style of its period. Side by side are monuments which date from the fourteenth to the seventeenth centuries in the style of their period. So the Church, as it were, breathes history from its walls; its monuments and paintings are sincere demonstrations of their authors' originality and spontaneity. This is one instance out of hundreds which might be brought forward that proves the universal law that no art is really valuable which does not emanate from the spirit of the period which gave birth to its author. It is because of its sincerity of purpose that art interests us. Fancy Ghirlandajo decorating the portion of the church assigned to him after the manner of Giotto, or Giotto in that of Cimabue because Cimabue painted on the walls of the church at the time of its erection; they would not, could not, have been such slaves to pedantry. As soon as architects

Design Original Buildings—

which, by the way, here and there they do and there are many examples in London, irrespective of severe canons of proportion and orders, but structurally consequent and individual—they will find plenty of sculptors and painters to work with them; but as long as they design in "styles" no original men will be slaves to them: they must continue to get the adornments for their structures from "the trade." Is it not a mistake to specialise early? The young painters—indeed, the old ones also—know nothing or little about architecture; nor is the young sculptor made aware of the position that he ought to hold in relation to spaces. Neither does the architect get a chance of working in conjunction with sculptors and painters, who should be his colleagues in his earliest days of training. They are brought up separately; and they remain separate, consequently neither their interests nor sympathies are current.

Finally, of course, the architect is the responsible person; therefore he should be a thoroughly equipped artist. Would it not be possible to avoid too early specialising? How few architects there are that know anything at all about colour! How few painters are even indirectly interested in architecture, and how few sculptors learn to be an attendant upon architecture! And what a loss it is to each that he is so ignorant of his sister arts!

The great men of past times were rarely specialists. Every one knows that Giotto was painter, sculptor, and architect. So was Raphael, so was Brunelleschi, so were Michael Angelo and Leonardo. Phidias was the son of a painter, and was educated in that craft; Ictinus was a sculptor as well as an architect.



SIR WILLIAM B. RICHMOND, R.A.

I suspect they worked harmoniously; and no doubt whoever designed the colour scheme of the Parthenon did so in conjunction with his colleagues.

The well equipped designer is able to cover a large field of action. If he can design in one material why not in another? None of the techniques are so enormously difficult, either of building, carving or painting, that they cannot be acquired by patience, *given the artistic temperament*. It is the artistic use of techniques acquired by experience which succeeds, or the reverse, in exact relation to the quantity of intelligence and judgment that have been put into it.

Our Age is One of "Harking Back"

—archæological more than creative. Certainly this applies to architecture. But in the arts of painting and sculpture such a term applies with far less accuracy; the best work being now done in them reflects the spirit of our time. Do the majority of our buildings do that? Does the Tower Bridge, for example, reflect our time? When architects do so the sculptors and painters will almost automatically come into touch with them, and the crafts also with them.

To reiterate: no original designer, painter, or sculptor would execute in the thirteenth, fourteenth, fifteenth, or sixteenth century style to satisfy the pedantry of an architect, though if he had made an *excursus* into any of those styles he might be able to do so; but if he did his work *qua* art and style would be quite valueless. The sculptor *makes* statues, the painter *makes* pictures; they do not design them only. Should not the architect *make* buildings? And, just as the painter and sculptor learn anatomy, should not the young architect be apprenticed to a builder, that he may learn the anatomy of his art and become in the highest sense a builder?

I confess to thinking that art education cannot be commenced too early or be too broad and inclusive. Specialism would follow according to the bent of the student's capacity. Should not a young architect practise decorative painting and sculpture up to a certain point? It could do him nothing but good. And the same principle should, I think, apply to the education of sculptors and painters; early instruction concerning plan and structure could do them nothing but good. Advanced students should, I think, be encouraged to collaborate. Given a model designed in conclave, made by the architect, to be sculptured by the sculptor and decorated by the painter, how interesting such efforts would become! What a stimulus they would give to the three arts! Each student having thus become conversant with the arts of his colleagues would be in a position to criticise as well as to appreciate them. The three arts would thus grow up as it were together; they would not be strangers to one another; the great mother of the arts, Architecture, would take to her children again, who have separated from her, as she has from them, to their and to her privation.

The purist may imagine that Greek temples, early and late Gothic churches, or even early Renaissance, were bald and colourless, but they were not; we know, on the contrary, that they were highly coloured and decorated, probably with what we, with love of faint anemic tints, would call crude colours. And modern buildings may be decorated with strong colours; why not? Crude colour soon tones down if the shades are harmonious.

Purity and Form.

Purity does not reside only in form; form is not its only exponent. Colour can be rich, splendid, strong, and yet be chaste. Chastity is not weak and anemic, it is the sign of



MR. E. ROSCOE MULLINS.

vigour and strength. Sculpture may be coloured even vehemently; painted woodwork, marbles, gold and other metals, can be introduced lavishly without one jot of purity being injured. But such a revival cannot come all of a sudden; we have to become used to experiments: these may be uncommon, unconventional, and, as such, they must take time to become established in and recognised by the public mind.

We have the material, minds and matter for the most rich and splendid work, but upon account of the divorce of the three great arts and of the crafts from them, more or less, that material is only serviceable within a narrow range and under unduly restricted conditions. Once get young students, architects, sculptors, and painters into touch with one another's art, and a really vital school will spring up with astonishing quickness. Architects will then take their proper position as artists, and sculptors, and painters with them in conjunction. Pedantry and its near relative dulness will cease to exist; painting will no longer be considered as "The Art," and the other two as minors. To the attainment of this end we should, I think, all struggle, an end which means union, wherein there is strength, share in the struggle and help, not hinder, one another's efforts. It is not precedence that any of us desire, but concord, mutual progress, and unity. We are individually striving to render England more beautiful; let us try to do so collectively; let us strike out for freedom, not licence, but freedom based upon the only sound foundation, sincerity, combined with knowledge of the various branches of what after all is the one art.

Mr. E. Roscoe Mullins's Paper

was as follows:—It may well be that a sculptor will approach the subject of the collaboration of architect, painter and sculptor from a rather more stringent point of view than would a painter; for whilst a painter can and does develop his art alone, independently of the other arts, requiring only house room, his art not suffering if so separated, it is otherwise with sculpture. A sculptor, I maintain, is only truly working out his art in its highest conception when he is working in unison with architecture, and is controlled and inspired by its conditions and limitations; and in so far as the willing hand of architecture is not held out to sculpture, the art suffers. The natural and rightful place for sculpture is in connection with or upon buildings, which it should ennoble and beautify by its presence; the treatment of sculpture should depend upon the particular lighting that the chosen position and the surroundings would give it, and much of its shape, arrangement and effect

must be due to the space allotted for its filling.

This is not, I know, the popular view of the art, but that it is the true one a glance at the past great periods would prove. I can only, in the short time allowed me, give this glance, but detailed inquiry would bear out my statement. There is hardly a work of sculpture in the British Museum that is not decorative in the true sense—that is, work that was applied to buildings, executed for buildings, of which the beauties can now only rightly be appreciated by recalling the buildings they were designed to decorate. In the days of the Renaissance it was equally so: Michael Angelo, Donatello, Luca della Robbia, Ghiberti, all collaborated with architects, and their best work was done for architecture. In the Gothic days, too, this truth is equally apparent, which a visit to the chapels and tombs at Westminster abundantly proves. It is only in these days that

The Direct Union

has been lost, and the art has been conceived as standing alone—*freistehende*, as the Germans say—and, like painting, thought to be free and independent. Nothing has fostered this false view so much as the prevailing custom of exhibitions, and I must also add museums, for in both we see sculpture isolated, in no connection with the place it is designed to fill. In exhibitions we accustom ourselves to a standard of isolation, forgetful of the main purpose of the work; that is, its surroundings and the causes of its shape and treatment. This aspect is lost in the æsthetic admiration of the work alone. Decoration in former days did not mean a mere filling up of space by some stone carver or so-called monumental sculptor, but rather the representation by the nation's most gifted sculptors of the stories and legends believed in by the people, and executed in such a manner as to enhance the beauty of their national buildings, and make complete and explain what would otherwise be bare and unintelligible. Such was decoration in the past. How differently in our day is decoration understood, when it has too often come to mean merely endless repetitions of meaningless ornament, as suitable to a tavern as to a church!

To show the evils of backsliding we may note the tendency of sculpture, when separated from architecture, in the particular form it takes at exhibitions, to develop into a species of bric-à-brac and *objets de vertu*, statuettes rather than statues, coloured combinations of assortments of stones and jewels, surface treatments of realistic skin-folds, and often ugly renderings of nature—anything, in fact, but work possessing the properties of true sculpture, which should depend upon breadth and knowledge of light and shade, and simple massing of form. In our Royal Academy the influence of the painter is felt on sculpture instead of that of the architect, and the result is scarcely satisfactory. It is natural that truthfully-modelled surfaces, literal renderings of nature and combinations of colour, would have more weight with a painter than with a sculptor; but in sculpture such tendencies conduce to realism, and the closer the imitation the less is the art displayed. Too often the work, when done, is only suitable to become part of a rich man's collection of isolated treasures, that only the few therefore can possess, rather than fitted to belong to the nation as a whole, as it could do if it were executed for public buildings.

There is one other evil I should like to mention, to which the sculptor is prone if he is detached from architectural control, and that is making the search after beauty as his one aim. To me it always appears that no theory, that has been advanced, has done so much to destroy individuality and original talent as this

Loadstone of Beauty.

An artist who is seeking for beauty alone is as a man seeking for happiness—a desirable end to attain, but never attained by directly planning or searching for it. And it is the same with the attainment of beauty in sculpture; the end is only reached by having some more definite object in view, while the vague search

for beauty only leads to imitation and trite conventionality. Let the immediate purpose of the work, however, be simply the desire to tell a story in the best possible way, and to adapt it to the place that the work is to fill; then the element of beauty will still possibly be there, without striving especially for it, and at any rate the work will be stamped with individuality.

Perhaps the time when least attention was paid to architectural decoration was at the beginning of this reign, when sculpture was represented in this country by Gibson; and his work shows the effete result of a one-sided striving for beauty, that ended in the neglect of nature and the adoption of a pseudo-classic treatment, uninteresting and unmeaning to us Englishmen of this century.

Since that time we have advanced in the right direction, and some of our best sculptors' works can be seen on buildings, forming part of a whole scheme and helping the purpose of the buildings for which they were intended. But though we have moved in the right direction, there are yet misconceptions to remove before sculpture can be fully applied in its true field as the co-mate of architecture. This is brought home to us when we note the one form of sculpture that we may fairly say is tolerated in England—that is portrait sculpture. Supposing we accept this form as characteristic of the nation—and I fear we have not yet risen to things higher—can we say, except in a few instances, that we have succeeded in portraying the individual man? I think not. The very size in which we depict him—I refer to outdoor statues—is sufficient to prevent the sculptor from giving an individual rendering of his subject. He is content if he succeeds in getting a portrait of the face, while to the figure he gives general classic proportions, so that we have individual heads on our statues that would fit equally well on any other statues' bodies and legs. Now, if these

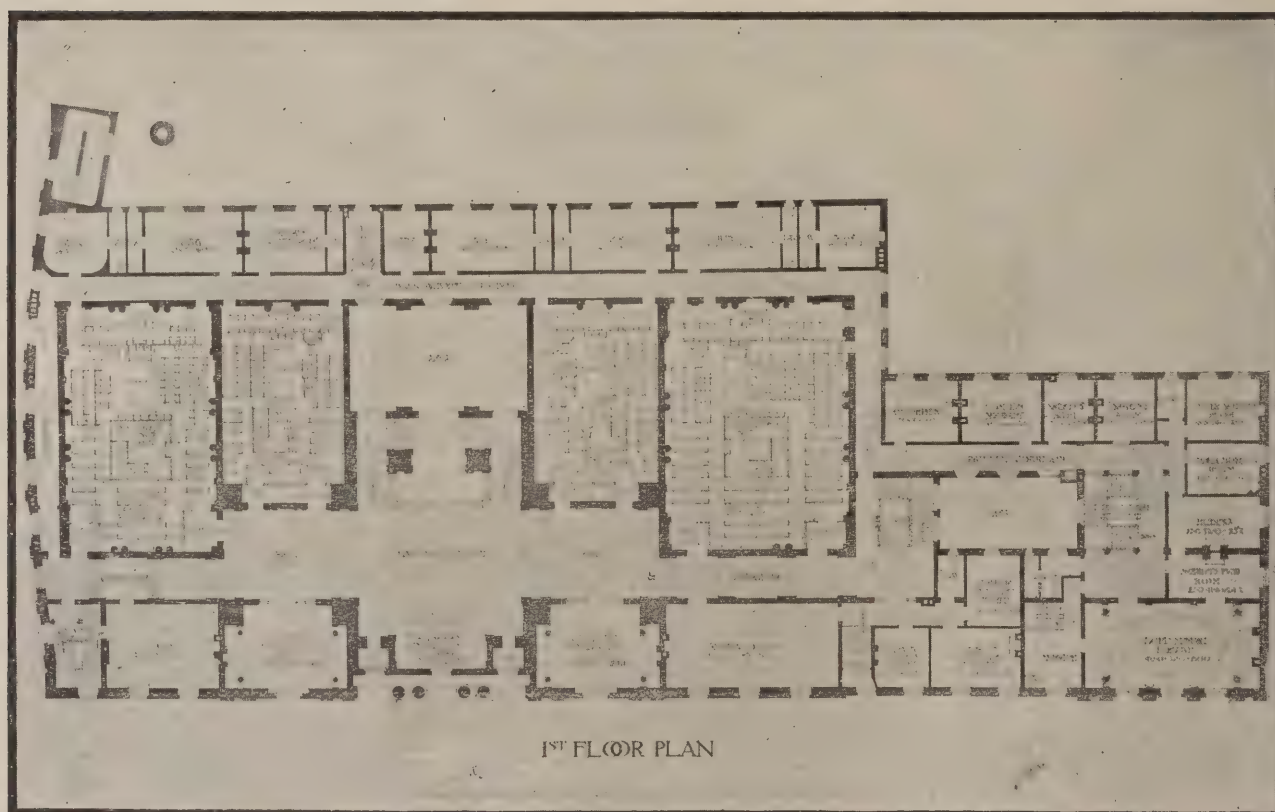
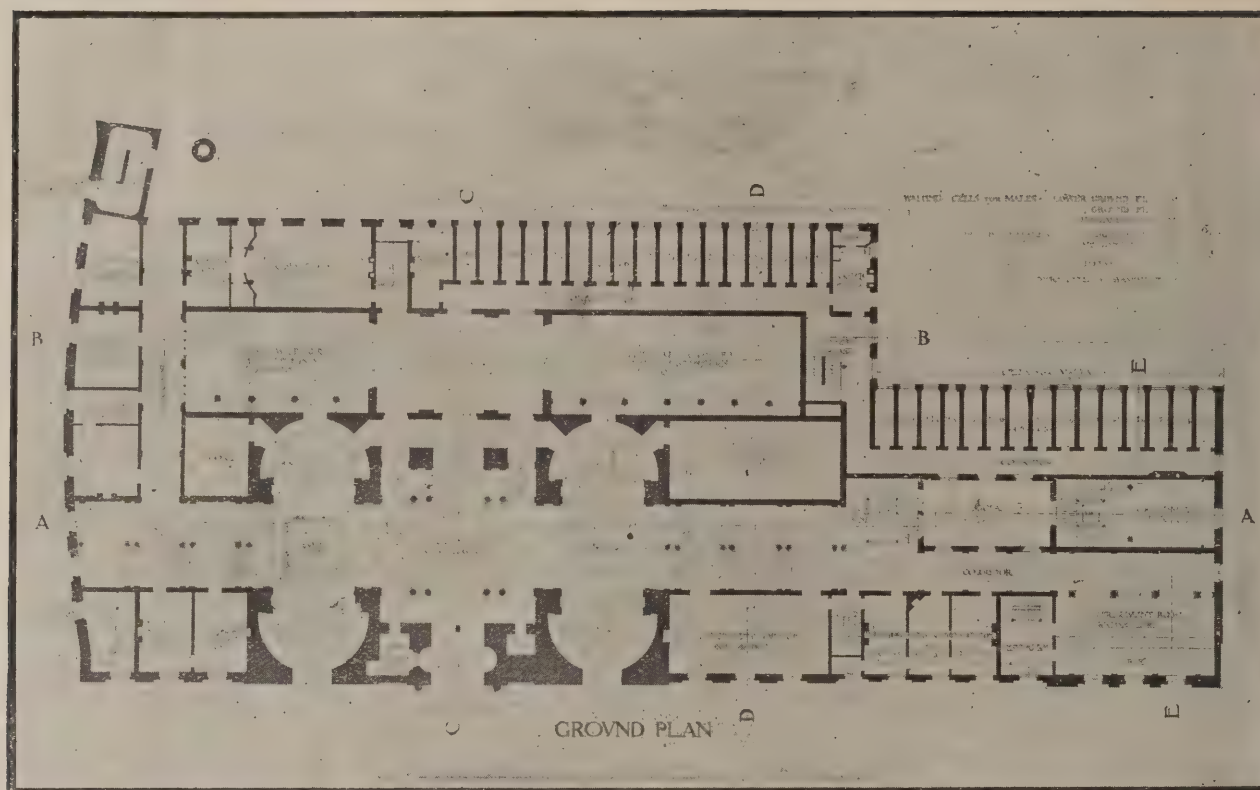
Portrait Statues

had been designed to fill niches or stand in courtyards, or to be placed in front of buildings, of which they would then form part, the size of the statue could be diminished, and attention given to the portrait of the man as he is, or was, not merely in face, but in figure. I maintain that no portrait statue should look more than life-size; it ought, that is, not to strike the observer as abnormal; the extra size that is given should be due only to the necessity of the surroundings, and the height at which the statue is placed. I think the only form of sculpture that will stand the test of isolation is work with strong action, as some equestrian statues, and ideal work that is not subject to the restrictions of modern dress; but even these are improved by a background, at least of trees.

This association with architecture would open other fields where the sculptor's art could assert itself, and where the nation's desire to perpetuate the memory of her great sons could be encouraged. For instance, a Hall of Heroes—a Walhalla—where the deeds of the great could be recorded, and where the whole building could be devoted to that end, would be far more interesting and instructive than is the prevailing custom of thrusting statues, as we do now, into Westminster Abbey and other noble buildings not designed for them, where they are void of meaning, and destroy instead of adding to the beauty of these buildings. In a modest way, too, I think there is room in our cemeteries and churchyards for a happier union of the two arts. Most of the sculpture we see there, besides being commonplace in design, is often vulgarly obtrusive; yet I think a cemetery should be a home for good sculpture, and it could be made so if the sheltering hand of architecture was there, too, to give restraint—a necessary element, and especially appropriate in a place hallowed by the association with our dead.

In so short a paper it would be out of place to enter into matters of detail, and I think, even with unlimited time at my disposal, I should hesitate before laying down any rules or restrictions as to methods of work or treatment of subjects. One might with equal right prescribe the style in which an architect

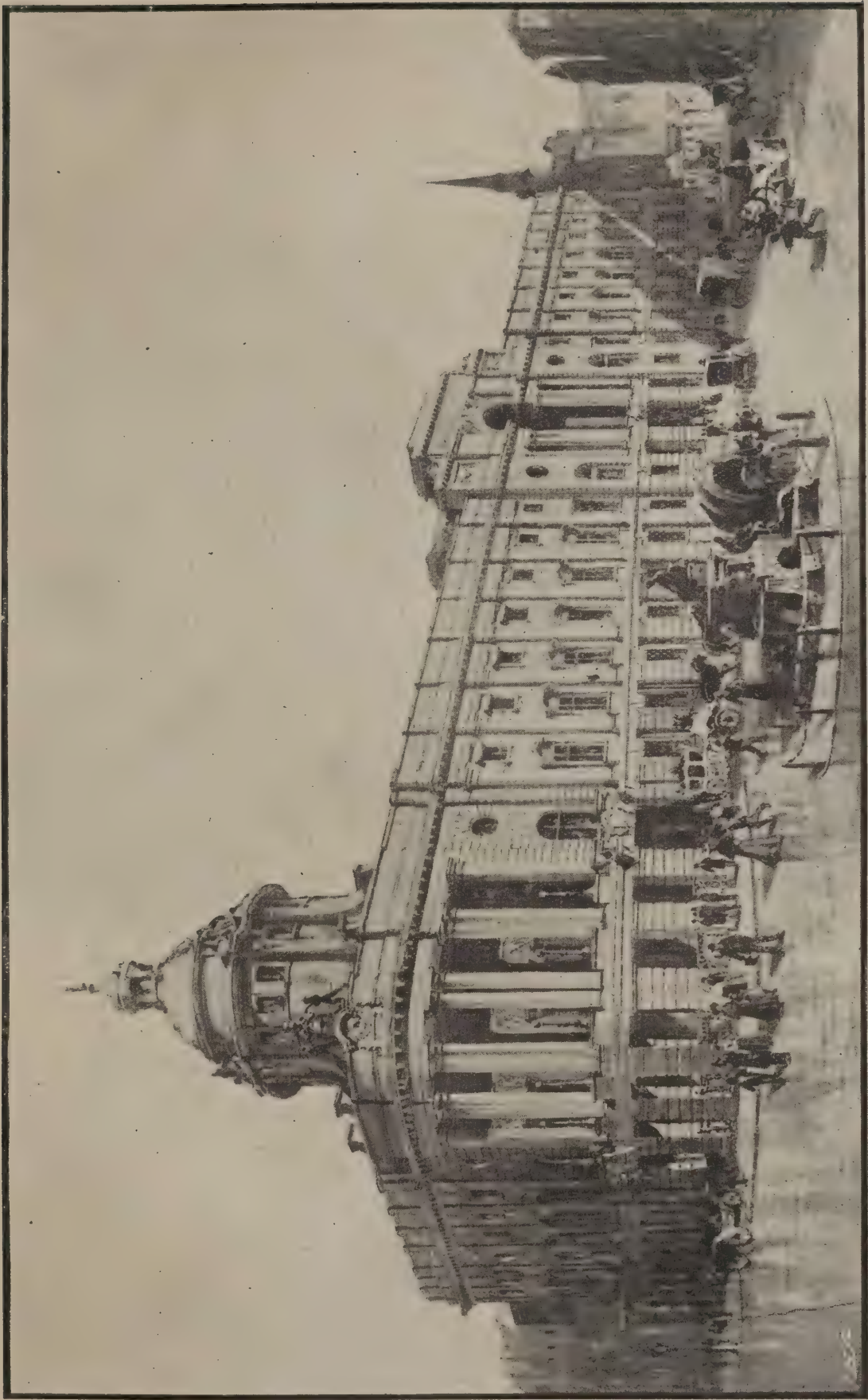
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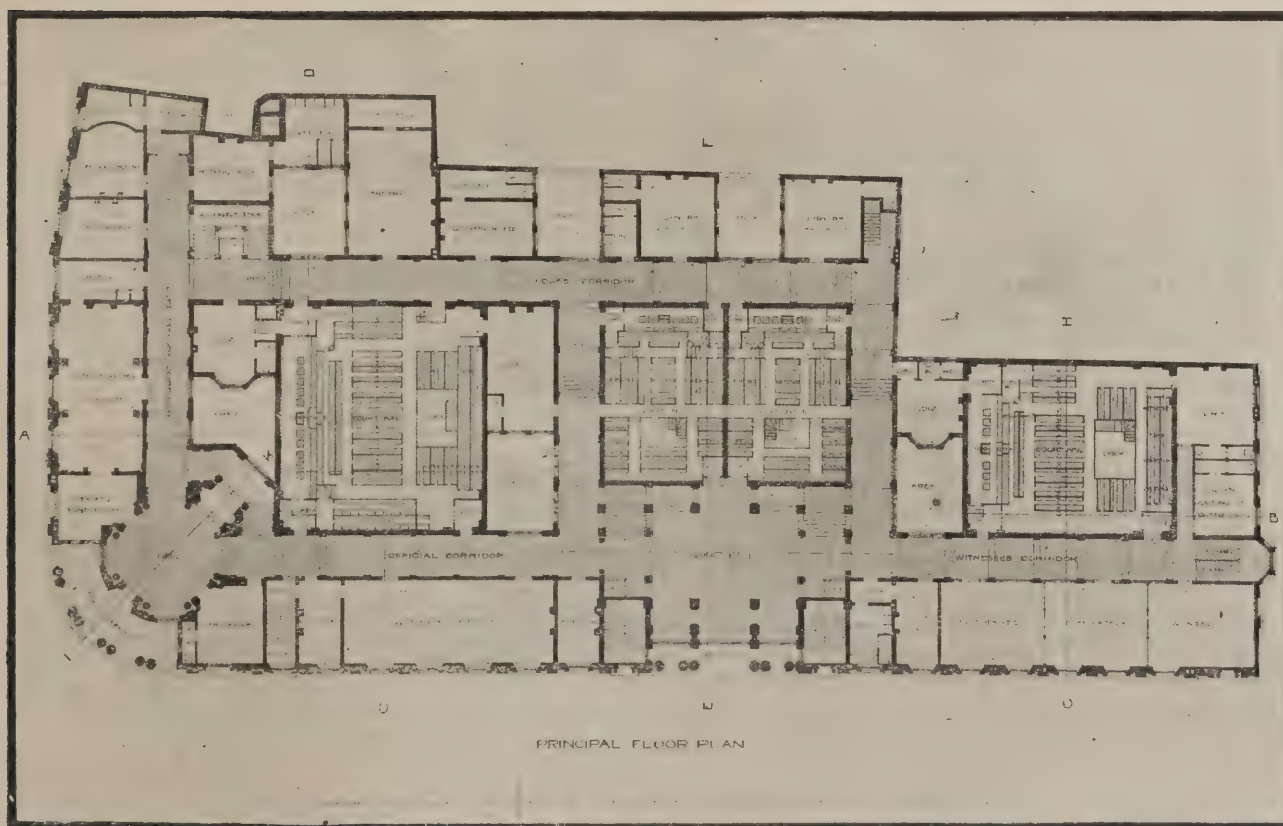
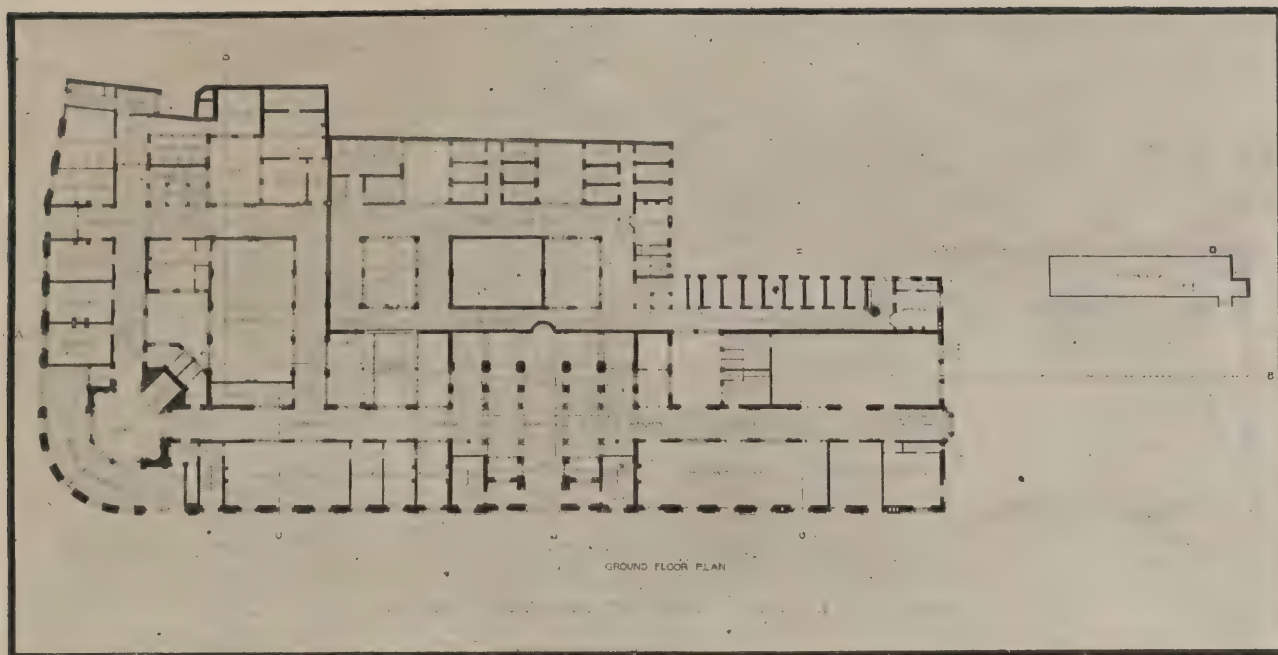
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NEW SESSIONS HOUSE IN OLD BAILEY: THE ACCEPTED DESIGN BY EDWARD W. MOUNTFORD, F.R.I.B.A.



NEW SESSIONS HOUSE IN OLD BAILEY: DESIGN BY JOHN BELCHER, A.R.A., F.R.I.B.A.



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should build. The only two conditions I consider essential are that the sculpture, whatever its character and wherever placed, should be seen in its entirety, and that the form the work takes should be the suitable one for

The Position ;

not, as in the case of the frieze that runs round the Athenæum Club in Pall Mall, and again over the gateway at Hyde Park Corner, which are copies of the well-known Panathenaic frieze of the Parthenon, but which are placed under quite different conditions of light and position than those that guided the Greek architect and sculptor in their choice of the style of relief.

In decoration the sculptor should assert his own individuality, and not be bound by effete laws of design; there is no other golden rule to follow to insure interest and vivacity—and interest and vivacity are two of the three elements necessary to all true decoration. The remaining element is the sense of restraint alluded to before, for, although the spectator should be conscious of the expression of movement, yet he craves at the same time for repose, and this is added by the restraining force of architectural surroundings. This restraint, instead of hampering the sculptor, really brings out the strength of his art, and shows its manifold capabilities of adaptation to required ends.

To sum up, I have intentionally dwelt upon the advantages accruing to sculpture rather than to architecture in this desired union of the two arts, and have left the gain, that would belong to architecture, to inference only. This I regret the less, as that side of the question has been fully entered into in the wider treatment accorded by the reader of the previous paper. The points I would insist upon are these: that it is against the best traditions of the past to divorce the arts of architecture and sculpture; that this divorce leads to a low estimate of sculptural decoration, as well as to a want of direction and meaning in the sculptor's work; that gallery exhibitions of isolated works belittle the art of sculpture; that portrait sculpture is shorn of its character and truth, which can only be truly given when incorporated in a wide scheme of decoration. For these reasons, therefore, I maintain that a healthy demand for sculpture and a capable and satisfactory development of the art can only be attained by returning once more to the traditions of the past and effecting a closer union of the kindred arts—architecture and sculpture.

The Discussion.

Mr. Selwyn Image, in opening the discussion, referred to the great service the conference would do in bringing artists in touch with one another, thus insisting upon that great principle, the Unity of art.

Mr. Heywood Sumner said that from the architects' point of view, it was of course perfectly true what Mr. Mountford had said, that architecture could stand alone, independent of painting and sculpture, but this wholesome admonition, seemingly thought necessary for the Institute to insist upon, was a mere flourish, and Mr. Mountford had qualified it directly after. Mother Architecture was exactly akin to Mother Earth; no one would dare to say that Mother Earth should not have been enriched with life, nor should architecture be divorced from its life-giving qualities. The wealth of colour in ancient works of architecture had been spoken of. If we saw them as they were originally, we should be overwhelmed with the wealth of colour. If we had in our dress plenty of colour, we should appreciate brightly coloured surroundings. With regard to disputes between co-workers in the arts, they often forgot that in the past the same differences arose. In regard to the statues in Westminster Abbey, he would be sorry not to have them there.

Mr. Beresford Pite spoke with reference to Sir W. Richmond's remarks as to "styles" and "style." As a general rule, to rob an architect of styles was to rob him of language, to reduce him to impotence. Mr. Street had said in

some lectures of his that style was the expression of character—the expression of the artist's feeling rather than the copying of certain forms of architecture. That from a man who was regarded as bound hand and foot to the corpse of Gothic was remarkable. In the century they had had one or two generations who worked in a dead style, but Burges and Street lived themselves into the thirteenth century, and in later times Mr. Bodley had lived himself into the fifteenth century. The enjoyment felt in the work of these men was purely from the same point of view. It was the same in other arts; no one would say that Burne-Jones's paintings were characteristic of the nineteenth century; when their charm was analysed, it was found to be in the reminiscence of the archaic rendering of the Early Renaissance. The difficulty encountered was that they were living in the close of a period of Renaissance, and they could not work themselves free from it. If an architect was stripped of his architectural styles, he was left to his own resources, to his own character. For the past five years they had seen this struggling, and the production of the simple, whitewashed, low-roomed, countryside dwelling. This had resolved itself into the plain town-house of the Magpie and Stump order. The architect had rubbed out everything, leaving only the bare walls and windows, nice as far as it went, but it did not go far enough. But if that architect was to undertake a monumental work, say a national memorial work, he would be bound to go to the Renaissance. Mr. Pite was bound to conclude that the cultivation of architectural character would have to be tried before the cultivation of architectural style from character was attempted.

Mr. William Woodward next spoke, and was followed by Mr. Aston Webb, A.R.A., who referred to the system pursued in building the Royal Albert Hall as an instance of the manner in which architects, painters and sculptors should work together. The fault of greater opportunities not being given to painters did not altogether lie with the architect; the painter had also been attracted by picture painting to the exclusion of decorative painting. It was to be regretted that there was no method of keeping wall paintings permanent, for no art without permanency was likely to call forth the best efforts of artists.

Mr. H. G. Ibberson thought the great difficulty with regard to the employment of the painter or sculptor was the non-appreciation of the public. The general public were like the statement that Nature abhorred a vacuum—they abhorred a vacancy in any part of a building. The public could not appreciate a piece of blank wall, and did not think they were getting their money's worth if the decoration was small but good.

Mr. Geoffrey Lucas, in reference to the question of a man's individuality coming into his buildings, said it was very questionable how much of his individuality a man should put in, for in buildings of the past it would have been impossible, were the names of the authors not known, to have picked out those by each man. Rather should an architect grasp the spirit of the age.

Mr. W. H. Seth-Smith referred to the system of training young architects pursued by the Architectural Association.

Mr. A. N. Paterson said painters were inclined to expect such large payments for small canvasses that they did not care to undertake decorative painting.

Mr. Mountford, in reply, said he entirely agreed with all Sir W. Richmond had said in regard to "styles" and "style," but thought architects must always, to an extent, have the "styles" with them.

Sir W. Richmond, in acknowledging, agreed that the matter rested a very great deal with the public. In reply to Mr. Webb, he had found that for fresco paintings there was a material which could stand: simply the yoke of egg and oil or wine of vinegar.

Mr. Mullins said that he did not wish his remarks with regard to the statues in Westminster Abbey to be taken to mean that he would have any removed.

On the motion of Mr. Emerson, votes of

thanks were accorded to the readers of the papers.

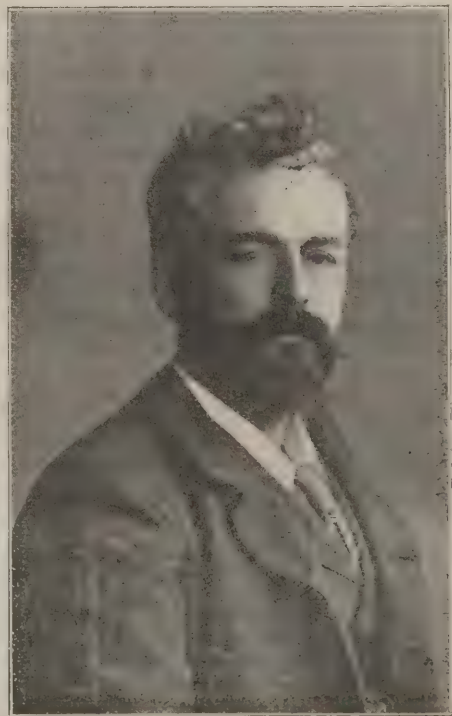
THE IDEAL CITY.

This was the subject for discussion at Wednesday evening's meeting, and it was introduced by four papers, each dealing with the subject from a different standpoint. Mr. E. A. Gruning presided, and there was a good attendance. The readers of the papers were Mr. Halsey Ricardo, the Earl of Meath, Mr. T. Stirling Lee, and Mr. W. D. Caröe.

Mr. Halsey Ricardo's Paper.

The object of my paper to-night, said Mr. Ricardo, is to try and precipitate, by means of discussion and suggestion, some conclusions as to what an ideal city should be, and also some agreement as to what a city should not contain that sets up any claims to be beautiful. What is it we want? We go up and down this city of London, for instance, open-eyed and open-mouthed, eager to observe and loud in our expressions of disapproval; but what do we want? What are our ideals? Abstract disapproval is so easy, and often so unhelpful—almost any one of us can condemn, but when bidden to specify alterations, difficulties—the difficulties in fact—at once begin to appear.

Are we agreed as to what we want? And by we I do not only mean architects, I mean amateurs of Architecture, cultivated people, men of taste, those who have given thought to the matter, made their observations on other towns and digested them, County Councillors, all those who have the care and the guardianship of this our city. What is it you want, and are you agreed upon it? What are your ideals? We architects want to know. They are your ideals that are being carried out. Architecture, so far as it is living art, is the realisation of the aims and needs of those that produce it, and the vernacular architecture of any given period is the index of the general feeling and temper of that age. The few sporadic attempts to do scholarly, antiquarian, or reactionary work have little influence on contemporary work, except where it happens to find itself in sympathy with those views; the great mass of building and construction generally is the true exponent of the popular view of architecture. Are you content? and, if so, why do you grumble? We talk of a city being beautiful, but we smile at the idea of making London so. Why? Even if, in these humble-minded days, that were too much to propose, could we



MR. HALSEY RICARDO.

not, if we wished, prevent its growing uglier? As it is, London gets more and more hideous every day. We never see an old house threatened with demolition, but what we have to fear a loss in its successor; we never see a concerted design in architecture, such as some of our squares, a few streets like Stratford Place and others, but we know their harmony is soon to be disturbed, and that quality of unity got by gracious co-operation will be burst in upon and flung into the gutter. We have buildings we call masterpieces—can we not at least preserve them unharmed? We allow the appearance of Somerset House to be defaced by mean additions. We talk of alterations to Waterloo Bridge; Hawksmoor's Church is undermined by a railway station; the moment a monument comes in the way of what is called the "convenience of the public," it is doomed and disappears.

Need for Agreement.

Is it true, is it probable, that we cannot have what we want? What is it stands in the way? It isn't money. We can afford to have our way. We hear ourselves described as an indomitable people, and we accept the epithet with complacency; it is not from want of saying that we know we are rich. We may not be an artistic people, but we are good organisers and governors, and such a standard of magnificence as Rome achieved might be ours did we desire it. The trouble is that we are not agreed as to what we want, and we are not sure that we ought to want it. Directly we are all agreed upon some public matter, an architecture springs up in response, and according to the quality of the sentiment, so is its interest. The National Conscience has for long been deeply stirred by the sight of helpless suffering, and the hospitals we have built to alleviate that, and to increase our knowledge as to its prevention, form one of the contributions of fine living architecture to the nineteenth century. So, too, are the great asylums. The care and thought, the quintessence of medical observation and research, have been gathered up and sublimed into formulated necessities, which have dominated the buildings erected in compliance, and by their insistence have given strength and history, and interest to these structures.

Public Institutions.

Other contributions to the architecture of our time are our Board schools, museums, public libraries, and technical institutes, based also on a popular desire to improve the conditions of our life. Abate something of the virtue of the impulse, and the standard of interest in style of architecture falls immediately. The theatres, restaurants, and gin palaces all rise in response to the popular call, and the nobleness of the demand dictates, in proportion, the nobility of the architecture. But in these instances there is, broadly speaking, a general agreement and codification of our desires; it is not so as regards the general treatment of our city. What is the view one is to take of London? That it is a vast workaday centre, from which all who are fortunate enough flee, after the day's work is done, to a bed in the country? If so, let us at once set about accentuating the position and importance of the railway stations, let us widen and straighten the routes between them, let us concentrate within a ring, if possible, the industrial nucleus, and separate the residential from it with an insulating zone of open space. We shall not make the city beautiful, it is true, but we might possibly its suburbs.

A Workshop?

The day has gone by when the city was walled round for shelter and defence, and the great gates of old time have been replaced now by those huge vomitories—the railway termini. But the gates of the walled city were prominent features both from within and without; their purpose was unmistakable and resulted in characteristic form. Cannot we do as much for our railway stations? Merely to clear away a wide space in front of them and to make the route spacious and direct, would do much to give them distinction.

Although I myself repudiate the idea of treating London as a mere workshop, still it is at least a definite treatment, a definite conception, and definition is what is at present so forcibly lacking in the handling of our city. The anxious, fevered scuttle from station to office, and from office back again to catch the train, is not a particularly fine idea, and is not likely to bring about particularly fine results; but, poor as they would be, they would be preferable to the present welter and the sense of compromise got from adjusting small individual claims. Or shall we take the view of London that it is a place to be proud of, and that we mean to be proud of it and keep it as a source of pride? There are many things that would justify us in this attitude—the river and some of the bridges that span it, and the Embankment that confines it; the Abbey, the Cathedral, the many churches and public buildings, some few of our squares and streets—possibly our parks.

And what should we do? Well, I am talking of the Ideal City, and I permit myself some flights of fancy that may be condemned as not altogether practical, though I try to keep on the hither side of Utopia, and so I answer, "Keep them." Keep our public buildings, keep our bridges, our squares, and our streets (those that we are agreed upon as embellishments of our city), keep them as they stand, at least for the present. As they are the subjects of our pride, let us treat them so; let the access to them be obvious and direct. Take the river for example. Let it be embanked on both sides, and let us have occasional glimpses of it from the Strand, wider and less squalid than the few grudging peeps which we can with difficulty now get. We are incessantly increasing the span of its bridges to facilitate the water traffic, let us have a traffic that may be pleasant to the eye and handy to the passenger.

Cleanliness, Processions, Music.

A swift service of small steamboats, trim and tidy, would help to relieve the congestion of our streets, and in many weathers and to many people would be a welcome alternative to the pavement. I said "trim and tidy" because on the grounds, seemingly, that we are rich and industrious we can't afford to be clean and decent, and haven't the time to be bothered with the necessary trouble; so London is disgusting and smelly owing to our slovenliness. The pride in a neat and perfect turn-out still clings to the stable, the harness-room, and the coach-house, and, by an association of ideas, somewhat affects the railway train; but the pavement is a fixed, interminable spittoon, and the tops of omnibuses a travelling one. In my ideal city, my impracticable Utopia, I would have a higher standard of cleanliness and scavenging. I would have more pageantry, more processions; and I would make many of them go by water. The Mayor and his state barges should be a familiar sight on the Thames. And I should like more music, especially on the water. The organ-grinder, the solo instrumentalist, "the German band," and all such small enterprise I would banish utterly from the streets, as well as yelling ruffians, street cries, and newspaper pitches; but in compensation I would increase the quantity of music already provided by the County Council, and I would provide a supply of kiosks in the streets where people could buy their papers in peace. We are surely all agreed that noise and disorder are ugly features in a city as well as in a house; and yet we permit great shouting letters, winking and glaring lights, every form of eye-torture that may sear itself indelibly on the brain—for the object of many of these advertisements is that you may never forget them again for the rest of your life. In the "ideal city" there would be a control over these street distractions, so as to secure some uniformity of effect. Nor should the streets preserve their haphazard character, so far as their general growth and expansion may give us chance for correction. The great streams of traffic should cross each other at right angles. The railway stations, the great creators of the swift-going traffic, should be recognised and their influence accepted, and the shortest direct routes to

them taken in hand and developed to meet the case.

Back-waters and Retreats.

But life is not all a hurrying from one ant-hill to another; there is such a thing as leisure and the enjoyment of it, there is such a thing as work which may be done deliberately and in quiet. Let us preserve, then, the backwaters and retreats, where we can find them in London, and insure that they shall not be arbitrarily invaded. They should be the shelters of our monuments. Each year we erect fresh statues in memory of famous men, but we have nowhere to put them, and they stand in the howling chaos of our streets, pitiable and helpless, horribly misplaced—or else they are thrust out of sight in narrow streets or chance corners. What a terrible misprision of their qualities this argues! It is part of the same temper that treats a piece of sculpture, an obelisk, or a fountain quite without reference to the site it has to occupy or its proper function, which is to add to, and accentuate, the general architectonic character of the locality it is to adorn. Architecture and decorative and monumental sculpture are not, as it seems to be thought, matters merely of detail, and immaterial how they may be combined, having no necessary connection—architecture in our cities should be the expression of our ideas, the ideas of a community, our corporate, not our individual desires. The aspect of our streets concerns us all, and such individuality as there may be in it is pleasant to us, so far as it reflects the history of the locality and such human characteristics as are obviously gracious and kindly.

Colour.

Lastly, there is the question of colour in our ideal city—colour, natural and artificial—both of great consequence as regards beauty and both requiring broad concerted treatment. Natural colours resolves itself into grass, trees, shrubs, and flowers.

I will leave the parks as outside the province of my paper and consider the use of grass and foliage, as it concerns our streets and open spaces. That much can be done by a mere strip of grass is shown by the breadth in front of the National Gallery. But why should we pause there? Why not compress to half their area the fountain basins in Trafalgar Square and turf the square—introducing, during the summer months, a few formal-shaped trees in tubs or boxes, to give contrast and variety to the green? Then the trees in our streets. At present they are planted at the sides of our streets, in the pavements, and the contours of the trees chosen are incompatible with the position assigned. They cannot grow properly without interfering with the light and air of the adjacent houses. Trees, such as planes, with spreading foliage, should be planted in the centre of the streets, where they can flourish unmutated and be of service in dividing the traffic. Where practicable, our streets should open to disclose a vista of green or a peep into the verdure of our squares or a glance on to the parterres of our Embankment. Of artificial colour little has been tried, and that little, done in experimental, isolated ways, is worse than useless. Colour must be treated broadly and in mass; in small quantities it is mainly irritating by its spottiness and the want of co-operation from the rest of its surroundings. Colour, quite as much as any other quality of architecture, must be used to express not merely individual whim and fancy, but must symbolise some general purpose and aspiration. Consequently, if we are to have colour in our streets, we must treat it heraldically. This has been recognised in some measure already, where colour has been employed by bodies of men—such as the State, vestries, parish councils, railway, and other companies. Here in London each parish colours its lamp-posts the parish colours, the dust and water carts carry the proper parochial bearings and legends; throughout Great Britain scarlet is the official tincture of the Post Office, black and white the traditional heraldry of the Coastguard stations. Our railway trains

and our omnibuses tell by their colour the companies to which they belong and the routes they take. We have London already divided up into various divisions—electoral, parochial, and the like. Let us take advantage of these and display those divisions outwardly to the eye. Already the parish lamp-posts, and other obstacles, are distinguished from each other by pattern and colour; we might go farther and define the boundaries of the parish by the colour of the area railings, and some form of superposed tint or quartering in part might define the electoral divisions. Moreover, the vestry hall and parish library would gather up in concentrated form the accepted heraldry of their office and locality, making them landmarks in the neighbourhood by the splendid richness of their colour, containing in their accumulation the separate badges and symbols elsewhere distributed through the locality, and explaining in the sum of their achievements the various voices whose utterances form the chorus of civic life.

Many are the "ideal cities" that might be shadowed forth—but our first concern is to settle what is to be our attitude towards the city as at present. Are we here on sufferance only, or do we mean to reside in it and consequently make it worth residing in? This point settled, the conditions of our residence will help to formulate our ideal, and by organised co-operation we can work towards this end, and once clear in our minds what we want we can push confidently towards the fulfilment.

Parks and Open Spaces.

The paper on this subject, which was read by the Right Hon. the Earl of Meath, Chairman of the Metropolitan Public Gardens Association, had been prepared by Mrs. Basil Holmes, hon. secretary of that association. The Earl said: It is difficult in the course of a quarter of an hour to speak of work which has been going on in our country for several centuries, or rightly to convey any idea of the magnitude of the need for open spaces and the various manners in which succeeding generations have endeavoured or have neglected to meet this need. The tendency to congregate into towns has always been in existence, but there has also been a corresponding desire on the part of the people to spend their holidays and the unoccupied hours of their working days in the fields and amongst the trees and hedges. The early chroniclers of English history describe all manner of sports in the field, the making of spring garlands, May-day feasts, and rejoicings in the woods, and many pleasures and pastimes on the open lands, the moors or commons, surrounding the towns and villages. The "open space movement" has been represented during the past three or four hundred years by innumerable struggles to keep free from encroachment such public lands as the Moorfields, on the north side of the City of London, and the commons, heaths, and forests throughout England, by ancient enactments limiting the increase of towns and the proximity of houses, by the opening of the royal parks, by the formation of square gardens and pleasure grounds, by the provision of forecourts or back yards to both small and large houses, and by public and private benefactions and legacies of lands to be dedicated to the people as village greens, commons, parks, or allotments. During the nineteenth century, when the development of the towns became so extraordinarily rapid, a more vigorous effort was needed to provide breathing spaces for their inhabitants; and since the year 1847 many Acts of Parliament have been passed relating wholly or partly to the preservation, acquisition, or maintenance of open spaces. Voluntary societies have come into existence to preserve or provide public recreation grounds, with the result that large parks and commons have been secured in and around our towns, churchyards, squares, and other small spaces have been laid out amongst the streets, while trees have been planted and seats have been placed in the public thoroughfares. But the ideal citizens of an ideal city would not be content with such spasmodic efforts and such varied methods of procedure. They would

provide open spaces in a systematic manner from the time of the commencement of the building of their cities. And I can only hope to throw out a few hints as to the way in which this might be accomplished.

Squares.

The plan so much in vogue about fifty or one hundred years ago of building houses in "squares" has much to commend it. But such squares should not surround gardens enclosed with railings, to which entrance is only allowed to the tenants of a certain limited number of houses. The square gardens should resemble the Continental "places"—open day and night, provided with grass, trees, fountains, flower-beds, and seats, and, like the surrounding streets, under the control and patrol of the police. The wider roads should be planted with trees, either near the houses or in a double row in the centre of the carriage-way; this would afford shelter in rain and shade in sunshine. All the public elementary schools should have good playgrounds attached, open to all comers out of school hours; and in addition to these there should be separate spaces, playing fields or open-air gymnasia provided for children, with proper instruction in the use of gymnastic apparatus; so that it might be impossible for any house in the city to be situated more than a quarter of a mile from a public playground. And these playgrounds should be attractive as well as useful, with a part set aside for trees and shrubs, flowers and seats. No large division or ward of the ideal city should be without its park, capable of being illuminated by night, where broad expanses of grass might be seen, and where stretches of water in lakes or streams might bring refreshment to the eye. The public seats should be in groups, in well-lighted parts of the thoroughfares; the drinking fountains and troughs should be artistically designed and pleasant to look upon; outdoor annexes to the restaurants should be encouraged; and every effort should be made to beautify the streets—not monotonously, but with taste and variety. What may be termed the

Modern Open Space Movement

was started before the close of the first half of the nineteenth century. The late Sir Edwin Chadwick, that great pioneer of sanitary reform, made a report in 1842 on the "Effect of Public Walks and Gardens on the Health and Morals of the Lower Classes," and he then used the phrase "open spaces." He also advocated the preservation as public land of the burial-grounds in towns when they should be disused. It was greatly due to his careful investigations and reports that most of these graveyards were closed in 1853 and the succeeding years, although another twenty-two years elapsed before any of them were laid out as public gardens. Now, in London alone, there are more than one hundred open to the public, nearly all being attractively laid out. Some of the square gardens have also been thrown open, notably those belonging to the Duke of Westminster (owing to the wisdom and generosity of the late Duke) and those on the estate of the Marquis of Northampton; and they now number, in London, twenty-seven.

I need hardly dwell on the very great success that has attended the work of the Commons Preservation Society, the Metropolitan Public Gardens Association, and the Open Spaces Branch of the Kyrle Society. These agencies have, by their labours and their example, stirred up such public authorities as H.M. Office of Works, the London County Council, the Metropolitan vestries, and the provincial county councils and municipal bodies, until it is now possible to say that the desire to acquire open spaces or recreation grounds is universal, especially in the towns and their suburbs. It is still a little difficult for village communities to understand their need of securing definite playing-fields or public gardens where they have no green or common for recreation; but the idea has taken root in the towns, and will in time extend to the villages. Full powers are now given to these public bodies, and to trustees of private estates, to give, to acquire, to lay out, or to maintain open spaces, and information on any

point connected with this subject will be gladly supplied by the secretary of the Metropolitan Public Gardens Association, 83, Lancaster Gate, W.

The Growth of the Suburbs.

There is much room for improvement in the way we build our towns and allow our suburbs to stretch out from them, ruthlessly swallowing up the rural surroundings and picturesque estates; but if the public mind is educated to the idea of preserving what is beautiful and of cultivating what is wholesome, if land-owners will only realise that the value of building land rises in proportion to the amount of timbered open space adjoining it, if people will understand that the more recreation grounds there are the quieter and less crowded each one will be, I feel sure that the architects of the future will so arrange their buildings as to preserve trees instead of destroying them, and that the cities of the future will no longer be vast accumulations of monotonous rows of houses, but will be interspersed with smiling gardens and healthy playgrounds, and surrounded by parks and woods and playing-fields.

Streets and Bridges: Considered in Connection with Our "Unideal" City.

This was the title given to his paper by Mr. W. D. Caröe, M.A., F.S.A., who said: The very limited time at our disposal for the discussion of two very large subjects tempts me to the method of a recent manifesto by a notable politician in retirement, whereby the soul of suggestive brevity seems to lie in the promulgation of abstruse queries, answerable by each man for himself. Thus—in regard to my first subject:—Shall our streets be straight or curved? Shall we adopt formal architecture, or the picturesque, or is indeed Palladian the only possible? Do we approve of Haussmannising ancient cities? Are boulevards beautiful and entirely conducive to the dignified display of architecture? Is the dignity of our streets to be measured only by their width, or the height of the buildings? How can we prevent the finest building sites passing into the hands of the architect speculator, whose productions are too often a menace to the continued sanity of those who care—and sometimes it seems also of those who are responsible—for their stability? How far shall street architecture or our public monuments be controlled, as in Paris, by a central authority, and how shall that authority be constituted? How can we instil into county councils and corporations dealing with vast architectural problems an intelligent appreciation of the accurate procedure which will ensure certainly successful results without doing indignity to our art or our honourable profession?

All these and many more springs of useful enquiry I commend to each one of you, believing that Lord Rosebery's method is perhaps more useful to us to-day than that of Socrates, and that individual taste and openings for a varying treatment under varying circumstances will help us to more fertile discussion as well as to more fertile result than any suggestions I might be able to lay before you within those limits of your time which I am permitted to occupy.

What is a Fine Street?

Intertwined with—indeed, comprehending all these queries—is the one, "How can we interest and instruct the public in architectural scholarship?" This Mr. Reginald Blomfield will deal with to-morrow, but it suggests to me to declare to you my devout belief that the finest street is not the widest street, and not necessarily even the airiest street, or the one best adapted to traffic, but first the one which has the most beautiful buildings beautifully placed; and every step taken in pursuit of our glorious ideals of light, air, safety, and convenience, which has even in attaining these turned us away from this more glorious hope and more desirable goal of beauty, is a step lost and an opportunity wasted. In which connection I will make my only reference to the archaeology of this wide subject, and bid you compare La

Rue de Fèves, at Lisieux, with our own airified and widespread Whitechapel. The chapter of

Lost Opportunities

in our streets is indeed a long one. So often might some beauty in small as well as large things have accompanied usefulness: and we may range in our quest from the Tate Gallery to the cabmen's shelter, from the cast-iron trimmings of the Tower Bridge to the cast-iron tunic of the London policeman. Most true is it that all the multifold and pressing necessities of modern city life in our streets combine to show us what we are in our appreciation of a city's dignity—the monuments, the advertisements, the open spaces, the trams, the omnibuses, the lamps and lamp-posts—aye! even the post-boxes, and the peelers, to say nothing of the telegraph and tram wires. Who shall say that we have educated our appreciations in these matters? or that they have not a large bearing upon our external city life, as we would wish to see and let others see it? To take an instance. The lamp-posts of formidable design cannot by night destroy the decorative chain which seems to thread through the maze of London streets; but what might those standards have done to enhance it by day, had they been produced from a design of graceful simplicity? There seems an opening for better things in the recent Act obtained by the City conferring the power to place lamps and wires upon house fronts. But how can any self-respecting householder (save he who holds a "public") welcome upon his house-front a lamp designed in the same spirit (to give three examples) as the new arc-light standards of the vestry of St. Martin's, the drain ventilators which tower in unsupported hideousness along the Chelsea Embankment and elsewhere, or those bloated posts whose nightly office it is to cast lurid gleams upon our most admirable Whitehall Charles I., designed as these are to dwarf and disfigure the proportions of pedestal and statue. To the official mind every statue seems in need of these overpowering torch-bearers, and with Charles I. and Lord Strathnairn thus officially glorified we may expect to behold the Duke of York and Lord Nelson each with his quota of proportionately prodigious satellites, lest perchance we may overlook some shade of our heroes' sky-seeking glory when we stand to study these things upon starless nights or in November gloom.

Further, let me instance the lack of imagination we display in the laying out of open spaces, often cleared at great cost. Are asphalt and latrines either satisfactory or picturesque when they appear as the exclusive features, perhaps eked out with a £5 penalty seat? I am not claiming much for that profession of which I am proud to be a humble member when I say that there are scores of able designers within it who could show how such things might be better done if only they were given a chance.

Posters and Advertising.

And what of the posters—those aching sores—the poor man's picture gallery (?)—so claimed by his false friends and tasteless toadies. This is a matter upon which I must refer you to Mr. Richardson Evans, the king-post of that admirable society called "Scapa" (The Society for Checking the Abuses of Public Advertising), of which I doubt not every person in this room is (or ought to be) an active member. Mr. Evans has most lucidly illuminated this question from time to time in the public press and elsewhere. But, in brief, let us clear our minds, and cease canting about the poor man's pictures and the rich manufacturer's glorious liberty of puffing (at our expense) his nostrums. Shall we not rather assure ourselves that the wanton and vulgar disfigurement of our streets can only increase the vulgarity of those who are so constituted as to appreciate such things, and let us vote at least that, if they must be, the wealthy puffer shall be taxed highly for the infliction of his puffs. In our ideal city, where all our street architecture will be beautiful, will we admit such imposition unheeded? In proportion as we take no pains to regulate the monstrous

vulgarity of our hoardings, do we confess our lack of care, of pride and of instinct for civic dignity and progress.

Holborn to the Strand.

It would be inappropriate to deal with this subject of streets without special reference to the great new thoroughfare and the opening-out of the Strand by the London County Council, the largest enterprise of its kind recently attempted and one which may be fruitful of much that we desire. Here we may perhaps turn our backs for a while upon Lord Rosebery's witty method in at least formulating hopes for the final direction these new opportunities may take.

The question of straight streets or curved arises where the plan concerns new cuttings to be made, not the following or widening of old thoroughfares, formed as they mostly are upon the curved lines of once wandering country lanes or dykes.

Now the cutting of a straight street through a district, already irregularly streeted, at once lands us in the difficulty of all kinds of awkward and canted corners. Nothing can be more unhappy than the sudden ending of a large building in a sharp, acute angle. Instances are numerous showing how this important point has been neglected through a lack of architectural instinct in the initial laying down of new streets—in many instances where it is clear that a very slight change of plan might have brought about results as much more desirable from a practical as they would certainly have been from an architectural point of view. I would make an incidental point upon this head—that however experienced in practical considerations may be the permanent official adviser to the Local Authority, yet an architect of repute and sound judgment should be associated with him in the conception of new streets. I would desire to insist that a graceful sweep, whereby awkward corners and angles are avoided, is better than the sacrifice of everything, even in the main thoroughfare, to mere straightness. I would further bring forward the simple suggestion of sweeping old side streets into the new main one in such a manner that graceful junctions are secured, which seems indeed an elementary expedient, but not one on that account the more observed or the less important.

Uniformity not Wanted.

I personally concur unhesitatingly in the desire expressed by the London County Council for a monumental treatment in dealing with the Strand Island and its approaches, and would gladly see such treatment continued as far as Holborn. But a monumental treatment need not mean the continuation of one uniform design throughout the whole length. Might not each block between the intersecting side streets be treated separately as a whole, it being essential in this case (as it is indeed in the whole matter) that the exterior, at any rate, of each such block should be under the control of one competent architect? Thus we might secure a result at once monumental, varied, and interesting, and not of a more than Parisian monotony. To some extent a similar dealing with broad frontages was adopted by the late Duke of Westminster in Mayfair, and but for the fussy influence of the terra-cotta craze, which happened to come at an unfortunate period in the development of the scheme, the work done might have been even more successful than it is. In their scheme, however finally attained, the London County Council must bear in mind rigidly to control the future alteration of façades and roofs, as well as their erection, or we may get a repetition of Regent Street, where excellent intentions, also upon the lines I have indicated, have led to disastrous results in the hands of unsympathetic or ill-trained modern maulers and re-designers.

I must not in this City of London conclude this part of my paper without brief reference to that most brilliant example of skill in the laying out of a city as proposed by Sir Christopher Wren for the rebuilding of London after the Great Fire of 1666. This is deft indeed in the avoidance of those errors to which I have referred. The introduction of

polygonal figures concentrating upon important points is so cleverly conceived that I have had the plan printed and handed round the meeting, so that those not already intimate with it may study it for themselves at leisure. It forms a more complete paper upon the subject than any I could devise to lay before you, and shows how in skilful hands ancient sites, boundaries, gateways, and streets may all be brought into order and made to contribute to an ideal whole.

Some Good Bridges.

There is no subject which excites my architectural instincts, pleasures, or regrets more than the contemplation of a bridge, be it of stone, wood, or iron. There exists what I venture to call a practical poetry about such a structure, nobly conceived, appealing to all those subtle senses set in motion by architectural appreciation. And it is not to be gainsaid that every age up to our own which has included bridge-building among its arts and sciences has unequivocally recognised this fact. I recall to you in support of this statement the numerous examples, from the Roman era onwards through Mediævalism, which loved to hallow the bridge by the chapel, down even to our own London Bridge. And while it is also true that the inspiration which has ever pervaded bridge-building has not left untouched some of our earlier engineers—among the honourable roll of whom I would name Rennie of London Bridge, Telford of Menai Bridge, Brunel of his Cornish trestles, Adams of that exquisite Eskutér Bridge at Buda-Pesth—yet it may not be denied that with the change from the direction of the architect to that of the engineer has come that lack of appreciation of beauty and fitness, resulting in those hideous bridges which disfigure our roads, our rivers, and our railways.

The Engineer as Bridge-builder.

Not for one moment do I depreciate the vast benefits to the human race conferred upon it by modern engineering skill. Had they only been as artistically successful in constructing their bridges as English engineers have been in the outward forms of their best locomotives we should have no complaint, but only admiration for all their work. But the problem was not the same. Quite absent from the locomotive, into the engineering problems of the bridge enters the element of architectural scholarship; and this the engineers have, with a few noble exceptions, made no attempt to master. When the importance of an architectural treatment has been recognised it seems generally to have been relegated to the office sweeper, who has swept up the torn pages of mutilated textbooks or manufacturers' catalogues and failed to consign them to the waste-paper basket. Albert Bridge, Battersea, Blackfriars, Charing Cross, Cannon Street, Chelsea, are specially our A.B.C. of how not to build bridges; and Vauxhall brings us nearly to the other end of an alphabet which terminates in Westminster. But it is easier to reckon the other way, when we find we have only two bridges out of seventeen within the Metropolitan area which are worthy to be named among the monuments of London.

I wish in these few remarks specially to insist upon the essentially monumental character of a great bridge; and I would urge upon our Members of Parliament, who grant bridge-building powers to railway companies, and upon our County Councillors, to excite their sluggish imagination and rise to the level of recognising at once and for all time that a bridge across the Thames is upon the same plane of monumental and architectural importance as St. Paul's itself, and demands the same developed architectural power to design or to embellish it. As regards the railway bridges, admitting fully their necessity, there is no excuse. In laying down a railway through a city the cheapest thing is to bridge the river. It does not compare with the buying up of land and claims, coupled with land construction. Yet the public has to pay in outraged sensibility and higher rates, all because of the imperturbable callousness of our Parliamentary representatives. Even now our peers have just

allowed a Bill to pass their honourable House whereby that Charing Cross monstrosity is to spread itself into Northumberland Avenue. No safeguard whatever is given to the public—not even advantage taken of the lever secured by a previous Act, which, in any widening, compelled the company to purchase the block of houses facing the Strand.

But we must admit that a railway company is not bound, in these ultra-commercial days, to hold anything sacred, save dividend; but is that an excuse for the direct representatives of our interests, who control the revenues we provide by our contributions to civic progress and order?

Vauxhall Bridge.

Why, I ask, are the County Council recognising the architectural importance of the Strand improvement and denying the architectural importance of Vauxhall, and, I suppose, Lambeth Bridge to follow? If the architecture in the Strand will cost one million, that at Vauxhall will cost at least half! Why should they assign the one to the united efforts of eight selected architects, and be content with the other as a mere piece of copybook design—in which, in the words of our premier novelist, "that rank which forms, as it were, its highest grace and ornament is mingled and confused with the viler parts of architecture?"

In no sense do I depreciate the importance of the engineer's control of all the bridge-building problems which depend upon engineering science; and if the engineer can prove himself the peer in architectural skill of those others whom I have named I am happy indeed to leave the whole work in his hands. But, as the matter now stands, and with the elaborated design before us, the action of the London County Council is wholly inexplicable and is opposed to the public interest. It is far from conducive to their being trusted as the central authority in whose hands the improvement of London and her monumental architecture may be left indiscriminately or ungrudgingly.

A New Bridge in Paris.

It would be impossible not to refer, in this connection, to the new Pont Alexandre III. at Paris, in which the architects, sculptors, and engineers have collaborated so ably together. The conditions laid down were such that a bridge of steel construction was inevitable, and MM. Résac and Alby had resort to a single span of cast-steel ribs, almost going back, constructively, to our Southwark model. To my own idea the architects and sculptors have been more successful in their share of the work than the engineers, because the latter have not been fully conscious of the limits of their material in appropriate decorative use. The total result, however, is such as to make us jealous of this bridge as the outcome of one of those things they manage better in France—merely because they recognise the simple logic of facts and the teaching of experience and history.

I hope for no more from these few remarks than that they will suffice to stimulate discussion upon subjects which cannot fail to secure your interest. Whether you are architects or otherwise, dwellers in cities or enjoying country life and pursuits, I need not remind you how in these days of strained effort, hydra-headed vulgarity thrusts itself oppressively into the daily life of all of us, and none of the arts suffers from the unwelcome intrusion so much as architecture. And our St. Michael, our hope in wrestling with the monster, must ever be an accurate and refined scholarship, which—be we mere plodders, whose best aspiration is but for a laboured success, or gifted with the imagination and resource of genius—will guide us always down a sure path, and the spread of whose wings will bring back to us beauty in our streets and bridges and all that appertains to our cities. Throughout all history the growth of civic dignity, monumentally and artistically expressed—in other words, the arts of peace—has ever been held indicative of a nation's position, power, and development in civilisation; and, if not always of rectitude in the

past, let this be our added incentive in a new century of Christian effort.

A Sculptor on an Ideal City.

Mr. T. Stirling Lee, who dealt with the subject from a sculptor's point of view, began his paper by quoting Browning's lines:—

The common problem—yours, mine, everyone's—
Is, not to fancy what were fair in Life
Provided it could be; but finding first
What may be, then find how to make it fair
Unto our means—a very different thing.
No abstract, intellectual plan of Life,
Quite irrespective of Life's plainest law.
But one a man, who is man and nothing more,
May lead: Idealise away:
You're welcome; nay, you're wise.

A fair city, he proceeded—is this building castles in the air? No; but from high thoughts and our imaginations we build foundations for its possibilities—foundations have been laid for all time to build upon, materials and all things necessary are to man's hands, then why idealise, but realise the actual.

The Natural.

It is natural for some to build, some to carve, some to paint, some to sing, to write and speak in words. We are thinking of our builders of cities. To build, then, is to some natural; it is the sport and pastime of many childhood hours. How many days he satisfies himself in building with his toys, his castles made with cards, always striving to go one better than the Tower of Babel, higher and higher. Then the outburst of joy produced by the downfall, the noise of its destruction. This natural gift in the boy we see in the man, and find in nations—joy of some to build, the greatest satisfaction of some to pull down, to make a noise.

In nations, like in man, we find the natural, the ideal, and then the material, and from these periods we have the height to which its civilisation has reached and the depths to which it has fallen, monuments for all future ages, of a nation's infancy, maturity, decay.

The Growth.

The early settler by the riverside, or near the wood, first builds his hut; he names it after its natural surroundings, "the hut by the river," or "by the wood;" he works, and by his toil produces the fruits of the earth, it becomes his garden of riches; then the thinker, who looks up, "man the uplooking animal," he sees the sun, the moon, the stars, the seasons, from his thoughts he is led to idealise, to worship, and takes the natural to symbolise his highest aspirations, object for his worship, and strikes out to more perfect manhood, to build a home wherein may dwell his God; he builds his temples, his palaces, his monuments, which clothe his thoughts and express all his highest ideals, and from these grow the maturity of a race. With this evolution of the mind of man comes also the evolution of his morals, which he calls virtues, the causes of joy and happiness, the causes of evil and misery.

We can trace the history of nations, the causes of prosperity, and the causes of decay. And it is natural for man from things seen to think and use his mind, and let the light of his soul dwell on the beautiful that it may live: the natural magnified to its ultimate to illustrate his ideas of the supernatural: the Egyptian his sun-god, light and life; the Greek with his Zeus (pure heaven) and his goddess Wisdom; the Florentine the Mother and Child, the ideal Maternity, and his love of labour—for was not his symbol of harmony of life the sound of the smith beating into instruments of music the crude metal of the earth? Take these five subjects: light, life, wisdom, maternity, labour, and round them you can build all the highest thoughts of man and the religions of nations, and which have been the subjects and themes for the monuments of all the great cities of the world. Take each subject to its ultimate, and you have the perfect actual—subjects fitted for sculptor's art and worthy to be placed in your ideal city.

But with power comes decay—the worship of the man, much self-glorification. The material man, not man's mind or soul, do we

measure him by; but his material external is portrayed, which produces destruction to the great ideal. We then produce the bulb, no longer the flower that has made this city fair.

The Sculptor.

So we workers in clay, wood, stone, and metals are but the children of your city. We are, at the hand of the builder, to write in streets the great thoughts of your philosophers, the dreams of your poets, the great victories of your warriors, the ever-spreading influence of civilisation, its truth, its justice, and its liberties, that in figure these ideals may live in the crowded streets of your city. But to hand down the mere posthumous portrait of the man is to give to the world the shell without the kernel—not the ideal in which the sculptor's soul may live and breathe, but the dead, mechanical production of a dead thing.

Has the sculptor any ideal for our technical side? Does he reach out to any ultimate in his means of expression? We see he has his ideal subject; has he ideal rules for his practical work? He knows that life is governed by simple natural laws; so just as simply must this child of nature express himself, and must govern every detail of his perfect work. It depends on the man, his mental vision. You may show him examples of the highest realisation of men's mind and hands, but he cannot reach them if his power of thought is not strong enough to produce the same conception. Take the pupil and the worker beside you: you can so transmit your thoughts and the way in which you see things that he can see just what you point out; but immediately he is left alone he falls back to his own range of vision.

Laws of Sculpture.

What are, then, these simple laws that govern the ultimate of the sculptor's expression? They are the combination in a work of three characteristics of the arts—architecture, sculpture, and painting. The dignity and monumental of the architect, the simplicity of severity of line and form of the sculptor, the atmosphere of light and shade of the painter—all these we find in the great works realised by man in his maturity, and prove what is always said by great artists, "that there is but one art, but different means of expression."

For subjects you take great abstract truths, for treatment you take the natural object and clothe it with its attributes to personify the unity of atoms into a great whole; and by the eyes we see and the power we feel will be the result and nearness attained to our great ideal. "The situation," says Carlyle, "that has not its duty, its ideal, was never yet occupied by man. Yes, here in this miserable, despicable actual wherein thou even now standest, here or nowhere is thy ideal: Work it out therefrom. The ideal is in thyself; the impediment too is in thyself."

The Discussion.

The reading of these papers was followed by a brief discussion, which was opened by Mr. H. E. Milner, who pointed out how the realisation of any of the ideals they had been considering must be governed by business considerations. Few cities had been built for residential purposes, with trade merely as a supplementary consideration. He gave some details of the best arrangements of streets, positions of factories, railways, &c., but pointed out that the character of the individual buildings must be decided by those for whom they were built. Mr. Owen Fleming pointed out how the opinions expressed by the R.I.B.A. had influenced the character of the improvements at Whitehall and of the new street from Holborn to the Strand. With regard to Vauxhall Bridge, he remarked that the London County Council had to choose between accepting the advice of the Institute of Architects and the Institute of Civil Engineers, the opinions of the two bodies being widely divergent. Mr. Cates spoke of the way in which suburban estates were laid out, without regard to considerations of beauty or convenience, but solely with the aim of creating

ground rents. He thought the land owners should be compelled, when laying out new estates, to provide open spaces for the new populations which would live on the estates. Mr. Charles Hadfield, of Sheffield, said the process of swallowing up the suburbs was going on everywhere; he should welcome the granting of largely extended powers to municipalities for dealing with land owners and speculators. After a few remarks by Mr. Edward S. Prior, a hearty vote of thanks to the authors of the papers was carried unanimously and briefly acknowledged.

THE EDUCATION OF THE PUBLIC IN ARCHITECTURE.

This was the title of the paper read on Thursday last at the fifth meeting of the Architectural Congress by Mr. Reginald Blomfield, who said:

The subject on which I have been invited to address you to-night is one of such intricate difficulty, and so closely connected with wider questions, that any reflections I may offer you are only in the nature of prolegomena. That such a subject should be suggested for discussion at this Congress is significant, for it points to the fact, with which we architects are painfully familiar, that the public does want educating in architecture very badly; and, in saying this, no imputation is made against our individual clients. The mere fact that they come to us shows (at last we think so) very excellent good taste, and though this impression is not always maintained, and occasions have been known to arise in which the architect has had to admit his inability to cope with the client's tenacity as to plate glass and other matters which vex the souls of the righteous, yet, on the whole, and properly handled, the client will usually follow his architect's lead. I shall, therefore, not attempt to deal with that most tempting subject, the intellectual relation of architect and client. What we are here concerned with is the general standard of intelligence in regard to architecture, the appreciation and misappreciation of the art as shown by current judgments, whether in the press or elsewhere; the evidence of taste displayed in actual buildings which reflect the average opinion of the times. The

Attitude of the Man in the Street

is the problem with which we have to deal. Now I fear there can be very little doubt that this attitude is far from satisfactory. I think that any competent observer who took note of the average of architecture in our great cities would be driven to the conclusion that the general level of taste and ability was low; further, he would find that some of the least admirable of these buildings were the most admired; and, lastly, if he compared his observations not only with the criticisms of the Press but with individual opinion, he would find no common standard of appreciation—merely a mass of unrelated judgments, amounting to little more than individual expressions of like or dislike. He would, in short, find public opinion on architecture in a state very little removed from chaos. He would find that there is no intelligent body of opinion to which a competent architect can appeal as a matter of course, and that the public in the pursuit of architecture are like sheep without a shepherd. The uncertainty of taste shown in the treatment of public buildings of the last fifty years—shown I do not mean by the architects, but by the authorities responsible—is conclusive evidence of the confusion of judgment which exists in the minds of our representative public men. First we had the Houses of Parliament, then the Foreign Office, then again the medievalism of the Law Courts, and now (I think fortunately) the Classic of the new Government buildings. It is evident that the authorities have had no sort of principle to guide them, and so the pendulum swings backwards and forwards. Unhappy officials, burdened with a responsibility of taste beyond their capacity, catch wildly at any passing fashion. Their chief idea seems to be to make a desperate bolt for cover; as for any consecu-

tive tradition of taste, any steady development of ideas on architecture, the case seems as hopeless as ever.

Genius in the Place of Tradition.

It has been suggested that this state of affairs is inevitable, that it is the penalty we pay for the individualism of English genius; that though the French do in fact possess a traditional standard of taste and technique, they do not reach the excellence attained by Englishmen in isolated instances. There may be some truth in this view; we cannot have a school and at the same time genius breaking out in all sorts of different directions at once. That we have no school in this sense is quite certain, for the Academy exists for other purposes, but it is to be doubted whether we nowadays produce genius in sufficient quantity to compensate for this absence of tradition; and at any rate this deficiency has not always been characteristic of English architecture. If, in the last century, Mr. Vardy or Mr. Ware, Mr. Wood of Bath, or Mr. Flitcroft were called upon to design a building, they knew exactly what they had to do; they had no necessity to clear the ground by a long preliminary discussion as to the style to be adopted. Given the client's general instructions, everything followed as a matter of course. The workman had all his details at his fingers' ends, and the client would have been much surprised if he did not get a house up to the accepted standard of taste, and as like as two peas to the nine hundred and ninety-nine "seats of the nobility and gentry" then being erected in every part of England. Everything went as smoothly as clockwork. Such a state of affairs has, of course, its defects. It may lead to dullness, pedantry, and stupidity, yet architecture is so difficult an art that it is only by long continued effort on familiar lines that any excellence may be attained; and without this state of things we should never have reached that complete accomplishment within prescribed limits, that clean precision of workmanship, which is so essentially characteristic of early eighteenth century work in England.

Literary Architects.

But about a hundred and fifty years ago a new element appeared. The amateur and the virtuoso assumed an importance they had never previously enjoyed. Distinguished noblemen dabbled in design. Eminent men of letters amused themselves with architecture. In 1750 Horace Walpole writes, "I am going to build a little Gothic castle at Strawberry Hill," ominous announcement of the impending change; and in the next few years Walpole completed his ridiculous house, to the admiration of all his acquaintance. The worst of it was that, though perfectly absurd in his notions of architecture, Walpole was a man of brilliant literary ability and a reasonably good connoisseur. Moreover he thoroughly understood the temper of his class, and the consequence was that his ideas "caught on" and were accepted by a good many foolish people as a necessary part of polite taste. Moreover—and this was where the mischief came in—they took their place in that romantic movement in literature which was soon to overrun the whole of civilised Europe. It is rather curious to reflect that the eighteenth century, supposed to be *par excellence* the century of logic and lucidity of thought, should have seen the birth of that confusion of ideas as to the limits and relations of the different arts from which we suffer at the present moment. Joseph Spence, an intimate friend of Walpole, wrote an elaborate treatise to interpret plastic art in terms of poetry, and, though this book was pulverised by Lessing, his fallacy, or rather the temper of mind which admits of it, is extant to this day. Walpole subordinated architecture to the elegant insincerity of his own literature; and the loss of all tradition in taste and standards of judgment was now only a question of time. Literary men had got the control, and it was not for mere architects to dislodge them. Moreover, these very architects were too often their humble and obedient servants. Though Chambers, last of the Romans, made a defer-

mined stand for the old ways, Robert Adam devoted his extraordinary cleverness to the introduction of a new manner in design; the Dilettante Society had set the ball rolling, according to the latest lights of Stuart and Revett; and now there was this direct attempt being made to reproduce Gothic architecture in addition to purely literary sentiment. It was hardly to be wondered at that the layman should lose his bearings. In the heat and turmoil of all this revivalism he might be pardoned for thinking that taste in architecture was a mere matter of pitch and toss. Thus this century opened with

Three Styles Struggling for Ascendancy.

The old traditional Classic of Chambers and his school; the new Greek method, which was to be carried to such a high degree of excellence by Decimus Burton, and later by Thompson, of Glasgow; and, lastly, this revived Gothic. All architects of reputation followed one or other of the first two manners. The amateurs stuck to the Gothic, and the amateurs carried the day; but when one considers that the whole force of the Romantic movement was behind them, the result is not surprising. So Wyatt, or Wyattville, or whatever he chose to call himself, started his career of architectural murder. Then Pugin followed, and threw himself into the cause with the enthusiasm of a very ill-regulated mind; and then came Ruskin, a man of narrow prejudice, but brilliant genius, whose eloquence won a sort of St. Martin's summer for the Gothic movement, prolonging its life quite two generations beyond its appointed time. I need not follow further the familiar history of the Gothic movement, but there is one important conclusion which I should venture to draw from this hasty survey, and it is this: All these men, from Horace Walpole to Ruskin, seem to me to have laboured under one very serious vice in their handling of architecture. If I may say so, they all took their eye off the ball. Walpole treated architecture as a subordinate expression of literature. Pugin, and still more Ruskin, translated it into terms of ethics.

The Result

has been that the idea of architecture as an art, with its own limits, its own technique, and its own ideals, has been forgotten, and one has almost to say lost. Volumes of eloquence as to the moral beauty of certain forms of architecture not only teach one nothing, but are actually misleading as to their artistic value. For an architect may be a very good man, and design and build with the utmost sincerity and moral enthusiasm, but his work may be exceedingly bad; witness that childish building the museum at Oxford. And, on the other hand, it is very well-known that artists of distinguished ability, whose work has had a singular fascination for intelligent judges, have been, to say the least of it, not immaculate. The critics have, in fact, set up an irrelevant standard; they have concentrated attention on matters which interest them, but which have no more to do with architecture than with boot-blackening; and we stumble here on some of the radical defects of serious English criticism. That strenuousness on which we pride ourselves has the result either of making our critics take their subject as a text for their own rhapsodies, or else it drives them out into action in the form of a directly moral application. They seem incapable of that cool and equable sympathy with every man on his own merits, that patient waiting on the development of genius which gives its extraordinary value to such criticism as that of Sainte-Beuve; for the function of a critic is to explain and interpret, not to substitute his own personality for that of his subject.

First Principles of Reform.

We have thus arrived at two results—first, that public opinion on architecture is practically non-existent, that is, the judgment of the public tends to be irrelevant and to rest on side issues; secondly, that this has resulted from the subordination of the art to the amateur; and the question now arises how this state of things is to be dealt with.

In the first place it seems to me that a fresh

philosophy of art is necessary, or rather a return to that clear understanding of the limits of the various arts on the lines laid down by Lessing one hundred and thirty years ago. We have to recover and drive home the truth, that if the arts have some common ground, yet they differ essentially "*ὅλη καὶ τέρσις μίσησιν*" in their subject matter and technique, and what Lessing did for poetry, painting, and sculpture we have now to apply to architecture. We architects have to build up in the public mind the conception of architecture as an art, with its own methods of expression and its own problems. We have to make it clear that architecture is not sculpture and painting, but architecture; that, given the practical conditions to be complied with, the architect has to treat them *secundum artem*—that is, that his concern is with proportions, mass, and light and shade. It is easy to sneer at the old jargon, such as the relation of solids to voids, and the like, yet these remain a general description of the actual difficulties in design that our art has to attack; and our skill should show itself not in the skilful reproduction of other people's buildings, or somebody else's motives, but in this exact adjustment of proportions, in the subtle management of light and shade, of shadows and reflected lights. It is due to the causes which I have endeavoured to indicate above that this conception has been thrust on one side, even by architects themselves.

Art as a Whole.

There is, and has been for the last few years, a very favourite watchword among us, "Art is one," and under cover of this motto the crafts have manoeuvred a skilful and insidious attack on architecture. The architect has been relegated to the position of the useful drudge who blows the organ while the craftsmen play on it. His function has been supposed to be that of providing an occasion for the arts of the sculptor, the painter, the metal-worker, the enameller, and all the others of the noble army of craftsmen. If the architect's architecture gets in the way it must get out of it, even to the destruction of the finest architecture in the kingdom; and in this way the architect is considered to establish his claim to be a member, though, indeed, but a poor relation, of the family of artists. As to this Shibboleth, of course all art is one, also it is not. It is one in the sense that, to the exercise of any art, some measure of imagination and practical invention is necessary, and again in the sense that any work of art is an expression of the human intelligence. In this sense the saying is true, but it is also a harmless platitude. If we try to get at the facts we find that all art is not one, that, on the contrary, each art has its separate province, divided from its neighbour by neutral ground which either may occasionally invade, or which they may fairly occupy in common; yet their separate limits ought to be strictly maintained in thought, and both in this and in many other instances the crying need is for clear ideas. It is to this groundwork of thought that I think we ought to direct our attention if we hope to educate the public. It is very desirable that the layman should know the history of the architecture of his own and other countries; his ideas will gather shape and colour from actual instances; and it is almost necessary that he should have some acquaintance with acknowledged masterpieces, in order to acquire some practical standard of judgment. Yet it is the use of this standard that constitutes the real difficulty. It is of very little use having a standard, and even a great mass of knowledge, if you have no idea how to apply it; in other words, it is of very little use to supply the public with facts and pattern books until the public mind is prepared to receive them, and it is here that the real difficulty of education begins.

Channels for Reaching the Public.

There seems to me, generally speaking, to be three channels through which public opinion can be reached: (1) by direct school teaching; (2) by treatises; (3) by the work

of architects themselves. In regard to school teaching, a good deal more might, I think, be done in this direction than anyone seems to contemplate at present. In most of our important public schools there is an art museum of sorts, a drawing class, run on rather old-fashioned lines, and usually some intelligent master with a cultivated interest in the antique and a sentimental attachment to early Italian art. Now, I am not in the least depreciating the work so done. It is good, as far as it goes, and is a very great advance on the neglect of any such teaching habitual thirty years ago. What is wanted is a more complete organisation of this teaching and a more comprehensive scope. Boys, those at any rate with reasonable powers of observation, are quick to pick up impressions, and there can be no doubt that they acquire some valuable elements of culture from the casual information that they are able to gather in this manner; yet I think I am correct in saying [that the boys' attention is called to art not from an artistic but from a literary standpoint. Our public schoolmasters are, as a rule, very excellent educationalists; there are probably none better in matters of scholarship and literature; but they regard the arts from the point of view of the average British public, rather as an elegant and superfluous accomplishment than as a serious expression of thought. Architecture in especial—I may say it in this company—from every point of view the most important of the arts, is hardly ever dealt with in our public schools. A boy gets some slight acquaintance with Greek and Italian sculpture from the casts in his museum, and learns the names at least of the great painters; he may also hear something about churches and buildings from the school antiquarian society, but of architecture never a word. I recollect the amazement of my uncle when I went into his office at three-and-twenty and did not know the meaning of a mitred joint; yet such ignorance was not only the natural but the inevitable result of the school and university education of the time.

What Boys might be Taught.

What I think might be possible would be, (1) to provide a well-selected set of architectural drawings of well-known buildings, and the simplest possible technical diagrams, such as should be easily intelligible to the schoolboy mind; (2) to give an occasional reading in architecture, dealing with its simplest points, and illustrated by models and clear drawings. The object of any such lecture should, of course, be merely introductory—that is to say, it should not attempt any elaborate disquisition on styles, or even on history, and should carefully avoid any attempt at technical instruction. What is wanted is such a handling of the subject as will call the boy's attention to architecture and give him an interest which he can develop later if he has any aptitude that way. By this means the ground would be broken up for the more detailed courses of instruction, such as are provided by the Architectural Association, Liverpool and London Universities, King's College, and the like, and even if the study were carried no further it would leave an intelligent interest in the art, and have an educational value of its own. Some sort of architectural text-book for beginners is, in fact, badly wanted; but the necessity of extreme clearness and simplicity of treatment, in addition to a comprehensive grasp of the subject, makes the preparation of such a text-book a matter of very great difficulty; yet it ought to be possible to prepare such a work, and I commend the problem to our professors of architecture. Something has already been attempted in this way in the University Extension Lectures. I have no experience to offer on this subject, but it appears to me that the lecturer labours under two serious disadvantages. In the first place he has to address a mixed audience, mostly of an age at which learning is not so easy as it used to be; and secondly, he has to make his lecture popular and attractive, otherwise his class falls to pieces. Moreover, so far as I understand, every lecturer is free to follow his

own devices, with the result that what one man builds up another pulls down. At every point, in fact, in our attempts at education in architecture we are brought up short by this want of a common standard, this loss of all established tradition.

The same difficulty meets us in the attempt to influence opinion by books and treatises. It was easy enough to lay down the law about architecture when the five orders and their strict observance constituted the law and the prophets.

Architects at Fault.

In Wren's time there was no necessity to educate the public. Evelyn did all that was wanted when he translated Fréart's Parallels. But nowadays we have no law; and if we architects are not agreed among ourselves as to the principles on which we should appreciate one another's work it is inevitable that the public should be hopelessly at sea. Yet I believe that our differences of opinion are more superficial than serious, more the result of misunderstanding than any insuperable cleavage. Whatever our individual divergences of manner, a really fine piece of architecture is usually accepted as such by most of us, and the problem before us is to disentangle the common ground of judgment on which we undoubtedly act, and to define it in such a form as will be intelligible to the public and be a guide to them in their own appreciations, a task again of the very greatest difficulty, and, perhaps, not the work of one generation, or of one man; yet I do not think that such a result will be indefinitely postponed. The consensus of competent judgment gains ground every year, and in time a method of criticism may be deduced from it, something far wider and more penetrating than the time-honoured system of the orders.

Meanwhile, and at a lower level, something might be done. It has been suggested that a series of plain pattern books for builders, giving working drawings of quite simple designs for doorways, windows, and the like, would save us from the utter vulgarity of the great majority of modern buildings in this country. It is well known that on the greater number of such buildings no architect has been employed, but the public is not aware of this, and its vision (such as it is) is being constantly perverted by the worst possible models in front of it. This, at least, we might escape, and the builders of the last century did escape it, because they worked to an excellent set of accepted patterns. It would be a most useful and, I think, practicable task if a committee of architects of recognised competence could be formed to superintend the issue of some such series of pattern books. In the matter of building construction this has already been very well done, in the South Kensington volumes, and it would not, I think, be difficult to supplement this on the side of design.

The Most Important Means.

Lastly, we come to what is, after all, the most important means of educating the public in architecture—our own work. Not only does an architect have a unique opportunity of educating the individual in his relations with his client, but each fresh work should be the most convincing embodiment of his own ideas of architecture, of which the effect, like that of a stone cast into the water, must spread in ever-widening circles far outside the centre of its first attack. We must set our own house in order before we can sweep and garnish that of the public; and thus the education of the public passes into the more intimate question of the education of ourselves; and at this point I may fairly leave it.

Perhaps at this moment the two worst faults of our architecture are, first, the total absence of any sense of style, that kind of design which snatches up any sort of detail and tacks it on to any kind of building, and of which there is abundant illustration in most of our new streets. This method we are all agreed on condemning, but there is another and rarer fault, and the more dangerous because it is the vice of a virtue, and this is a certain preciosity, what Pliny calls *Quædam artis libido*, which runs out into frantic experiments after something new and altogether original.

This latter habit of mind turns its back on tradition, or thinks it does, and resolutely eschews beauty, in its wild attempt at strength. Both of these faults can only be attacked by a more thorough and intelligent education of the student, and by a clearer appreciation in our own minds of the province and ideal of architecture.

In the first sentence of this paper I mentioned the extreme difficulty of this subject, and I have endeavoured to show that the state of public taste at present is due to deeply-seated causes, causes so difficult to reach that one might almost be tempted to despair of the future of architecture. Our best ground of hope is in the excellent work being done by individual architects, and in the agreement, rather than disagreement, of critical judgment which exists among ourselves. Such an agreement must, in the long run, influence public opinion. What we experts say in this generation will be matter of common knowledge and acceptance in the next. It should be our work, therefore, to clear the air of misconceptions, and to endeavour to build up again an aesthetic judgment, which shall be independent of styles and fashions, because it rests on the essential facts and conditions which lie at the root of all good work in architecture. We cannot ourselves expect much immediate result, yet perhaps our children's children may enter into possession of the promised land.

The Discussion.

Professor F. M. Simpson (Liverpool) said his opinion on this subject could be expressed in one sentence—the education of the public in architecture depended entirely on the education of the architect. It was the current work, the work with which we were surrounded on every hand, that affected the public and not the knowledge or representation of buildings erected in past ages. It was a well-known truism that in order to educate people you must first interest them, and though it was possible to interest them in the manner suggested by Mr. Blomfield, it would be only a passing interest, whilst if the education was carried past a certain stage it would cause a false standard to be raised, because it would be an archaeological one. The architect should always lead and the public follow; not *vice versa*, for there must not be retrospection but advancement. If building continued to improve in the way it had done during the last twenty-five years the education of the public would follow as a matter of course, because they would be surrounded by good examples instead of bad ones.

Mr. Basil Champneys, M.A., took rather a gloomy view, and held a pessimistic opinion about the future. If the public would not take any interest in architecture, what could be done? The architectural room at the Royal Academy, for instance, was looked upon as a spot where were gathered together a number of drawings which might be seen with much more ease in the auctioneer's window. The speculator was gaining ground, and every year buildings without any merit were being erected in increasing numbers. He had grave doubts about the solution being found in the architects improving their work, for was this possible when the public did not ask for it? Nor did he favour the pattern book suggestion, because the builder would be sure to mix up all the designs, and use one sort of a door and another kind of window.

Mr. E. S. Prior, M.A., agreed with Mr. Blomfield's plan of campaign, and in the course of a most humorous, though somewhat erudite, speech he drew a picture of the time (about 2,000 years hence) when architecture would have ceased to exist, because then everyone would be always speeding from point to point by some rapid means or other, and, of course, stationary buildings would not be needed; pendants would then refer to architecture as a system adopted in barbaric days of piling stones on top of one another for no known purpose; this would be in the age of locomoture, when the lands were peopled with "locomots." However, reverting to the prosaic, he pointed out that architects to-day were like knights who taught the rules of

tourney without being able to sit a horse, and he concluded by saying that the public could only be educated by the architect becoming first educated himself.

Mr. Paul Waterhouse, M.A., asked the pertinent question: Had the public ever been interested in architecture? He thought not, and we need therefore not be despondent by the present aspect of things. We should leave the public alone and look to ourselves.

Mr. John Slater, F.R.I.B.A., B.A., thought it impossible to teach the public to take interest in architecture, but he would urge that architecture should be taught in our schools, and he felt sure that the small amount of knowledge acquired by those who attended University Extension lectures would enable them to appreciate more the great old buildings, and give them an interest in architecture generally which they would ever retain.

Mr. Beresford Pite gave it as his opinion that "a little knowledge was a dangerous thing." There were very few living arts, and until we could arouse our enthusiasm we should be helpless to teach the public. We needed intelligent criticism of architecture, and, more than all, we needed to educate the jerry-builder by showing him that it was just as economical to put better bricks in the house than to use those of inferior quality, and sprinkle the whole with stupid ornament.

Mr. E. W. Hudson, A.R.I.B.A., and Mr. H. G. Ibberson, A.R.I.B.A., also spoke, and Mr. Blomfield replied.

RESPONSIBILITY OF LOCAL AUTHORITIES IN RESPECT OF BUILDING BY-LAWS.

This was the subject of the paper read by Mr. Lacy W. Ridge at the sixth meeting of the Architectural Congress, held on Friday last. Mr. Ridge said:

It may be present to the minds of those who are members of the Royal Institute of British Architects that on June 12th, 1899, that body passed unanimously a report drawn up by a special committee on building by-laws in the non-Metropolitan districts of England and Wales. Among the suggestions of the report was one that the Local Government Board should be requested to receive a deputation on the subject of these by-laws. On October 26th last a deputation, which had to be hastily got together, and was consequently not as fully representative as might have been desired, waited at Whitehall on Mr. T. W. Russell, M.P., the Parliamentary secretary of the Local Government Board. Several of the permanent officials of the Board were present. The immediate result I may describe to you in the report sent to the Council of the Institute, and published in the Journal on November 11th, 1899.

The deputation, referring to the report addressed to the Local Government Board by the Institute, laid before Mr. Russell the views of the Institute on the advisability of grouping the Model By-laws for non-Metropolitan districts in England and Wales, with the view to the adoption of such groups, and such only, as were applicable in particular localities; and the exemption from certain groups of by-laws of detached buildings standing within their own grounds; the uncertain requirements of local authorities as to the drawings required to be deposited, and their declining in some cases to give the grounds of their objections where approval of plans is refused; the establishment of a special technical Tribunal of Appeal; the extension to the provinces of the London system of dealing with rights as to party-walls; and other questions connected with the administration of building by-laws.

Mr. Russell, in reply, said that, as regards the principle underlying the report, *i.e.*, the advising by the Local Government Board of the local authorities as to what by-laws it would be best for them to adopt, it was always a delicate matter, owing to the jealousy of local authorities at the interference of a central authority. He thought the question of grouping the by-laws was a fair point for consideration. As regards the demand on the part of

local authorities for drawings, such bodies often exceeded their rights; but in some instances powers were given to local authorities by special Acts. At the stage reached by the present Parliament he could hold out no hope of legislation on the questions involved, but everything had been carefully noted, and should be submitted to the consideration of the expert advisers of the Board, who would report as to the extent it would be possible without legislation to meet the views of the Royal Institute. In conclusion, Mr. Russell asked whether it would be possible to confer with the deputation again. An answer having been given in the affirmative, the deputation thanked Mr. Russell for his courteous hearing, and withdrew.

If the exigencies of an aged Parliament rendered legislation impossible in October the crisis through which the country has since passed has filled not merely Parliamentary officials, but the general public, with anxieties and considerations of such tremendous moment that the lesser evils which local legislation or administration can cause or cure have sunk into insignificance. It would, in the months that are past, have been useless to attempt, either through the newspaper press, with their well-filled columns of startling and too often sad news, or through any other channel, to arouse public opinion on such a subject as building by-laws.

What might be expected from Legislation.

So far as legislation is concerned we must be content to wait in readiness to impress on a new Parliament the propriety of considering Bills for the extension of the Metropolitan system respecting party-walls to the whole country; for some proper and equitable system of dealing with "ancient lights," and for such modifications as may be desirable in the Acts affecting buildings in non-Metropolitan districts. Primarily, however, the report of the Special Committee was intended to deal with the by-laws under existing Acts of Parliament as a matter of administration only. Whether anything has resulted from the consideration of the expert advisers of the Board promised by Mr. Russell I am not in a position to say. It is not inconceivable that at such a time the blessings of peace may have special charms for those who are so comfortably described as "permanent officials," and that things are going on much as before; and that vast tracts of open, sparsely inhabited country are still being annexed to an ambitious little town somewhere in the neighbourhood, and the liberty of the inhabitants subjected to "urban powers."

Unfavourably, however, as the circumstances are for vigorous action, I felt that I should be almost "looking back," "after putting my hand to the plough," if I allowed a Conference of Architects to be gathered from all parts of the country here in London without at least offering to bring forward again this subject of building by-laws on which we have still so much work before us. The particular part of the Report of the Select Committee to which I wish to call attention is its last paragraph. "The influence of those who are interested in building would have to be brought to bear upon the local authorities to urge them to give effect to the proposed measures of relief by adopting such, and such only, of the divisions of the by-laws as would be applicable to their district or to different portions thereof."

Gathered in this Conference must be many who have great personal influence with the members and officials connected with local authorities, while nearly all must from time to time have dealings with them. Architects collectively and working together (why do not architects work better together?) should have an almost decisive voice in these matters. Any other profession would be recognised as the authority on any subject bearing so directly on its work as these by-laws do on our work, and would be allowed to suggest for enactment pretty much what it thought fit. Under the Public Health Act it is the local authority that makes the by-laws, and it has power to alter or repeal them by a subsequent by-law. It is merely provided that they shall not take

effect till confirmed by the Local Government Board. Now it is necessary that the

True Position of the Local Authorities

should be understood in this matter. Possibly the more important corporations may know their own power, but the constant excuse for harmful by-laws given by members of the smaller bodies I find to be that the by-laws are thrust on them by the Local Government Board. Mr. Russell, on the other hand, speaks of the jealousy of the local authorities at the interference of a central authority. The explanation of the difference is, I think, that the smaller authorities and their advisers are quite without the knowledge and experience which would make them capable of struggling against the centralised Board at Whitehall, and so take whole what is sent to them. Herein architects as a body might very effectively help these authorities, and I propose to call attention to

Three Special Points

taken out of the Institute report as being of particular importance. The first point on which architects ought to insist is that there should be definite and explicit regulations as to the deposit of drawings. This appears in the body of the Special Committee's Report, page 450 of 1899 R.I.B.A. Journal. The principle is that a block plan, with drainage, public roadways, and adjoining premises, should be deposited and left with the local authorities, and that other drawings should be submitted for inspection, stamped, and returned.

The report says: It is of great importance that the requirements of the local authorities as to the deposit of drawings should be reasonable, and that they should be explicitly stated. The Committee suggest that in all cases a block plan, with the lines and depths of drainage shown thereon, together with the nearest public roadway and adjoining premises within 100ft. of the proposed building, should be deposited, and that, where required, plans and sections (together with elevations, if needful to explain methods of construction) should be submitted for inspection during a defined and limited time; which drawings should be then returned, stamped, if approved, or, if not approved, accompanied by a precise statement of the particulars in which the by-laws have not been complied with.

Whitehall Traditions.

It seems to be a sort of tradition at Whitehall that the by-laws cannot go beyond saying that the plans and sections are to be deposited—a wonderful emanation, I suppose, from the legal mind. Mr. Russell, however, said he could see no objection to the by-laws making regulations as to the mode of deposit, and no wonder, for what the Act says is, "And they may further provide for the observance of such by-laws by enacting therein such provisions as they think necessary—as to the giving of notices, as to the deposit of plans and sections by persons intending to lay out streets or to construct buildings." Note the absence of elevations. "Provisions as to the deposit of plans," &c., is surely wide enough for a reasonable and definite arrangement. It is extremely objectionable that unnecessary drawings should choke up the offices of the local boards, and that architects should be called on to leave there in perpetuity plans of their works, to be studied at their leisure by the local surveyor—possibly a rival practitioner—and by his clerks. If for the public good persons about to build must make and deposit plans, they should at least be informed definitely what they have to do, and be put to as little trouble and, above all, subjected to as little delay as possible.

Next I would urge on you to get the local authorities to push the adoption of the Institute's by-law on party-walls (Division D, p. 451). It is long to read through, and might not be wholly intelligible at once. It gives relief, however, in the case of small houses in two particulars which will be much valued by investing builders; it settles the point up to which the party-wall need not be carried through the roof, so that in exposed situations (as along the south coast), where the difficulty of keeping out the weather is considerable, and the risk

of fire very slight, the roof over a row of small houses need not be broken. It would also allow a single-brick party-wall to be used in cases where the by-laws now require, and require wisely, the use of one and a half brick external walls. The main charm, however, of treating party-walls in a division by themselves would be that it would enable the local authorities in many cases to say: "You have laid out your streets with ample space, in accord with Division B; you will comply with the sanitary requirements of Division F; separate your houses properly with party-walls, as Division D, and we will trouble you no further; for it is impossible to see how you can be any nuisance or danger to your neighbours, and we will trouble you no more with by-laws." Taking such a position with small properties, or with pairs of workmen's cottages or villas, particularly in the country, would be a great relief to everyone, and do much, very much, to obviate the ill feeling which now constantly arises from insisting on useless trifles merely for the sake of enforcing the by-laws, as if that in itself were a good and wholesome thing; an opinion only too likely to grow into a fossil in the official mind.

A Few Practical Points.

Again, I would insist on the alterations named under Division E on page 452, whereby in a storey in a roof, and in the storey immediately below the roof (not being a ground storey), timber construction and weather tiling or plastering is allowed in place of brick in detached or semi-detached domestic buildings, and also that some credit respecting the thickness of the wall should be given for the tiles in weather tiling nailed to brickwork. Admirable, warm, sound, and picturesque construction, very characteristic of some parts of the country, is being thrust out of use, not because it is defective or has been found wanting, but from pure ignorance, and because the by-laws were founded on the London Building Act. This was primarily a piece of panic legislation after the Great Fire, and directed, and rightly directed, against fire in a town crowded in a way we can hardly now realise. Many of its provisions are inapplicable where wind or rain, which are certain, are far more formidable than the very rare fire which soon burns itself out. The London Act landed us with Gower Street and Harley Street as the normal types of building. It is not for architects to acquiesce in the same sort of thing happening all over in the country through the abolition of local characteristic styles of building.

Finally, let us ask the local authorities to remember that it is local government they have to administer; that they exist, not for the enforcement of a set of by-laws, whether they be useless or not, but for the good of the community; and that their office will be best promoted in the matter of building when they carry with them the intelligent goodwill of those who build; which they certainly will not attain by curtailing unnecessarily the liberty of the subject.

The Discussion.

Mr. W. J. Locke, the secretary of the Institute, read a letter from Mr. William Henman, F.R.I.B.A. (Birmingham), in which he instanced the case of the Birmingham City Council, who, a few years ago petitioned the Local Government Board to modify the by-laws in connection with certain tenements they were building, though before that they had been zealously insisting that everything should be carried out to the letter.

The chairman (Mr. W. Milner Fawcett, F.R.I.B.A., M.A.) also emphasised the point that they were tied down to the exact letter and not to the spirit of the by-law. In another set of by-laws a clause should be inserted giving latitude in certain cases.

Mr. Lewis Angell said the Local Government Board allowed no discretion at all, because committees might then get wire-pulled and make undue allowances and favouritisms.

Mr. Ralph Nevill, F.S.A., was afraid that London architects had little appreciation of the enormous difficulties encountered by the provincial architect, and he hoped something

would be done to enforce the revision of the by-laws. Local authorities had been anxious to adopt a system of modified by-laws, but the Local Government Board replied that the whole must be taken or none at all. He urged incessant application until some change was effected.

Mr. Maurice B. Adams, F.R.I.B.A., said the surveyor should be allowed to use his discretion in the matter of by-laws, and Mr. Charles Hadfield, A.R.I.B.A. (Sheffield), hoped the Institute would press the matter. Mr. A. E. Sawday, F.R.I.B.A. (Leicester), said that the insistence on the by-laws being complied with often increased the price of work, and clients went from architect to builder. Mr. Lacy Ridge said that it was not the Institute's business to take action. Local authorities could best be influenced by the local architects.

MUNICIPAL BUILDINGS—WHO SHOULD DESIGN THEM?

After the by-laws question had been finished with, a discussion took place on the resolutions proposed with regard to architectural work being executed by borough engineers and surveyors who have received no architectural training. These resolutions were:—

1. That in the interests of architecture it is inexpedient that buildings of a municipal character be designed and erected by engineers or surveyors having no architectural training.
2. That as a matter of sound finance, and in the interests of ratepayers, it is desirable that the duties of the borough engineer and surveyor should not include work of an architectural character.
3. That it is detrimental to the interests of the architectural profession that buildings of a municipal character should be designed and erected by the borough engineer and surveyor.

The first resolution was seconded by Mr. J. D. Mould, F.R.I.B.A. (Manchester). A letter was then read from Mr. Henman, pointing out that the wording was ambiguous, and suggesting a new form for the resolutions by combining all three in one; but eventually this was ruled out of order.

Mr. H. H. Statham, F.R.I.B.A., took it that the real object of the first resolution was purely an artistic one, that architecture should not be placed in the hands of the municipal officer. Routine work and genius did not go hand in hand—witness the post office buildings of one pattern throughout the country.

Mr. H. H. Langston, A.R.I.B.A., was not a sympathiser with the resolutions. If they meant anything, it was that engineers and surveyors should be ridden down as men incompetent and unable to be entrusted with the carrying out of buildings erected at the ratepayers' expense. He could not see what the architects were driving at, unless it were envy. Suppose an architect without employment obtained the post of borough surveyor. Was that to prevent him making his position a stepping-stone through his architecture?

Mr. Statham then moved the following amendment:—

That in the interests of architecture it is inexpedient that important buildings of a municipal character be designed and erected by the official engineer or surveyor to the municipality.

Mr. Charles Hadfield (Sheffield) moved that the first of the resolutions be passed. In the course of his remarks he said:

In moving this resolution it is far from my intention to utter any words of disparagement of the work of the civil engineer, of the land surveyor, whose calling, like our own, demands the exercise of high skill and ability, and who are all engaged in work of the first importance to the common good, much of it, moreover, being work which calls for sympathy and co-operation with that which is peculiarly the province of the architect.

I need scarcely allude in this connection to the laying out of estates for building, and the formation and improvement of the arteries of our rapidly growing towns and cities, work on whose success the best efforts of the architect's craft are dependent. I would yield to no one in expressing a thorough appreciation of the inventiveness and skill evolved in the carrying out of these public works, or of those great mechanical structures which will, perhaps, form the special distinction of the nineteenth-

century engineer. But I fail to comprehend how the training of the civil or municipal engineer, or the land surveyor, or the many diverse duties which fall to his lot, can possibly qualify him to originate or to carry out architectural work of a character high enough to appeal to any man or woman of average culture, in an age when appreciation of great works of the architect is considered a part of a polite education. I define good architectural work to be that which is the peculiarly artistic outcome of skilful planning and sound construction. Both equally appertain to a plain building devoid of what are popularly styled "architectural features," and to a highly elaborated building—and I venture to submit that you cannot expect to get individuality, originality, and interesting design without a well-ordered architectural plan. I think, too, you will also agree with me these qualifications cannot be attained by the aid of "ghostly agency." Beyond all question "municipal buildings of a public character," such as town halls, public baths and libraries, hospitals, police and fire brigade stations, markets and industrial dwellings, demand the particular skill of the architect, whose especial province it should be to impress upon these works the marks of his intimate study of planning and design—and of that individuality which can never appertain to official architecture. With all our shortcomings this individuality has been recognised by foreign critics to be a distinctive quality of the best modern English architecture. I feel strongly that the system of conducting important building operations, which has commended itself to the British public for the last fifty years, and which is now undoubtedly bidding for an increased sphere of influence, ought to be discountenanced, as being at variance alike with common sense and public utility. It is a system which is not tolerated by enlightened public opinion on the Continent, and I am glad to learn that the American Institute of Architects has been taking concerted action on this subject for some time past, and with success; for they have brought about a considerable reform in the direction of removing architectural work from the control of the official surveyor.

I feel that I am speaking for most of you in expressing my own sympathy with the wide extension of municipal energy, which is one of the great progressive forces of our day, and I think I may fairly say that such a sympathy tends to increase one's regret that the great changes which this municipal enterprise is bringing about should result in unconsciously lowering the standard of national architecture, instead of being the means of fostering it; and that this, too, should happen at a time when, thanks to the educational advances of recent years, a marked increase in skill and originality may be looked for.

Municipal and Governmental enterprise is more intelligently developed in this direction in France, Germany, and elsewhere on the Continent than it is at present in this country, adapting itself, as it does, to the æsthetic feelings of the people at large, and one is glad to note that already the representatives of more than one of our important municipalities are beginning to appreciate the fact. In the Middle Ages, from the time of the social movements of the thirteenth century, the spirit which is actuating our great municipalities to-day was the factor which called into being the best efforts of the architectural craftsman throughout Europe, and made architecture *par excellence* the art of the people, and England from the thirteenth down to the eighteenth century was no exception in this respect, as many of our older towns and hamlets still bear evidence. I regret to say, however, that such evidence, at the inappreciative touch of the surveyor-architect, is becoming a vanishing quantity. The ruin worked in this respect, notably in the last twenty-five years, is known only to those of us who devote holiday weeks or days to looking up the legacy left by a past which appreciated architecture at its true value; and it is against this all-round vulgarising and lowering of the standard of architecture to serve the needs of a grasping, sordid commercialism—never perhaps more in

evidence than it is to-day—that I have ventured upon these few remarks.

Mr. Statham's amendment was seconded by Mr. Maurice B. Adams, who said that the architects had no intention to set themselves against the surveyors. Mr. Angell opposed the amendment. Mr. Lacy Ridge said he should be sorry if the Institute passed any such resolutions as those proposed. No good would be effected, it would be bad taste, and he felt sure that not the slightest attention would be paid to the matter. Mr. Hudson thought also that if the resolution were passed it would be a dead letter. It would be just as pertinent for the engineer to say that the architect should have nothing to do with the sanitation and drainage. Mr. Langston (who afterwards left the room in disgust) trusted the vote would not be taken. Were they so perfect with an architectural training? "Let him who is without sin cast the first stone." Mr. Neville was against the resolution. Persons could turn to many municipal buildings erected by architects, and could say, "Is this, or this, or this beautiful?" Several other gentlemen spoke, but eventually Mr. Statham's amendment was carried by 14 votes to 5. It was then put as the original motion and carried.

In moving the second resolution Mr. Sawday said that £1,000,000 worth of architectural work had been carried out during recent years at Leicester by the borough engineer and his staff; a great deal of work had also been done outside the official department, with more satisfactory and economical results. Mr. Statham thought that the passing of the first resolution was sufficient; Mr. Angell agreed, and the second resolution was withdrawn; the third resolution was also withdrawn.

VISITS TO PLACES OF INTEREST.

In connection with the Congress a number of visits to places of special interest to architects were paid during the week. On Wednesday afternoon a party of 180 visited the new Westminster Cathedral. Mr. J. F. Bentley, the architect of the building, was in attendance, but owing to his ill-health the Rev. Canon Johnson conducted the party, and explained the features of the cathedral. Mr. Charles Hadfield, of Sheffield, one of the best known Roman Catholic architects in the provinces, was also present. His Eminence Cardinal Vaughan entertained the party at tea at his house, where a model of the cathedral was exhibited.

On Thursday morning a visit was paid to the University College Hospital Extension in Gower Street, when Mr. Alfred Waterhouse, the architect of the building, acted as guide. The afternoon of the same day was devoted to visits to Stafford House and Bridgewater House. On Friday, the works of two important firms widely differing in character but each of special interest to architects were visited, namely, Messrs. James Powell and Sons' Glass Works at Whitefriars, and Messrs. Holloway Brothers' Building Works at Westminster.

On Saturday about a hundred ladies and gentlemen went down by steamer to Greenwich Hospital, where they were met by Mr. William Crisp, C.E., of the Royal Naval College. After inspecting the buildings, they proceeded across the park and took tea at the invitation of Mr. Thomas Dinwiddy, F.R.I.B.A., at his residence, the Manor House, Blackheath. Altogether the excursion was a most enjoyable one. Mr. W. J. Locke, B.A. Cantab, secretary of the Institute, acted as leader.

An International Tramways Exhibition was opened at the Royal Agricultural Hall, Islington, on Saturday last. At the private view Mr. W. H. Dickinson, Chairman of the L.C.C., reminded his hearers that electricity is much cheaper than horses. In Glasgow the two systems have been running side by side, and electricity pays better by 4½d. per car mile, which on our present London tramways would give an economy of £562,000 a year, equal to an all-round reduction of rates of 3½d., or to a decrease of fares by 40 per cent.

Keystones.

New Military Hospital.—Sixty acres of land have been purchased at Alton, Hants, to build a military hospital for returned invalids from South Africa. It is stated that accommodation will be provided for quite 500 invalids.

New Public Buildings at Helmsley, Yorks.—On Wednesday last the Duke of York laid the foundation-stone of the new Court House, Town Hall, Market Hall and Public Library now in course of erection at Helmsley.

A Flawless Block of Fine Gritstone weighing 500 tons was recently lowered in Stancliffe Quarry, Darley Dale. The greater part of it will be used for sculptural purposes on the additions now being made to the Walker Art Galleries, Liverpool.

Royal Victoria Infirmary, Newcastle-on-Tyne.—The foundation-stone of this building was laid by the Prince of Wales on Wednesday last. Mr. W. Lister Newcombe, F.R.I.B.A., of Newcastle, and Mr. H. Percy Adams, F.R.I.B.A., of London, were the joint architects.

New Pier for North Woolwich.—The Great Eastern Railway Company are constructing a new pier for North Woolwich. It is being built in the docks, and it is expected will be moved into position in about two months' time. The new pier will cost more than £30,000.

A Memorial to Sir Thomas More has been placed in the church of St. Lawrence Jewry, E.C. It takes the form of a stained-glass window, 14ft. by 7ft., and was unveiled by the Speaker of the House of Commons on Friday last. The window was designed by Mr. George Ostrehan and executed by Messrs. Joseph Charter and Sons.

Dundee Institute of Architecture, Science and Art Competitions.—The 1900-1901 syllabus of competitions held by this Institute has been issued. We note that Nos. 3 and 4 (the former for a water-colour study of an existing building, and the latter for a design of carved wood panels) are open to any person under twenty-five years of age residing in Forfar, Perth, Fife, Clackmannan, or Kinross. Mr. Charles G. Soutar, 5, Whitehall Street, Dundee, is the hon. secretary of the students' section.

The Annual Dinner of the R.I.B.A. was held on Friday evening at the Whitehall Rooms. Mr. W. Emerson, the president, was in the chair, and the Duke of Cambridge was one of the guests. Among others present were the Archbishop of Canterbury, the Bishop of London, the Lord Mayor, Lord Strathcona, Lord Alverstone, Lord Claud Hamilton, Lord Welby, Sir E. M. Thompson, Sir H. H. Howorth, M.P., Sir B. Stone, M.P., Sir H. Trueman Wood, Sir J. Taylor, Sir T. Drew, president of the Royal Institute of Architects in Ireland, Sir W. B. Richmond, Sir L. Alma-Tadema, Mr. T. W. Russell, Sir W. Bayliss, Mr. Gregory, and the presidents of a number of the scientific and other learned societies.

"Competitions Again."—Under this title on page 368 of last week's issue was recited the strange action of the Carlisle School Board with reference to the competition for a new higher grade school. The Board has now decided to publish the report of their assessor (they declined to produce it before), who says in his general remarks:—"I am of opinion that the four plans marked 'C' (Messrs. Castiglione and Gibbings), 'E' (Mr. G. Armstrong), 'G,' scheme J (Mr. T. Taylor Scott), and 'H' (Messrs. Oliver and Dodshun) possess the most merits and are deserving of the premiums to be awarded. I have not been asked to place these plans in order of merit but am prepared to do so if requested." It would be interesting to know on what grounds the Board decided to discard the recommendations of the assessor, because of the four designs selected by him only two are included in the Board's award.

Deputy-Surveyorship, Barry.—Mr. E. Finchcliffe, of Crewe, has been appointed to his post at a salary of £175 a year. There were thirty-nine applications.

The Wallace Collection.—The magnificent collection of art treasures contained at Hertford House, Manchester Square, was formally opened by the Prince of Wales on Friday.

The County Surveyors (Ireland) Bill has read a second time in the House of Lords on Friday. Its object is to obviate the unnecessary examinations which county surveyors in Ireland now have to undergo.

A new Observatory at Grimsby was opened on Thursday last. It is situate in the People's Park and has been presented by the Mayor, in commemoration of the Queen's eightieth birthday. The tower is 50ft. high, and is surrounded by a balcony.

The Society for the Protection of Ancient Buildings held its annual meeting in the meeting-room of the Society of Antiquaries, Burlington House, on Wednesday last. The attitude of Lord Curzon in regard to the ancient buildings of India was noted with satisfaction. It was regretted that Newgate

prison was to be demolished, and a committee reported that they had impressed on the London County Council that it was worth some sacrifice to preserve some of the old houses on the west of Lincoln's Inn Fields.

Change of Address.—Messrs. B. Ward and Co. have removed from 15, Great George Street to new offices at 38-9, Parliament Street, Westminster, S.W.

"Architectural Review" Competition.—Owing to difficulties in obtaining site plans, the closing day for this competition (which is for a villa on the Riviera) has been postponed.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING—			
June 29	Gowerton, Wales—School	School Board	W. Jenkins, Dunraven House, Gowerton.
19	Irvinestown, Ireland—School		Henry Armstrong, Irvinestown.
29	Stockport—Fire Station	Watch Committee	J. Atkinson, Borough Surveyor, St. Petersburg, Stockport.
30	Bristol—Reconstructing Bridge	Docks Committee	W. W. Squire, Engineer, Cumberland Basin, Bristol.
30	Brighton—Villas	Freeholders of the Madeira Estate	J. M. Ferguson, 8, Quality-court, Chancery-lane, E.C.
30	Witham—Bridge	Essex County Council	Chief Surveyor, County Offices, Chelmsford.
30	Gwinear, Cornwall—Additions		Sampson Hill, Green Lane, Redruth.
30	Ippleton, Devon—Farmhouse	R. Meddicott	S. Segar, Architect, Union-street, Newton Abbot.
30	Leeds—Houses	A. Webster	W. H. Beevers, 26, Bond-street, Leeds.
30	Llangollen, Wales—House	E. Evans	16, West-street, Llangollen.
30	Old Hartley—Church		B. Dickinson, Secretary, Old Hartley.
30	War Dept. Contract, Ballincollig, Cork—Stables, &c.		Royal Engineer, The Barracks, Cork.
30	Warwick—Buildings	Managers of King's Middle School	R. C. Heath, 1, New-street, Warwick.
July 1	New Ferry, Cheshire—Bowling Pavilion	Lower Bebington U.D.C.	Surveyor, Council Offices, New Ferry, Cheshire.
2	Bury—Rebuilding	George Street Brewery Co. Ltd.	J. Grundy and Sons, 12, Brazen-nose-street, Manchester.
2	Bury, Lancs.—Hospital	Health Committee	Pole and Little, 9, Gray's-inn-square, London, W.C.
2	Exmouth—House	W. Sansom	P. Sherwin, Architect, Manchester-street, Exmouth.
2	Hull—Larder	Guardians	Freeman, Son & Gaskell, Albert-chmbrs., 11, Carr-lane, Hull.
2	Loughborough, Leics.—Alterations	Town Council	A. H. Walker, Town Offices, Loughborough, Leicester.
2	Peterston-uper-Ely, Wales—Additions	Rev. Canon Roberts	G. E. Halliday, Architect, Cardiff.
2	Rawtenstall, Lancs.—Church		Austin and Paley, Castle Park, Lancaster.
2	Southwam, Yorks.—Alterations, &c.	School Board	Walsh & Graham, Lancs. & Yorks. Bank-chmbrs., Halifax.
2	Oxford—Public Conveniences	Corporation	City Engineer, Town Hall, Oxford.
3	Bristol—Alterations and Additions	New Streets Committee of the Corpor.	T. H. Yabbicom, 63, Queen-square, Bristol.
3	Cleethorpes, Grimsby—Schools	School Board	Croft and Bentley, Osborne-street, Great Grimsby.
3	Burton-upon-Trent—Bubble Wall	Corporation	G. T. Lynam, Town Hall, Burton-upon-Trent.
4	Ellesmere, Salop—Shelters	Urban District Council	R. E. Lloyd, Clerk, Ellesmere.
4	Barnstaple—Homes	Guardians	W. C. Oliver, Architect, Barnstaple.
5	Cork—Dwellings	Corporation	H. A. Cutler, City Engineer, Cork.
5	London, S.E.—Offices	Guardians of St. Saviour's Union	G. D. Stevens, 13, King-street, E.C.
5	Sheffield—Hospital	City Hospital Committee	C. F. Wike, Town Hall, Sheffield.
5	Spennymoor, Durham—Alterations	Tudhoe School Board	Mr. Rogers, Surveyor, Silver-street, Spennymoor.
7	Chesterfield—School	School Board	W. Cecil Jackson, 29, Knifesmith Gate, Chesterfield.
7	North Ormesby, Middlesbrough—Police Station		County Surveyor, Northallerton.
9	Armagh—Alterations	Asylum Governor	J. C. Boyle, The Mall, Armagh.
9	Beckenham—Brick Transformer Stations	Urban District Council	J. A. Angell, Council Offices, Beckenham.
9	Bexley, Kent—Farm Buildings	Asylums Committee of the L.C.C.	Clerk, Asylums Committee, 6, Waterloo-place, S.W.
9	London, E.—Town Hall Extension	Shoreditch Vestry	Clerk, Town Hall, Old-street, E.C.
10	Brighouse—Laundry	Joint Hospital Board	Sharpe and Waller, 32, Brailford-road, Brighouse.
14	Donaghadee, Ireland—Villa		W. J. Fennell, Scottish Provident-buildings, Belfast.
14	Farnborough—Cottages		W. T. Taylor, County Surveyor, The Castle, Winchester.
16	Hellingly, Sussex—Asylum	Urban District Council	R. Blaker, 211, High-street, Lewes.
16	Wimbledon—Alterations	School Board	Council Surveyor, The Broadway, Wimbledon.
17	Patcham, Sussex—Premises	Visiting Committee	Clayton and Black, Architects, Patcham.
21	Bodmin—Farm Buildings	Corporation	R. P. Edyvean, Clerk, Bodmin.
30	Cardiff—Town Hall and Law Courts		Town Clerk, Town Hall, Cardiff.
ENGINEERING—			
June 29	Hartlepool—Reservoir	Corporation	Martin and Fenwick, 1, Park-place, Leeds.
29	Hull—Bascule Bridge	Rural District Council	City Engineer, Town Hall, Hull.
29	Walsall—Pump Well	Tramways Committee	F. W. Mager, District Surveyor, Aldridge, Walsall.
30	Manchester—Overhead Equipment	Gas Committee	J. M. McKilroy, Tramways Dept., Town Hall, Manchester.
30	Carlisle—Water Gas Plant	Corporation	C. B. Newton, Gasworks, Carlisle.
30	Dudley—Condensers		R. P. Wilson, 66, Victoria-street, Westminster.
July 1	Alexandria, Egypt—Generating Machine	New Streets Committee	Controller-General Ports and Lighthouses, Alexandria.
3	Bristol—Bridge	South Indian Railway Co. Limited	T. H. Yabbicom, 63, Queen-square, Bristol.
3	London, E.C.—Engines and Tenders	Tottenham Urban District Council	South Indian Railway Co., 55, Gracechurch-street, E.C.
3	London, N.—Fire Alarm Posts	Middlesex County Council	E. Crowne, Coombes Croft Ho., 712, High-rd., Tottenham.
3	Walton-on-Thames—Strengthening Bridge	City Council	H. T. Wakelam, Guildhall, Westminster, S.W.
4	Limerick—Electric Lighting	Corporation	J. Enright, 47, Victoria-street, London, S.W.
5	Taunton—Filters	Consumer's Gas Co. Ltd.	Borough Surveyor, Taunton.
5	Northallerton—Exhauster	Rural District Council	J. A. Squire, Consumers Gas Co. Ltd. Gas Committee.
5	Uxbridge—Bacteria Beds	Spanish Government	Denton, Son, and Lawford, Palace Chambers, Westminster.
7	Madrid—Electric Tramway	Lancashire County Council	Commercial Department, Foreign Office, S.W.
9	Haslingden, Lancs.—Bridge	Corporation	County Bridgemaster, County Office, Preston.
9	Swansea—Reservoir	Urban District Council	E. H. Wyrle, Guildhall, Swansea.
10	Bexley Heath, Kent—Footbridge	Urban District Council	W. T. Howse, Public Offices, Bexley Heath, Kent.
10	Mountain Ash, Wales—Boiler	Corporation	J. Williams, Town Hall, Mountain Ash.
13	Hull—Bridge	Corporation	A. E. White, Town Hall, Hull.
14	Dublin—Refrigerating Machinery	Tees Valley Water Board	G. T. Harrap, 5, Budge-row, London, E.C.
14	Middlesbrough—Reservoir	Guardians	J. Mansergh, 5, Victoria-street, Westminster.
14	South Shields—Electric Lighting	Parish Council	J. W. Coulson, Union Offices, South Shields.
17	Trimdon, Durham—Lighting		T. W. Wilkinson, Parish Council Offices, Trimdon Hall, Trimdon.
23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5, East India-avenue, E.C.
23	Kolbergermunde, Germany—Dredger	Harbour Superintendent	Der Hafenbauinspektor, Harbour Works, Kolbergermunde, Germany.
Sept. 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depot, Hammerton-street, Bradford.
IRON AND STEEL—			
July 4	Amsterdam—Ironwork	Netherland Government	Commercial Department, Foreign Office, London.
7	Midhurst, Sussex—Fencing	Rural District Council	Surveyor, Council Offices, Midhurst.
10	London, S.W.—Lamp Standards	London County Council	Engineer, County Hall, Spring-gardens, S.W.
11	London, N.E.—Lamp Pillars	Electric Lighting Committee of the Hackney Vestry.	R. Hammond, 64, Victoria-street, Westminster, S.W.
PAINTING AND PLUMBING—			
June 29	Wolverhampton—Painting	School Board	F. H. Fleeming, 102, Darlington-street, Wolverhampton.
29	Eastbourne—Painting and Cleaning	Guardians	F. G. Cooke, 2, Hyde-gardens, Eastbourne.
29	Hebron, Wales—Painting	Trustees of Welsh Baptist Chapel	J. Rees, Architect, Pentra.
29	Stanhope, Durham—Painting	Industrial and Provident Soc. Ltd	Managers, Society's Premises, at St. John's Chapel, and Frosterley.
30	Bedwas, Wales—Repairing	School Board	Lewis Miles, Secretary, Bedwas.
30	Keighley—Painting		Clerk, School Board, Keighley.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.		WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
PAINTING AND PLUMBING—Continued.				
July	1	Whitwood Mere, Castleford—Colour-washing ...	School Board	J. Redpath, 72, Methley-road, Whitwood Mere.
"	2	Halifax—Painting ...	School Board	W. H. Osler, 22, Union-street, Halifax.
"	2	Warwick—Painting ...	School Board	F. H. Moore, 2, Northgate-street, Warwick.
"	4	Gravesend—Redecoration of Town Hall ...	Town Council	E. J. Bennett, 189, Parrock-street, Gravesend.
"	4	Sheffield—Painting ...	School Board	J. F. Moss, School Board Offices, Sheffield.
ROADS—				
June	29	Goole—Street Paving ...	Urban District Council	F. Chambers, Council Surveyor, Goole.
"	29	Wisbech—Materials ...	Walsoken Urban District Council	J. Kerridge, Club-chambers, Old Market, Wisbech.
"	29	Bolton-on-Dearne, Yorks.—Improvement Works	Urban District Council	Surveyor, Council Offices, Bolton-on-Dearne.
"	29	Lancaster—Road Diversion ...	Rural District Council	W. Dixon, 5, Dalton-square, Lancaster.
"	30	Beccles—Flints ...	Corporation	Town Clerk, Beccles.
"	30	Shiremoore, near Newcastle—Street Works	Earsdon Urban District Council	J. R. MacMillen, Council Offices, Backworth.
July	1	Croston, Preston—Paving Setts ...	Urban District Council	T. Whittle, The Hillocks, Croston.
"	2	London, E.—Granite Pitchings	Bermondsey Vestry	Surveyor, Town Hall, Spa-road, E.
"	2	Northwram, Yorks.—Works	Urban District Council	Walsh and Nicholas, Yorkshire Bank-chambers, Halifax.
"	4	London, E.—Pitching ...	Mile End Old Town Vestry	J. M. Knight, Vestry Hall, Mile End-road, E.
"	4	Balby and Hexthorpe, near Doncaster—Forming	Urban District Council	G. Gledhill, High-road, Balby.
"	4	Winton, Bournemouth—Kerb	Urban District Council	W. T. Streater, Council-chambers, Winton.
"	4	Chiswick—Making-up ...	Urban District Council	Surveyor, Council Offices, Sutton Court, Chiswick.
"	7	Sunderland—Materials	Rural District Council	T. Young, Council Offices, Sunderland.
"	7	Swinton, Lancs.—Setts	Urban District Council	H. Entwisle, Council Offices, Swinton.
"	9	London, N.W.—Street Works	Hendon Urban District Council	Engineer, The Burroughs, Hendon, N.W.
"	9	Quarry Bank, Staffs.—Street Works	Urban District Council	Surveyor, High-street, Quarry Bank.
"	16	Wimbledon—Yard	Urban District Council	Council Surveyor, Broadway, Wimbledon.
"	21	Lewes—Granite ...	Town Council	M. S. Blaker, Town Hall, Lewes.
SANITARY—				
June	29	Durham—Sewer ...	Rural District Council	G. Gregson, Eastwood, Western Hill, Durham.
"	30	Macclesfield—Sewer ...	Rural District Council	J. Thorpe, 19, King Edward-street, Macclesfield.
"	30	Backworth, near Newcastle-on-Tyne—Sewerage Works	Earsdon Urban District Council	J. R. MacMillen, Council Offices, Backworth.
July	2	Rotherham—Sewers ...	Sewage Works Committee	R. E. W. Berrington, Bank-buildings, Wolverhampton.
"	2	Southwick, Sussex—Sewerage Works	Urban District Council	C. O. Blaber, 64, Ship-street, Brighton.
"	2	Thornhill, Yorks.—Scavenging	Urban District Council	S. W. Parker, Council Offices, Thornhill, near Dewsbury.
"	3	Dover—Drains ...	Town Council	H. E. Stilgus, Town Hall, Dover.
"	4	St. Stephen's-by-Saltash, Cornwall—Drainage Works	St. German's Rural District Council	S. W. Joukin and Son, Liskeard, Cornwall.
"	6	Brighton—Drain Pipes ...	Town Council	T. J. C. May, Town Hall, Brighton.
"	9	Quarry Bank, Staffs.—Sewers	Urban District Council	W. Fiddian, Old Bank Offices, Stourbridge.
"	11	Hambleton, Surrey, Sewerage Works	Rural District Council	F. Smallpiece, Clerk, Guilford.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.		DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
June	30	Blackburn—Police Courts ...	£78 15s. each to six competitors	R. E. Fox, Town Hall, Blackburn.
July	16	Falmouth—Sewerage Scheme ...	£100, £50, £25	J. H. Genn, Town Clerk, Falmouth.
Aug.	1	Sunderland—Church ...	.....	William Wilson, 7, Azalea-terrace, South Sunderland.
"	25	Cardiff—Asylum...	£105	Borough Engineer, Town Hall, Cardiff.
No date.		Biviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review" (see p. xi).

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FORAGE.

Hay, best	per load	£ 8 10 0	2 s. d. 4 0 0
Sainfoin mixture	do.	8 15 0	4 5 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 0 8	1 7 0
Straw	per load	1 4 0	1 18 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 8 0	1 11 6
Colza Oil, English	per cwt.	1 9 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	per cwt.	1 2 10	—
Do. red	per cwt.	1 15 0	—
Linseed Oil	per gal.	0 0 6 3	0 0 6 3
Petroleum, American	per gal.	0 0 6 3	—
Do., Russian	per gal.	0 0 6 3	—
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	3 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 5 0	1 7 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 17 0	—

METALS.

Copper, sheet, strong	per ton	84 0 0	—
Iron, Stuffs, bar	do.	10 0 0	11 10 0
Do. Galvanized Corrugated sheet	do.	14 0 0	—
Lead, pig, Spanish	do.	17 2 6	17 7 6
Do. do. English common brands	do.	17 12 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, sin. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Stuffs, Girders and Angles	do.	8 15 0	9 5 0
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	138 10 0	139 0 0
Do. English ingots	do.	142 0 0	—
Zinc, sheets, Silesian	do.	25 0 0	—
Do. do. Veille Montaigne	do.	25 17 6	—
Do. Spelter	do.	20 7 6	21 5 0

TIMBER.

Sort Woods.

Fir, Dantzic and Memel	per load.	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 0 0
Do. Pitch	do.	8 16 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4 4	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	12 15 0	18 0 0
Do. do. 4th & 3rd.	do.	12 15 0	14 15 0
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	14 0 0	16 10 0
Do. do. 2nd	do.	8 15 0	14 10 0
Do. do. Unsorted	do.	14 5 0	—
Do. do. White	do.	11 5 0	—
Do. Swedish	per P. Std.	16 15 0	18 0 0
Do. White Sea	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd & 4th.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st per P. Std.	do.	10 10 0	10 10 0
Do. do. 3rd & 2nd do.	do.	8 10 0	10 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	9 5 0	10 15 0
Flooring Boards, 1 in. prepared, 1st	per square	0 10 6	0 10 9
Do. 2nd	do.	0 9 6	—
Do. 3rd & 4th.	do.	0 8 9	—

HARD WOODS.

Ash, Quebec	per load	£ 8 17 6	2 s. d. 4 10 0
Birch, Quebec	do.	8 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4 4	—
Do. Honduras	do.	0 0 3 23/32	—
Do. Tobasco	do.	0 0 4 1/32	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4 15/16	—
Do. African	do.	0 0 3 13/32	—
Do. St. Domingo	do.	0 0 6 7/32	—
Do. Tobasco	do.	0 0 4 11/16	—
Do. Cuba	do.	0 0 6 27/32	—
Oak, Dantzic and Memel	per load	8 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	8 15 0	5 15 0
Do. Odessa Crown	do.	8 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 6	0 8 5

COMING EVENTS.

Wednesday, June 27.

INSTITUTION OF MECHANICAL ENGINEERS.—Summer Meeting (First Day). Prof. H. S. Hele-Shaw on "Road Locomotion," Mons. Edouard Sauvage on "Recent Locomotive Practice in France," Prof. C. A. Carus-Wilson on "Polyphase Electric Traction," Mr. Bryan Donkin on "Observations on an Improved Glass Refractor for Studying Condensation in Steam-engine Cylinders and Rendering the Effects Visible," 10.30 a.m. Annual Dinner at the Hotel Cecil, 7.45 p.m.

TIMBER TRADES' BENEVOLENT SOCIETY.—Festival Dinner at Trocadero Restaurant. 7 p.m.

SOCIETY OF ARTS.—Annual General Meeting. 4 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS INSTITUTION.—Half-yearly Meeting of the Directors. 8 p.m.

Thursday, June 28.

INSTITUTION OF CIVIL ENGINEERS.—Dinner to Sir Douglas Fox, president, by the Council and Officers of the Institution, Grand Hotel. 8 p.m.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Annual Dinner at Frascati's Restaurant. 7.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Summer Meeting (Second Day). 10.30 a.m.

HELLENIC SOCIETY.—Meeting. 5 p.m.

DUNDEE INSTITUTE OF ARCHITECTURE, &c.—Annual Business Meeting. 7.30 p.m.

Friday, June 29.

INSTITUTION OF MECHANICAL ENGINEERS.—Conversation. 9 p.m.

Saturday, June 30.

ARCHITECTURAL ASSOCIATION.—Second Summer Visit to Christ's Hospital, Horsham.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Visit to Windsor, conducted by the Rev. Canon Dalton, F.S.A. Meet in the nave of St. George's at 3.40 p.m.

Tuesday, July 3.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST AND BEAUTY.—Annual Meeting at Grosvenor House. 4.30 p.m.

ROYAL ACADEMY.—Soirée. 9 p.m.

Thursday, July 5.

INSTITUTION OF CIVIL ENGINEERS.—Reception at Guildhall. 9 p.m.

SOCIETY FOR THE PROMOTION OF HELLENIC STUDIES.—Annual Meeting.

ROYAL INSTITUTE OF PAINTERS IN WATER-COLOURS.—Soirée Musicale in aid of the Francis Joseph Institute.

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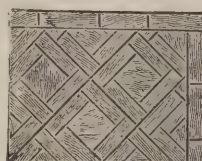
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BRIXTON, S.W.—For alterations and additions to Brixton Independent Church. Mr. P. Morley Horder, architect, 148, New Bond-street, W. :—
Maxwell Bros. ... £4,290 Patman and Fothering-ham ... £3,741
John Grover and Sons ... 4,293 F. and H. Higgs ... 3,710
Holloway Bros. ... 4,140 Holliday and Green ... 3,575
Wm. Higgs ... 3,994 wood ... 3,575
H. L. Holloway ... 3,900
BRYN.—For the erection of a church. Mr. F. B. Smith, architect, Fort Talbot :—
E. Groom ... £3,610 9 3 Jno. Davies ... £3,290 0
Lathey and Co., Cardiff ... 3,444 14 10 * Accepted.

CRICKLADE (Wilts).—For the erection of a Cemetery Chapel, boundary walls and palisading, &c., Cricklade, Wilts, for the Burial Board. Messrs. William Drew, M.S.A., and Sons, architects, Swindon :—
Flewelling and Hucksion ... £830
F. Barnes and Son, Purton ... 820
C. Williams ... 687
J. Williams ... 656
* Accepted. [Rest of Swindon.]

HORSELL (Surrey).—For new residence in Carlton-road, Horsell, Woking, for Mr. R. Gale. Mr. Hy. A. Whitburn, architect, 22, Surrey-street, W.C., and Woking. Quantities by Mr. Edwin C. Finks, Parliament-mansions, Victoria-street, S.W. :—
Stanley Ellis ... £28,461 Ingram and Son ... £2,870
Heglett & Hammond ... 3,394 R. Wood ... 2,567
G. Kemp ... 2,950 Harris and Son, Woking ... 2,725
Martin Wells and Co. ... 2,399 * Accepted.

LONDON.—For rebuilding and reinstating after fire the "Railway Bar" public-house, Elephant and Castle, S.E., for Messrs. Barclay, Perkins, and Co. Mr. G. Hubbard, architect :—
Goodall and Sons ... £1,626 J. C. Richards ... £1,497
Webber and Co. ... 1,520 W. Nash, New Cross ... 1,479
Burman and Sons ... 1,497 * Accepted.

LONDON.—For the construction of a lift at premises East-street, Southwark, S.E., for Messrs. A. Joseph and Co. Mr. H. Fuller Clark, architect, 28, John-street, Bedford-row, W.C. :—
The Otis Elevator Co. ... £144 M. F. Medway ... £263
R. Waygood and Co. ... 265 A. Smith and Stevens ... 258

LONDON.—For alterations to the "Lord Gough" public-house, West Ham. Messrs. Foulsham and H. Riches, architects, 3, Crooked-lane, King William-street, E.C., and Bromley-by-Bow, E. Quantities supplied :—
W. Maddison ... £1,767 T. Welsh ... £1,735
Courtney & Fairbairn ... 1,755 Sheffield Bros. ... 1,555
A. E. Symes ... 1,750 * Accepted.

LONDON.—For repairs and decorations at the "Crystal Tavern," Mile End, E. Messrs. Foulsham and Herbert Riches, architects, 3, Crooked-lane, King William-street, E.C., and Bromley-by-Bow, E. :—
A. Webb ... £399 T. H. Jackson ... £335
S. Salt ... 339 T. Osborn and Sons ... 323
* Accepted.

LONDON.—For erecting a three-storey factory and other alterations at Crosby-row, Bermondsey. Mr. Edward Crosse, architect :—
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H. J. Williams ... 1,697 0 0 Newton ... 1,644 13 11
F. and H. Higgs ... 1,693 0 0 Wells and Son ... 1,615 0 0
F. and H. Higgs ... 1,670 0 0 * Accepted.

LONDON.—For erection of stabling for Messrs. Tilling and Co., at Lee, S.E. Mr. A. L. Guy, architect :—
Derman ... £6,622 14 Staines ... £5,500 0
Daly ... 5,880 0 Faulkner ... 5,583 0
Havell ... 5,793 0 Jerrard ... 5,561 0
Courtney ... 5,697 0 Kennard Bros. ... 5,533 0
Leng ... 5,622 0 * Accepted.

SOWERBY BRIDGE.—Accepted for additions and alterations to St. George's Schools. Mr. S. Wilkinson, architect, Sowerby Bridge :—
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SALTASH.—For the erection of dwelling house and offices on the "Path Fields" estate, St. Stevens-by-Saltash, for Mr. Parkes. Mr. Edgar M. Leest, architect, Public Hall-chambers, Devonport, and 59, Fore-street, Saltash :—
W. V. Alford ... £270 S. E. D. Ough ... £685
Taylor and Mutton ... 699 * Accepted.

TREDEGAR (Mon.).—For the erection of a hotel, for Messrs. Griffiths Bros., Limited. Messrs. Lansdowne and Griggs, architects, Metropolitan Bank Chambers, Newport, Mon. :—
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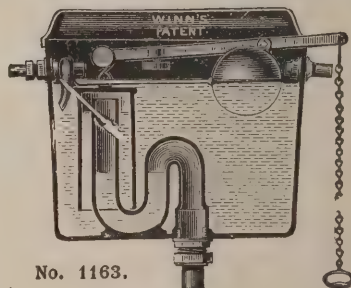
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JULY 4, 1900.
No. CCLXXXII.

EFFINGHAM HOUSE,
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An Architectural Causerie.

New Sessions House Designs. We commented last week on some general characteristics of the designs for the

New Sessions House, and on Mr. Mountford's design in particular. Of the unsuccessful designs, that by Mr. Florence seems to us to be in many respects superior. There seems to be a general ruling idea in the plan which the rest of them lack. It is set out more on good architectural lines, which lead to finer effects. On entering, the vista is straight before one; we have not to turn to right or left to be struck with the effect. The central hall or wide corridor, running from front to back, produces naturally a grand central feature in the front, which is emphasised by a large pediment accentuating the entrance. The flanking colonnades to right and left suggest the presence of the courts, and if the two projecting blocks which balance one another are not exactly expressive of the plan, at least the right-hand one has perhaps sufficient excuse. The weakest part seems to be the treatment of the left-hand projection, and the return to Newgate Street, where the elevation is treated in a purely arbitrary manner which is false in effect. Mr. Florence seems to have treated the design more on its own merits than any of the others, and not to have been misled by a fancied necessity to over-use rustications. We cannot say that we think it shows any more of the special sentiment or character of the building than do the other designs; but, taking it all round, it strikes us as the most genuine attempt to produce architecture. The arrangement of the courts with the tower and staircase on the central axis is very pleasing in effect, and is probably as convenient on the principal floor as any other; but it leads to a difficulty with the stairs to the docks, which come down in the centre of the rooms below. The ground floor is, by contrast, rather chaotic, but not much, if at all, worse than the rest.

Mr. Belcher has a design which is interesting. In its general arrangement the principal difference is the state entrance for the Lord Mayor at the angle of the two main streets. Although at first sight it may seem the right idea to place a principal entrance at the corner of a site with two frontages, yet, in this case, we think it a mistake, as the rest of the plan cannot be arranged to suit. The *porte-cochère* for the use of a state coach and four-in-hand is a mockery—the curve should have been concave, not convex; the circular hall spoils the rooms each side, and leads to awkward shapes everywhere; and the outside effect of it all is far from happy. As a plan, we do not think it compares favourably with Mr. Mountford's. The ground floor is not so

well lighted, and the arrangements are not so convenient. We doubt the convenience of bringing in the general public to the galleries at the main entrance. Probably it was a mistake to place a court to the extreme right of the plan—it seems more natural to keep all the courts in the main part of the site. As regards elevation, the main wall between the large features, where treated with pilasters, would look well, and it seems the right thing to accentuate the large hall, but we cannot say we like the way it is done. The author has managed to express some of the main

Brydon. It is not necessary to point out how false and inartistic this effect is, how little it expresses the plan and arrangements. That sham-screen wall forming the return of the attic is as bad as that at St. Paul's. Has there been no progress in ideas since then?

But, however much we may condemn the general treatment of this scheme, we must do what justice we can to any good points, one of which seems to us to be the corridors between the courts, which give better access to them than is to be obtained in Mr. Mountford's scheme; though on the other hand the



DESIGN FOR COVER OF CATALOGUE BY C. ANGUS.

facts of the scheme in his elevation, and has not gone out of his way to produce arbitrary breaks and features of all sorts, in which respect he compares favourably with most of the others.

We are particularly disappointed with Mr. Brydon's design. Mr. Brydon has a reputation for quiet sensible work that was pleasing and artistic. This design goes near to ruining it. We remember no greater artistic mistake than this, by any man with pretensions to the name of architect. We could have understood some people doing it, but not Mr.

arrangement of the judge's rooms is not so good. Some of the internal effects promise well, and no doubt there are many good points, but we find all interest or pleasure in looking at it entirely spoilt by the front elevation.

In the design by Mr. Hare the same fault is noticeable; the front elevation is not the natural expression of the plan. It is not difficult to design an arbitrary elevation if we neglect its connection with the plan. The difficulty is to design the plan so that it will naturally produce a fine effect in elevation.

This is where the skill of the architect is shown. The plan itself is simple and straightforward, and the courts seem well arranged, but here again all interest in the design is destroyed by the fact that the elevation is a sham. In itself this elevation is pleasing enough, it is broad and simple, and seems to have been inspired to some extent by Newgate prison—but, as the expression of the building, what value has it?

Mr. Baggallay has a plan which seems to have many good points. Some of his arrangements seem excellent. The main feature of his scheme is the manner in which he has modelled and cut up the main front of the building; presumably a reminiscence of Newgate. This arrangement does not seem to us to be satisfactory. On looking at the perspective one sees three large projecting blocks which one naturally supposes to be large and important rooms, presumably the courts. An examination of the plan shows them to be made up of large and small rooms and staircases, which, by this treatment, have an importance on the outside out of all proportion to their relative value in the whole scheme; and these large blocks are also treated in a way that does not express what is inside. The elevation is pleasing in detail, though it seems a little too ornate in parts, and the general effect does not strike one as being so dignified as some of the others. As plan, however, this design compares very favourably.

It is much to be regretted that so many of the designs show such utter contempt for one of the first and most important principles of design, viz. that the plan must express the elevation, and that neither elevation nor plan must be tortured to suit the other. We hear a great deal about this principle in lectures and papers, and at such functions as prize distributions and presidential addresses, when it is laid down and expounded with much righteous emphasis. When we see our leading men, chosen by our leading society, calmly ignoring this principle, what are we to think of the value or sincerity of the utterances with which we are so familiar? And what right have their productions to be considered as architecture at all?

It seems to us that the assessor in a competition for which such productions are submitted is in rather a difficult position. He is there as an architect, to judge architecture. As such, he should confine his attention to such works as come under that definition. If he is to take himself and his position seriously, and to act logically, what other course is open to him than to disqualify all such designs? Possibly the promoters may only require convenient buildings, in which case they should not invite an architect to judge them. Should this be so—as we suspect is very often the case—and should an architect be asked to arbitrate, would it be his duty to select only from the works of architecture, and to submit the rest of them to the promoters with the remark that while not coming within his province they may yet possibly be the sort of things that are wanted?

Whatever may be the most reasonable course of action, it seems to us that the present method, whereby competitions in architecture are promoted, architects invited to compete, an architect appointed assessor, and then works which violate the fundamental principles of architecture admitted and sometimes even selected as the best—such method seems to us to be neither logical nor just. How much longer are our ideas to remain in a state of chaos?

A. R. J.

On Reflection.

Quantity Surveyors' Fees.

THE case of *Mellor v. Britton*, reported in another column, revives the old question of the expediency of the quantity surveyor being paid by the builder. The custom is that the builder, on receiving the first instalment under his contract, pays the quantity surveyor's fees, and in straightforward building there is no objection to this procedure; but when the relations between the parties are at all complicated, or the work is a pure bit of speculation, there are plenty of opportunities for trouble. In the present case the defendant was contractor for a piece of speculative building, and his contract made provision for the payment of the quantity surveyor's fees on receipt of his first instalment. When this payment became due the building owner, being unwilling or unable to pay, compromised with the defendant by assigning to him, lock, stock, and barrel, the whole of his interest in the undertaking, and the latter endeavoured to resist the plaintiff's demand for fees on the novel ground that, as he had not received an instalment from the building owner, he was not liable for the amount. The defendant lost his case, it being decided that the amount of work that had been done would have enabled the building owner to raise money to meet the instalment if he was pressed; but the builder having agreed to accept the assignment of the building agreement in lieu of cash, he was not entitled to disregard the claim of the plaintiff for his fees. This case has its peculiarities, of course, and it discloses a new ground for disputing the quantity surveyor's fees, but we have never yet been able to understand the reason for including these fees in the contract price at all. It is no advantage to anybody. The architect, fearing to lose his client, does not mention the quantity surveyor; the client refuses to pay his fees because he was not informed about them, and sues the architect for damages; the builder sues the owner for the amount of the surveyor's fees, and the latter sues the builder. And all this accumulation of evils comes from perpetuating a silly and nonsensical custom that should long have been consigned to oblivion. If the owner paid the quantity surveyor direct, he would understand from the beginning that the latter's fees are additional to the architect's; the architect who gets out his own quantities would not be suspected of receiving illicit commissions, and the quantity surveyor would not have to resort to the Law Courts so frequently. In addition it is more fitting, from a professional standpoint, that the surveyor should be employed and paid direct by the owner.

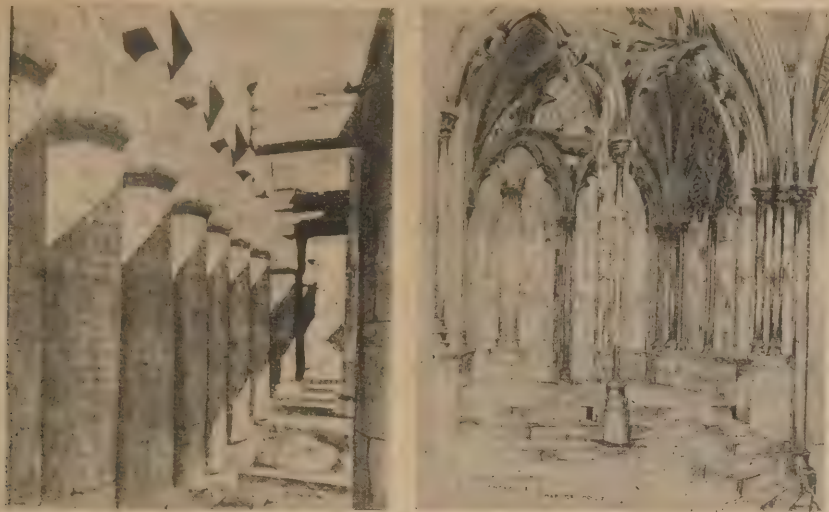
The Rent of Flats.

It was a slangy and laconic speculative builder, who, being asked what class of people inhabited flats, said, "Flats!" Doubtless from his point of view (he had built several blocks) he was right. The occupier rarely cares to know how his residence is built, and it is well sometimes for his peace of mind that he doesn't. But for many people flats have a convenience that cannot be denied; married couples without family, widows or widowers, bachelors, or people who have to travel a good deal, find them a convenience. But the rents that are being asked for the flats about London are really extortionate. No doubt the original idea in erecting flats was to enable families of moderate means to live in good residential districts by putting them one above the other instead of side by side. But flats no longer cater for people of moderate means, and if you ask the builder why, he will tell you that the ground rent is so enormous. It is a curious thing this ground rent. Land

in outlying suburbs which a year ago could fetch nothing exceptional in the way of ground rent is now being covered with blocks of flats at enormous rentals—enormous because of the heavy ground rent. Two curious instances of the high price of flats have recently come under our notice. In an outlying western suburb a new type of flat is being erected. These flats are built in rows, ground and first floor, and in appearance are exactly like the rows of small houses that abound all over London. Moreover, they occupy just about the same ground space, and are just as flimsily built. The ground and first floor flats have front doors side by side, that for the first floor opening direct on the stairs, which, being of wood, can easily be set alight to by the people in the lower flat, who have a cupboard underneath. And the owner is asking and getting £35 and £40 for these places, so that for a building occupying the same space as a £25 house he is getting £70 to £80 a year. The other case concerns some flats of a superior character, built in blocks of six, in three floors, and letting at £50 per annum each. At the back of these flats, fronting another road, some semi-detached villas are being erected at a rental of £50 a year. The ground space occupied by each villa is rather more than that occupied by one of the flats, and in addition the rooms are larger and better lighted, and the accommodation is greater. So for a smaller ground space the owner of the flats is getting three times as much rent as the owner of the villas next to them. Proportionately it is cheaper to live in Park Lane than in a Kensington flat. No wonder that the public is awakening to the fact that the advantages of flats are more apparent than real.

Saner Judgment Asked for.

THIS is the day of cheap travel, but there are dangers in the path of the traveller which are not mentioned in the guide-books. One of these is the danger of over-rating or under-rating prominent features in the country being visited, in allowing novelty to distort true judgment, or in failing to appreciate the real value of things because of national prejudices; and these remarks are particularly applicable to European countries. While the Briton secretly prides himself that his nation has neither the fickleness nor the sensualism of the French, the awkward ponderousness of the Germans, the ignorance of the Italians and Spaniards, nor the cruelty and dirtiness of the Turks, he will often exaggerate the merits or faults of these countries on the very first occasion he has of visiting them, and he is exceedingly prone to draw comparisons—of course, to our detriment—of the ways in which matters are managed here and on the Continent. For instance, a man goes to Normandy, and he comes back and tells you of the quaintness of the architecture, and how picturesque everything is, but he omits to discover that rooms are stuffy, or draughty, and decent sanitation is unknown. St. Malo is a charming old town to look at, there is a mediaeval aspect about it, but some of its streets are no more than 10ft. wide, and it can hardly be called satisfactory to empty slops out of the window into a zinc funnel forming the top of a pipe that runs down the wall to the street level. We hear a great deal of talk about Paris just now; its bridges are splendid, its sculpture is excellent; but it has many features which one would be sorry to see introduced here. All that is asked is that travellers should try to form a fair judgment of what they see, and not let their imaginations, or their ignorance, dominate them; and in all cases to give the benefit of a doubt to their own nationality; to be as patriotic in these matters as they are with regard to the excellence of their policeman, the superiority of their fire-brigade, and the defence of their country.



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EXHIBITION OF WORK.

FOREMOST amongst the Exhibitions held at the Walker Art Gallery, the annual one consisting of the work of the students of the above school is rightly taking its place as one of real interest to the lover of art and the citizen alike. Out of a veritable chaos which enveloped all effort subsequent to the foundation of the School in 1895, light and order are gradually merging; and this collection of work, opened recently by Sir William Forwood before a representative gathering, shows that already the influence of the school is being felt far beyond its immediate student roll.

The aim of the school is such as must necessarily take years of hard, persistent, and well-directed labour to attain. It is no less a one than to fathom deeper than the shallow waters in which the mere amateur finds pastime in the playful handling of the brush, the pencil,

or the chisel, and to sound the genuine artisan, who is too apt to be looked upon as a machine, systematically resigning his will, his taste, his talent maybe, to the exigencies of a lifeless trade. Through him eventually the everyday production of everyday articles of need, use, and enjoyment must be set upon a higher plane. This is no small ambition, but already the stone-carver poises his mallet and wonders if it is sufficient reason for him to be hewing such senseless forms, that hundreds of others have done the same before and are still doing them; and the smith leans on the anvil and hesitates before he distorts and twists his metal into such well-worn meaningless curves. The main result is that the artisan or craftsman is being helped to think for himself, to throw off the shackles which have bound him hand and foot so long, and to look upon his material in a manner he never did before. Thus in the exhibition much more stress must be laid upon the works in wood and stone or modelled for translation into such, in copper and brass, in iron, in embroidery, and in stained glass, than upon the easel productions

in oils or chalk, which, though necessarily given a prominent place, may be seen to greater advantage at any school of art pure and simple. We see the result of these studies, however, in the designs for black and white and book illustration generally, for textiles, wall coverings and friezes, and for stained glass, where the figure is freely and fearlessly introduced as the central motif.

It is not possible to leave this section without singling out the admirably conceived and forcibly executed design work of all kinds by C. D. Angus, G. A. Williams, and O. Allen. Mr. Angus's design for the cover of the illustrated catalogue, reproduced on p. 395, is an entirely sumptuous and decorative piece of drawing. There is a distinction about the work of these students in particular not due to mannerisms but to a genuine artistic sense, and it would be well if such could be said of the design work as a whole. The student unfortunately is apt to assimilate whatever is faulty in his master's work rather than what is sound and lasting, and there is a marked leaning in many of the exhibits towards a morbid conventionality which has found its way south of the Tweed. It shows itself in the long, gaunt, shapeless type of figure, which never could exist in a healthy state, and which treats anatomy as a useless restriction; in a generally weird and unearthly aspect of things in general; and in bad and often illegible lettering

in particular. From such one turns with relief to the really healthy and vigorous work produced in the modelling studio under Mr. C. J. Allen, and in the brass and copper workshop under Mr. R. L. B. Rathbone. In these, as well as in the wrought-iron and wood carving, one sees at a glance that the limitations of the material have been realised, and that the design has been thought out with due regard to them, the result being that the restless straining after effect which mars so much of the work of the "new school" is entirely avoided.

Owing to the full scope allowed, the exhibits in applied design are very numerous. G. A. Williams, who has just been awarded a County Scholarship, scores many well-deserved successes with much thorough and consistent work, ranging from modelling and drawing from the life to modelled designs for silver, bronze, and plaster work. The monumental drinking trough here illustrated is full of refreshing suggestions for the treatment of a subject which by common usage has been degraded beyond all reason. It is shown in a plaster model, one-third full size, and consists of a granite base about 12ft. long, carrying a large bronze trough treated with broad, easy-flowing surfaces. The same student's designs



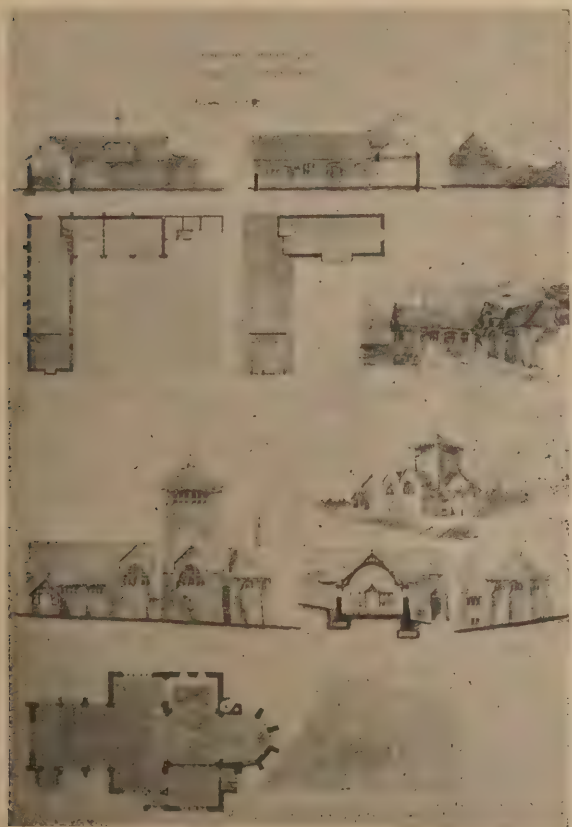
LES GARGOUILLES.

DESIGN BY C. ANGUS.

for a sun-dial in bronze, a dish in silver, and a scheme for the decoration of a room in coloured plaster are exceedingly happy.

The stained-glass studio has not long been in full working order, but already has produced some excellent pieces of coloured and leaded decorations. C. Meyer (another County scholar), C. Gwatkin, and M. Collins in particular have made rapid progress. One feels the simpler the arrangement the better the result is likely to be—in the panel of the former, for instance, a peacock's tail becomes confused when it is so conventionalised that each group of feathers has its own lead lines and colour; and in the work of the latter it is only after much attention and the exercise of no small amount of ingenuity that one can decipher the letters spelling "The Queen of Hearts" wrought in as part of the design and descriptive of it. This glass work is all cut and leaded by the students themselves.

Furniture design is not nearly so well represented as one might wish, considering that Liverpool—essentially a city of commerce and transit as distinguished from a city of manufacture—possesses quite its full share of cabinet



DESIGNS FOR COUNTRY HOUSE STABLES AND A MOUNTAIN CHURCH BY FRANK RIMMINGTON.



MODEL OF DRINKING TROUGH TO BE EXECUTED IN BRONZE AND GRANITE, BY G. A. WILLIAMS.

shops, representing a huge annual output of quite mediocre furniture and fittings.

Beyond the working drawings made by apprentices at the bench under a practical man, there is only one exhibitor who shows any serious attempts at putting thought and feeling into this most important craft. This is C. P. Wilkinson, and his work on paper commends itself to closer inspection than one would otherwise give, owing to the fact that two pieces of furniture actually carved out are successful and full of promise. We would point out, however, that in detailing such things it is of the greatest importance to consider the eye level: a flat projecting moulding may look admirable at a height of 6ft. or 7ft. from the floor, and be entirely out of place at a height of only 3ft. or 4ft., and we fear from his book cupboard that this has been rather lost sight of. The copper escutcheons upon it are very effective, and it is difficult to overpraise the other hammered and repoussé copper work shown by T. S. Pemberton, H. H. Eckstein, O. E. Thompson, H. B. Barl, F. Nachtigal and others, comprising a large variety of useful articles all designed with relation to the material and carried out in the best traditions of the craft.

The proportion of architectural drawings and sketches is one-third of the total number of exhibits, representing the work of students in various stages from their first year's acquaintance with a T-square to advanced compositions produced in the evening design classes, the whole being under the direct supervision of Professor T. M. Simpson and Mr. Arthur Stratton. In the design class, F. Rimington shows a set of five subjects rather weakly drawn but much aided by small perspective

sketches cleverly handled; A. Landstern, Guy Blood, and W. T. Clarke have also taken advantage of the opportunities offered by the class to practise the planning and composition of widely different classes of buildings without which no architect in these days can at all consider himself equipped to meet the many-sided demands made upon him. In this way thoughtful and workable schemes for "a mountain church," "a golf club-house," "a block of cottages," "a stable building," &c., have been produced from subjects set fortnightly during the winter terms.

The second-year students show an interesting group of designs for a country house fully treated as working drawings, and in the case of Ronald P. Jones further explained by a large scale model executed by himself. The same student shows several sketches in line and water colour made in English cathedral towns and in the ruined temples of Egypt, always truthful in the extreme, but rather thin and nervous in execution—faults which time and confidence will certainly remove. That the exhibition as a whole is a success nobody who visits it will dispute; that there is room for a higher standard of perfection no one will doubt. Let it be remembered that the training of the architect and the craftsman is a many-sided problem, the solution of which is beset by almost unsurmountable difficulties, and that any effort tending to raise the low dead level from which the country at large is as yet only beginning to arise, is worthy of all sympathy and support.

COLOUR IN ARCHITECTURE.

By A. TROYTE GRIFFITH.

I.—ITS AESTHETIC VALUE.

It is a curious fact that, though the element of colour is felt by everyone to be a most important factor in architectural effect, yet, with one great exception, architectural historians have usually afforded the most cursory treatment to this branch of the subject. Certainly the history of architectural development and the criticism of master-works of all ages may be written with very small reference to colour and colour decoration in a perfectly logical and scientific manner. But, after all, these are only the dry bones of an art, and if architecture is investigated on the lines of comparative osteology we shall never arrive at the vital principles that inspired the builders of previous ages, nor at the true spirit of the buildings themselves.

For a considerable period architecture has followed lines of development on which colour,

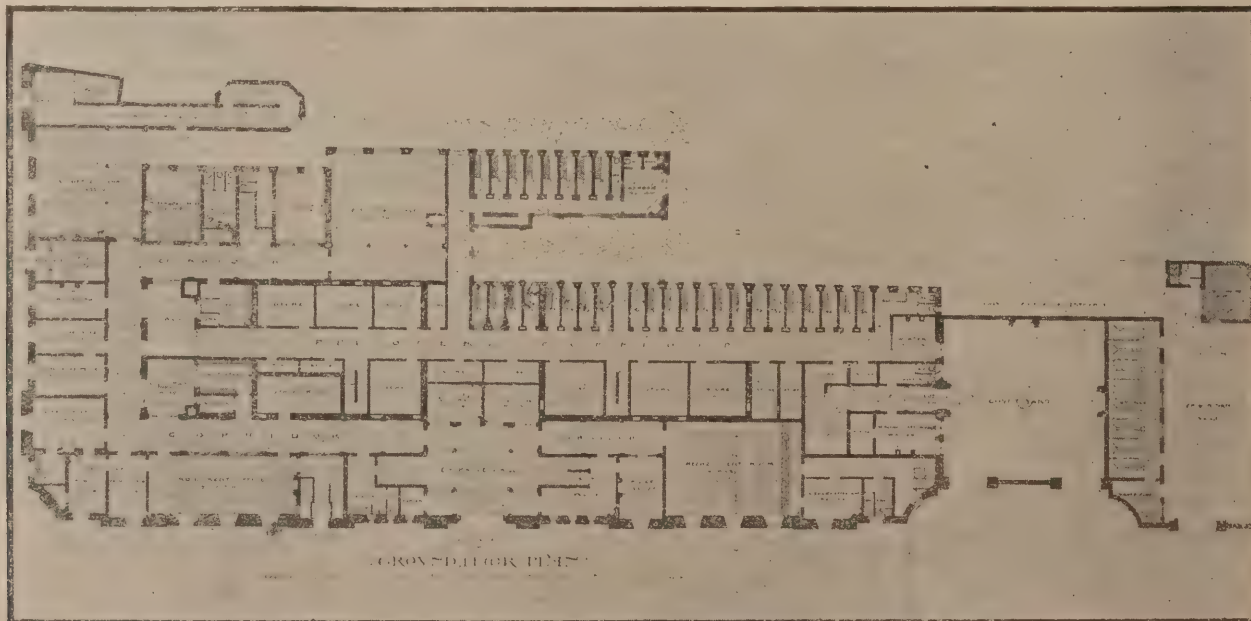
in the broadest meaning of the word, has had very small influence, and decoration in colour no influence at all; while painting, the expression of human emotions by the means of colour, in the most direct manner, has thrown off the guidance and restraint of architecture, and risen to a pre-eminence hitherto unknown in the history of art. Our houses and galleries are stored with pictures, often consummate harmonies of tone and colour, yet created with no consideration for their ultimate surroundings. On the other hand, the buildings themselves are designed and erected with no more regard to colour than may be contained in the question whether green slates or brown tiles be used for the roof or red bricks or yellow for the walls.

At previous periods of great artistic activity, before painting had become a separate art, the element of colour entered extensively into architectural effect; but since the discoveries and improvements in the methods of drawing and light and shade, in the fifteenth and sixteenth centuries, the influence of colour has mainly been confined to the pictorial arts. That the advancement of painting would of necessity react on architecture was soon shown by such buildings as the Arena Chapel at Padua, and the Sistine Chapel at Rome, but that it should ultimately deprive architecture of the use and enjoyment of colour was far from the intention of Giotto or Michael Angelo. Such, however, has been the result, but whether the irretrievable result remains to be seen.

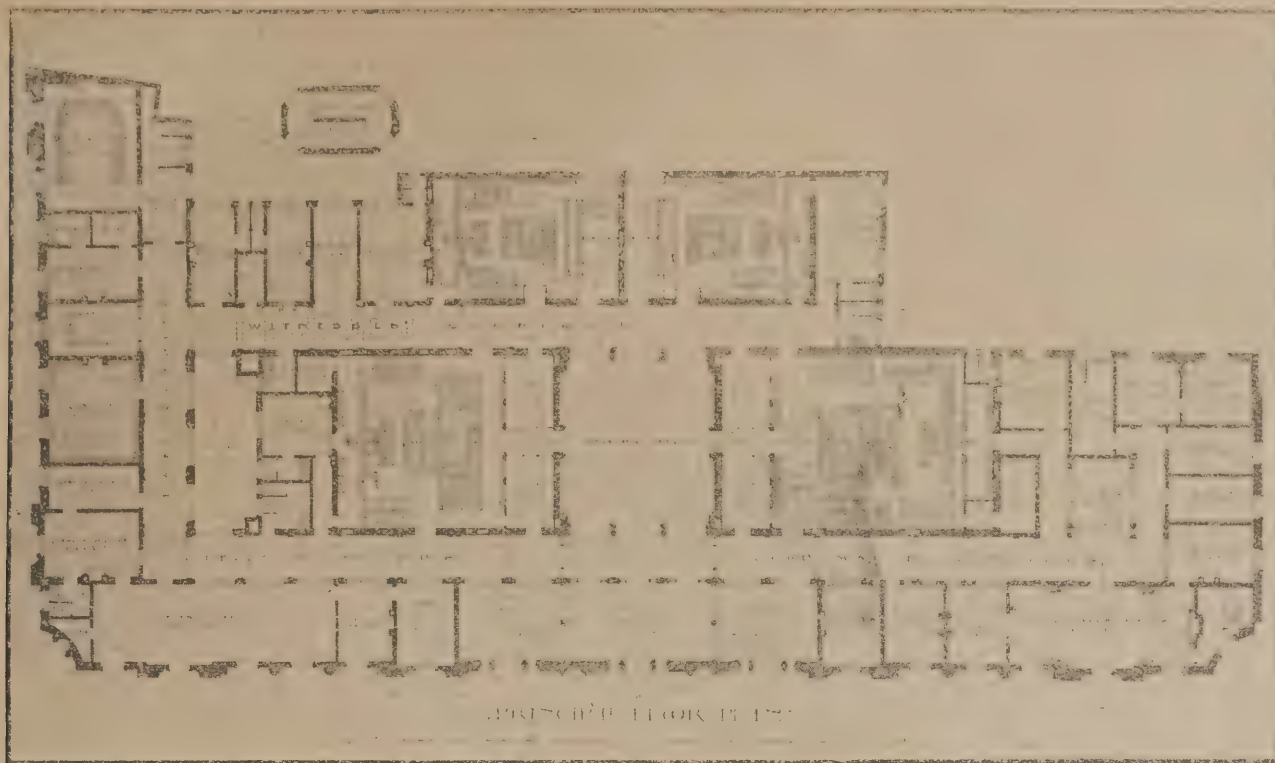
It is, perhaps, advisable to clear the ground by a brief definition of colour and sight. The sensation of sight is produced by the action on the retina of the eye of very minute waves, transmitted from the objects seen. Waves of a certain length produce the sensations known as redness, and waves of other lengths produce sensations of other colours. So that colour is an internal sensation, and has no existence as colour outside our eyes, and it is impossible to see forms apart from colour sensations of varying intensity. These colour sensations are probably the readiest means of affording æsthetic pleasure to mankind. Savages almost invariably take delight in simple combinations of colour, as may be noticed in their weaving and basket-work. And although civilisation has developed the distressing disease of colour-blindness, yet so potent are the attractions of colour for even the most acute thinkers that the beauties of polarised light may be said to have given rise to an abstruse branch of mathematics.*

But in spite of the almost universal craving

* See Rood's "Modern Chromatics," Chap. XXIII. See also Church's "Colour," Chap. I.



NEW SESSIONS HOUSE: DESIGN BY H. T. HARE, F.R.I.B.A.



NEW SESSIONS HOUSE: DESIGN BY H. T. HARE, F.R.I.B.A.

for colour, it has often been stated that it is not essential, or even desirable, in architecture, and these beautiful effects which so readily touch the mind of man should be renounced by the architect. Strictly speaking, this is impossible. For what is building to us but colour? The most monochromatic building in the world is made up of patches of colour, which, by experience, we know to represent light and shade. Colour exists everywhere, in the sunlight and in the shadow; and as the painter cannot depict cavernous archway or salient cornice by mere washes of neutral grey, but requires every paint on his palette, so must the architect ever work with and even create colour, whether he will or not.

To determine whether any valid reason exists for the limitation of architecture to monochrome it will be necessary to analyse the elements of architectural effect. Without entering into a lengthy discussion of aesthetics, it may, perhaps, be assumed that the arts of form—architecture, painting, and the like—appeal to our minds solely by means of the sense of sight, and that the sensations thus received give us pleasure, firstly, because the objects seen are themselves beautiful, and, secondly, because they arouse in our minds other emotions, such as solemnity or terror. The latter may seem a bold assumption, in view of the controversies that have raged on this very point, from the eloquent expositions of the ethics of art by Mr. Ruskin to the amiable discourses of Mr. Whistler. But whatever opinions painters may hold as to the legitimate sources of effect in their own art, surely no one can assert that either Hellenic architects or mediæval church builders were solely actuated by the pursuit of the beautiful, that in a Parthenon, or a Notre Dame, they did not intentionally express some lofty spiritual ideal. In the same way different schemes of colour produce different *mental* sensations; the funereal hangings of a Good Friday service or the gorgeous colours of an elaborate ritual impress the worshipper quite apart from their actual beauty or ugliness. Instances of this psychological effect of colour might be indefinitely multiplied. It seems, therefore, a fair deduction that colour would be rather an assistance than an hindrance to the mental effect produced by architecture.

When we consider the other of the two sources of architectural effect, the element of beauty, the way is not so clear. Volumes have been written on the question of architectural beauty. But perhaps the definition of Vitru-

vius that a building should be stable, convenient, and beautiful is as comprehensive as any. Though the elusive quality of beauty is still undefined, two undoubted characteristics of architecture, stability and convenience, are thereby differentiated.

These qualities of stability and convenience will be found to fix certain limits to the use of colour no less than to other means of architectural effect, such as the height of buildings or the tenuity of supports. Convenience will prohibit arsenical colours or combinations actually painful to the eyes, stability will demand that the colouring be as permanent as the nature of the building requires. For instance, the Gothic builders could not be expected to anticipate a state of society which would tolerate the whitening of frescoes and the destruction of coloured windows, the very *raison d'être* of their architectural surroundings. On the other hand, the temporary expedient of painting that preserves our iron constructions from the ravages of the weather would insult the everlasting bridges of Rome.

However, the principal element of beauty in architecture is undoubtedly the sense of utility, the expression of the function by the form of the building, the expression of the construction in the decoration. Nevertheless, the maxim, "Build in truth," has the corollary, "Design with beauty." The architect is not precluded from creating beautiful forms apart from any constructive significance. The spire is no less legitimate as a means of architectural effect than the pinnacle; the mutules as justifiable on the front as on the side of the Doric peripteros. And, although decoration in colours may have no constructional significance, the addition of colour to architectural forms is not thereby condemned. It is the exaltation above the necessities of life, the disdain of all restrictions, that raises architecture to the supreme heights of art. The spire of Salisbury, the sculpture of the Parthenon, the mosaics of St Mark's, to mention the crowning glories of three typical buildings, can be ascribed to no necessities or suggestions of construction. That beauty of form is not destroyed by beauty of colour may be seen in every work of nature. Cloud forms are not more beautiful on a grey day, the contrast of red and green does not detract from the beauty of the rose, nor the butterfly lose grace of outline in gorgeous colour. Thus might it be again with architecture.

At this point it may be useful to recapitulate the foregoing argument. The pleasurable sensations aroused by architecture are of a

complex nature. They arise partly from certain mental associations or suggestions (which would on the analogy of other arts be increased by colour); partly from the feeling of stability and convenience of the building in question (which would impose certain limits to the unrestrained use of colour); principally, perhaps, from the high expression of the needs of man, both in the general purpose and in the subordinate details of building, rising at times to the sphere of pure beauty. And this ideal element in architecture will justify the addition of beautiful colour to beautiful forms, as is universally the case in Nature.

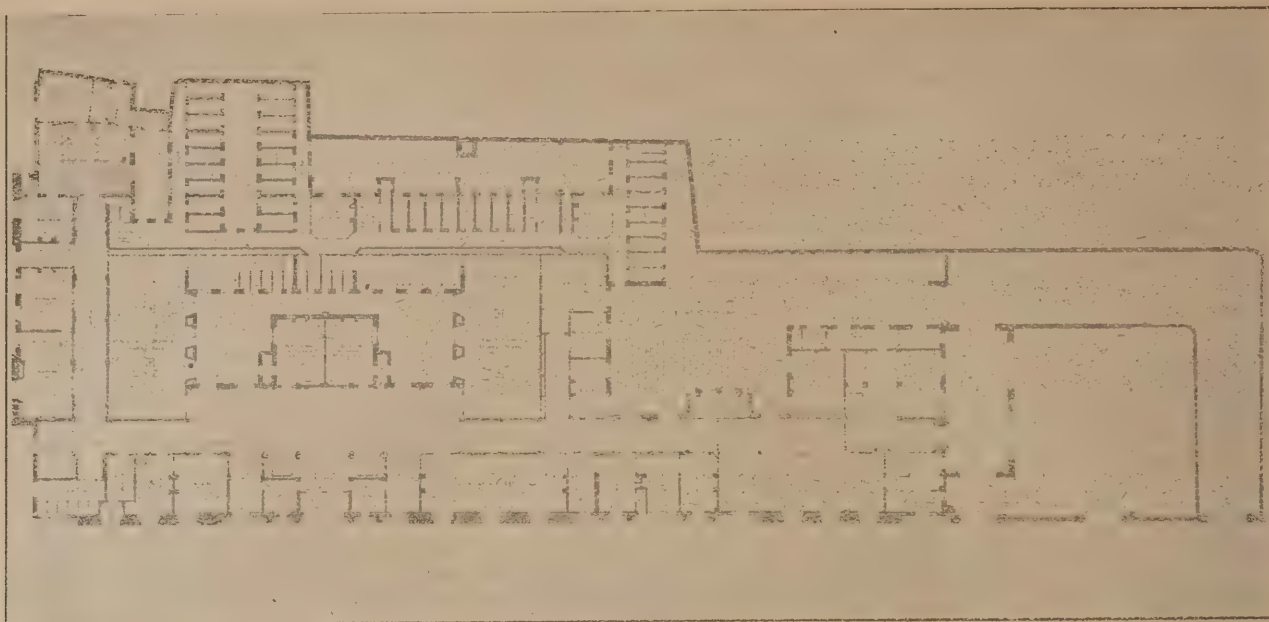
This theory must now be tested by an enquiry into the use of colour in those periods of art that have led to our present position. It will then remain to ask what deductions can be made with respect to the employment and value of colour in contemporary architecture.

II.—THE HISTORICAL USE OF COLOUR IN ARCHITECTURE.

Egypt.

Although it is possible that the civilisation of Mesopotamia may have extended to a more remote antiquity, yet the earlier examples of coloured architecture are found on the banks of the Nile. The oldest of these decorations have been ascribed to the period of the third dynasty, before the year 3000 B.C. A completely formed style is already shown, which was destined to endure, with very slight alterations, until the Christian era. In this primitive art of the Egyptians the separation between painting and sculpture is not yet clearly defined. At first bas-reliefs with very slight modelling were sunk below the surrounding material, and painted with vivid colours. At subsequent periods colour was applied to the exterior as well as to the interior of buildings, a complete system of polychromatic decoration being employed in the temples of Thebes and Luxor about 1600 B.C. This lasted until the domination of the Ptolemies, as shown in the well-known temples of Philæ, when the arts of Egypt at length began to succumb before the advance of Hellenic culture and Roman conquest.

Through the whole period of Egyptian history, colour decoration shared in the unchanging character of architecture and sculpture. It is, however, possible to trace certain developments from earlier forms, as, for instance, the shape and colouring of the lotus column from primitive coloured bas-reliefs of the sacred lotus



NEW SESSIONS HOUSE: DESIGN BY FRANK T. BAGGALLAY, F.R.I.B.A.

plant, one of many instances of the development of architectural forms from painted decorations. Eventually papyrus, palm, and other floral motives were applied to the decoration of capitals with conspicuous success. The schemes of colouring are usually simple combinations of red, blue, yellow, white, and black. Wall paintings are purely decorative; the human figure was conventionalised no less than flowers, animals, or inanimate objects. Repetition of the human figure as an ornament was thus rendered enduring. The entire neglect of light and shade precluded pictorial effects, though in his own way the Egyptian decorator has contrived to depict wonderfully detailed representations of the religious ceremonies, warlike exploits, and domestic life of his contemporaries.

Great value was obtained by the use of decorative inscriptions, in the form of hieroglyphics, themselves a development of the paintings they explain. The hieroglyphics are often an integral portion of the scheme of decoration, and it is interesting to compare the most ancient known form of art with the similar use of decorative writing by that very modern nation, the Japanese.

Persia.

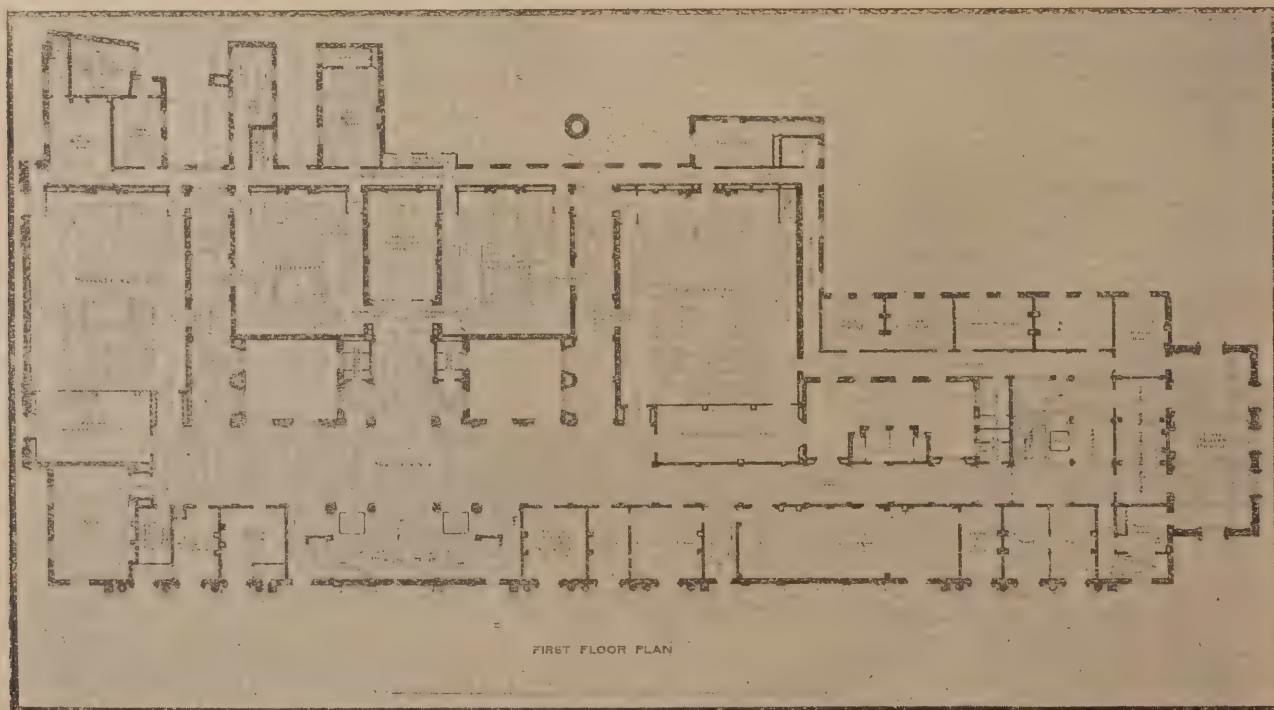
(The use of enamelled brick.)

The buildings of the successive nations that occupied the valleys of the Euphrates and Tigris are now in a far more fragmentary state than those so perfectly preserved by the rainless climate of Egypt. The remains, more particularly of Persian architectural decoration, are, however, of the greatest interest. Good building stone being difficult to procure in the plains of Mesopotamia, important monuments were constructed of sun-dried bricks, strengthened and faced with burnt bricks of a better quality. Interiors may have been plastered and painted, but exterior walls were faced with glazed bricks. These were combined to form representations of real and imaginary animals or human figures, with elaborately patterned borders and friezes.

This method of decoration was employed in the first place by the Assyrians and Babylonians at Nineveh and Babylon, and subsequently, in spite of essential differences in the national style of architecture, by the conquering race of Persians, though with their experience of Babylonian methods the latter

were enabled to produce architectural decorations of greater artistic value.

The most beautiful of these are the friezes and wall decorations from the Palace at Susa of Darius I., who reigned from 521 to 483 B.C. This palace is known to have been destroyed by fire in the reign of Artaxerxes, 465 to 429 B.C. The glazed bricks with which the walls are faced vary in size, averaging 3 in. in depth by 13 in. in length. Each course is kept level and of the same depth throughout. The subjects range from purely ornamental repeating diapers and borders to rows of animals and processions of soldiers, slightly modelled and represented nearly life-size. The grounds of the figures and beasts are always light shades of greenish blues. In the lion frieze the animals are white with green and blue markings and yellow bosses on the legs. Two types of lion are represented alternately, varying in subordinate details. The lions all face the same way, in the same pose, and are completely separated from each other by the light blue ground. Simple borders form the top and bottom of the frieze. The whole composition is in a brilliant key of colour. An even more decorative beast is a dragon, also



FIRST FLOOR PLAN

NEW SESSIONS HOUSE: DESIGN BY FRANK T. BAGGALLAY, F.R.I.B.A.

white, with orange, blue, and green wings, and red horns and markings, on a grey-blue ground—a superb piece of colouring.

The friezes of archers are more subdued and subtle in effect. Here, again, the figures are isolated and alternated. The brown-skinned archers have brown quivers with green patterns, and orange uniform with white and blue spots, all on a green-blue ground. The frieze of white-skinned archers differs only in the details of armour and uniform, the ground colour being slightly lower in tone. The two friezes are thus carefully harmonised with sufficient variety of detail to avoid monotony. The brown faces of the one regiment and the white faces of the other form the keynotes of the two designs; to these the whole scheme of colouring is subordinated with the most consummate skill. (This description is from the plates in Dieulafoy's "Art antique en la Perse," and the casts at Kensington.) In these friezes the Persians, consciously or unconsciously, exemplified the most vital principles of colour decoration. In the first place they deliberately spread a regular diaper of brick joints over the whole decorated surface, thus emphasising both the construction and the material of the wall, and at the same time subordinating the decoration to the architecture. Secondly, their material was sufficiently tractable to permit a correct rendering of dignified figure subjects, while it did not demand a too realistic treatment; thus, on the one hand it was superior to mosaic, on the other it would not seem to compete with the realism of modern painting. Thirdly, they never attempted effects that the material did not readily permit; the figures received the chief care and elaboration (to which the conventional patterns were merely accessory), but never to such an extent as to become mere *tours de force* of technique. Lastly, by gentle surface modelling, and fusing the colours under transparent glazes, they obtained a harmony and softness of effect impossible in flat, juxtaposed tints of oil paint.

Hellas.

(The complete polychromatic treatment of architecture and sculpture.)

Much less is known with certainty about the use of colour by the Greeks than is the case with the work of the Egyptians and the Persians. For although the best period of Hellenic architecture was the comparatively recent date of the fourth century B.C., yet the action of a moister climate on more perishable media has left very slight traces of the original decoration. And there often are so changed that a careful chemical analysis fails to determine the precise nature of the pigments. A certain amount of information can be gathered from the references of contemporaries and the descriptions of travellers. But very various have been the interpretations of such passages, as no impression is more difficult to perpetuate in words than that of colour; and if it has been suggested that Homer himself was colour-blind, from the impossibility of reconciling his epithets with modern ideas, it is not surprising that there is considerable divergence of opinion as to the exact meaning of writers of inferior descriptive powers. As a matter of fact, the direct allusions to colour decoration by contemporary writers of the best period are remarkably few; and while one critic accounts for this by declaring that polychromatic decoration was too common to attract any special notice, others use the same absence of direct evidence to prove that all painted decorations were added to the Hellenic temples at a later period of art.

Again, it is often stated that the Greeks made use of pigments only from secondary motives, to conceal inferior materials and preserve their buildings from decay; as a kind of ceremonial survival from an ancient wooden construction, or as an easier process of decoration than sculpture. Kugler, for instance, wrote: "If no others, yet certainly the white marble buildings erected in Attica exhibited in their principal parts the material of which they were built, in its own proper colour; and that painting, therefore, is only to be referred to subordinate details." Notwithstanding this expression of opinion, the fact seems to be that

the Greeks did employ a complete system of polychromatic decoration on both the interior and exterior of their monumental structures; and that though this was at first from ceremonial reasons, eventually in the best periods of architecture purely æsthetic considerations prevailed.

However, it is not necessary to enter into a critical discussion as to the exact extent to which the Greeks employed colour in architecture and sculpture, a question which depends more on the exact meaning of obscure passages in the classics than on the scanty remains of colour in the buildings themselves. It may be worth noting in passing that a certain anecdote related by Herodotus turns on the fact that in Greece just as heralds were usually dressed in white and temples coloured, so a white temple was as great an anomaly as a herald dressed in colours—the conjunction of the two being an omen of the destruction of the Sicilian town of Siphnos. (Herodotus, iii. 57: 'Ἄλλ' ὅταν ἐν Σίφνῳ πρυτανῆια λευκὰ γένηται, &c.)

Colour decoration had been applied by the Greeks to their sacred edifices from the earliest times. This was considered by Semper ("Der Stil") to be a ceremonial reminiscence, evolved from the prehistoric shrine, sheltered by many-coloured woven fabrics. The prototype of the Doric temple being a wooden building requiring a protective coat of paint, the practice was continued for decorative and religious reasons in the development to a stone or marble structure. The old stone temples of Selinors and elsewhere were covered with a coat of stucco as a ground for painting. Marble was introduced later for constructional reasons, one of its chief advantages being the superiority of its surface for the new method of painting that came into use at the same time. This was the celebrated encaustic process of the Greeks, by which more brilliant results were obtained than by the older distemper process. (Pliny, N. H., xxxv. 39: *Ceris pingere, ac picturam inurere qui primus excogitavit, non constat. Quidam Aristidis inventum putant, postea consummatum a Praxitele. Sed alquanto vetustiores encausticæ picturæ exstiterunt ut Polygnoti, xxxv. 41: resolutis igni ceris penicillo utendi, quæ pictura in navibus, nec sole, ne sale, ventisque corrumpitur.*) Architecture, painting, and sculpture were now combined to form one harmonious whole, a work of art in which one was not more important than the other, sculpture being used to increase the effect of painting as much as painting to increase the effect of sculpture.

Although the polychromatic decoration of the Doric temple was thus of the highest importance, yet it was not governed by the strict laws that controlled the architectural details. The painted decorations were varied to give a special character to the temples of various deities. It is, therefore, difficult to lay down general principles for the treatment of colour, though it is reasonable to assume that the decoration of the Doric order had more in common with Egyptian colouring, the Ionic with that of Assyria. Moreover, any particular "restoration" must always be of a rather hypothetical nature, as the actual pigment has long ago vanished from the exposed portions of stone or marble buildings and only now remains in sheltered places, such as the lacunaria of the Theseion. Still, a fairly reliable clue to the strength and style of colouring is afforded by certain terra-cottas that have been discovered at Olympia and Selinous. In localities where marble was not easily procurable the Hellenic builders used terra-cotta for roofing tiles and gutters, and to case in the corona of the cornice. These terra-cotta mouldings are of a fine yellow-ochre colour and richly ornamented with meanders, guilloches, honeysuckles, and other elaborate patterns in strong reds and blacks. They are described as having kept their colour with extraordinary freshness in a manner impossible with surface decoration. It is evident that, in a well-considered scheme, the whole entablature must have been treated with the same strength of colour and decoration as a single moulding, such as the terra-cotta corona.

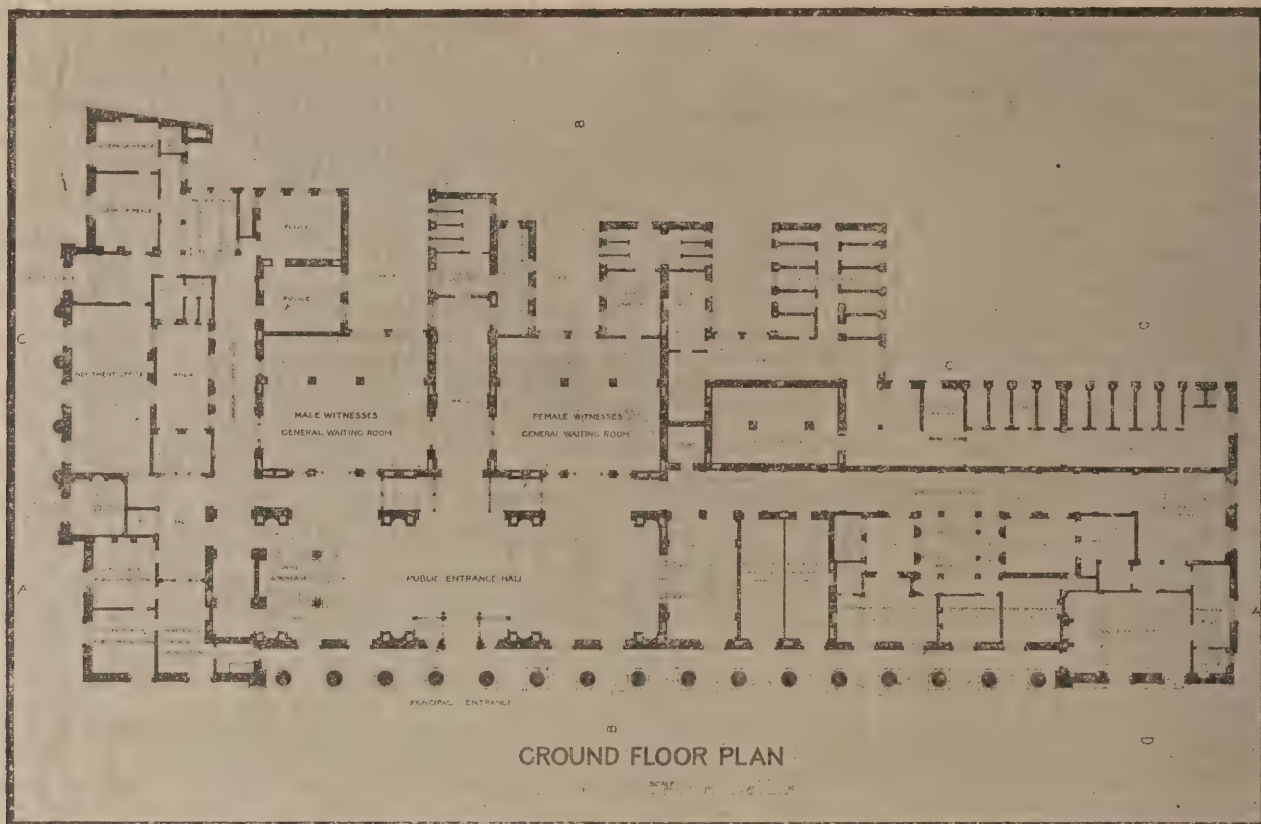
The ideal building is described by Semper

as "glowing with the beauty of the setting sun. The colour a yellow-red, very vapoury, resembling the finest terra-cottas. In fact, the general appearance of the temple would resemble a fine day in the east." This golden-ochre tint or "baphe" (a reminiscence of the older stucco) covered, or rather stained, all portions of the order, the leading features being accentuated by stronger colours. Tympana, lacunaria, and metopes were a deep red, or sometimes a dark blue, as a ground for the sculpture. The prevailing colours of the mouldings were red, blue and green, more brilliant than those used in the grounds. The colours of the ornaments were alternated and "united by delicate fillets of white, black or gold." The enamels of Egypt, Semper suggests, may convey an idea of the colouring of the Attic ornaments. The sculpture was all painted or tinged with colour, the marble never being left in glaring whiteness. Metal ornaments were often attached to the figures, such as the armour and trappings of the Panathenaic frieze; in fact, the sculpture became the predominating point of the composition in colour as well as form, if it is permissible to separate the two elements of effect. Bas-reliefs may have been coloured more realistically than sculpture in high relief, as being more akin to the convention of painting. Flat wall surfaces were decorated with actual paintings. It is probable that, after the Periclean period, the use of colour on architecture and sculpture became less important as the art of painting advanced from the restrained decorative work of Polygnotos to the realism of Zeuxis and Apelles; though the desire for unity, the leading characteristic of Hellenic art and literature, was sufficiently strong to prevent the easel or panel picture from taking a prominent position.

A polychromatic scheme of this description, involving a complete system of coloured sculpture, may be considered impossible. This is a point that requires some discussion, as the value of coloured architecture cannot be separated from coloured sculpture, and a style that declined the assistance of sculpture would be at once deprived of a legitimate and necessary source of architectural effect.

In considering the original state of existing remains of Hellenic art, exaggerated importance must not be ascribed to their present appearance, or to the sensations now produced in us. We have never seen them otherwise than in monochrome, and are accustomed to consider them as perfect now, being incapable of imagining a higher beauty than that we know. Moreover, these marbles, mellowed by the exposure and neglect of centuries, have been endued with a charm of surface texture unknown and undesired by the Greeks, and whatever compensation for the loss of colour is obtained by the action of time must be thoroughly discounted in a just consideration of their perfect state.

Neither must excessive importance be attached to modern failures in coloured sculpture. For these have been unsuccessful from misconceptions of the principles and scope of colour in this connection. Some attempts have failed through too realistic an application of colour, an approximation to nature that would seem to demand speech and motion to complete the deception. The conventions of colour must be observed even more strictly than the conventions of form, while the just limitations of sculpture become all the more necessary when colour is added to the other means of illusion. Other experiments have proved unsuccessful through a too partial use of colour. Subordinate parts have been richly decorated, leaving the head and features in a comparatively neglected state, while in reality the most important points of a statue should be accentuated by colour, as was the practice of the great Hellenic sculptors. Again, statues are now placed in the accidental surroundings of museums or exhibitions. The Greeks beheld theirs under more favourable conditions. The Athene Parthenos was not isolated in an inharmonious interior, but became the central figure in a well-considered scheme of colour. Coloured statuary needs, above everything, a harmonious background; the amount of colour admissible in any par-



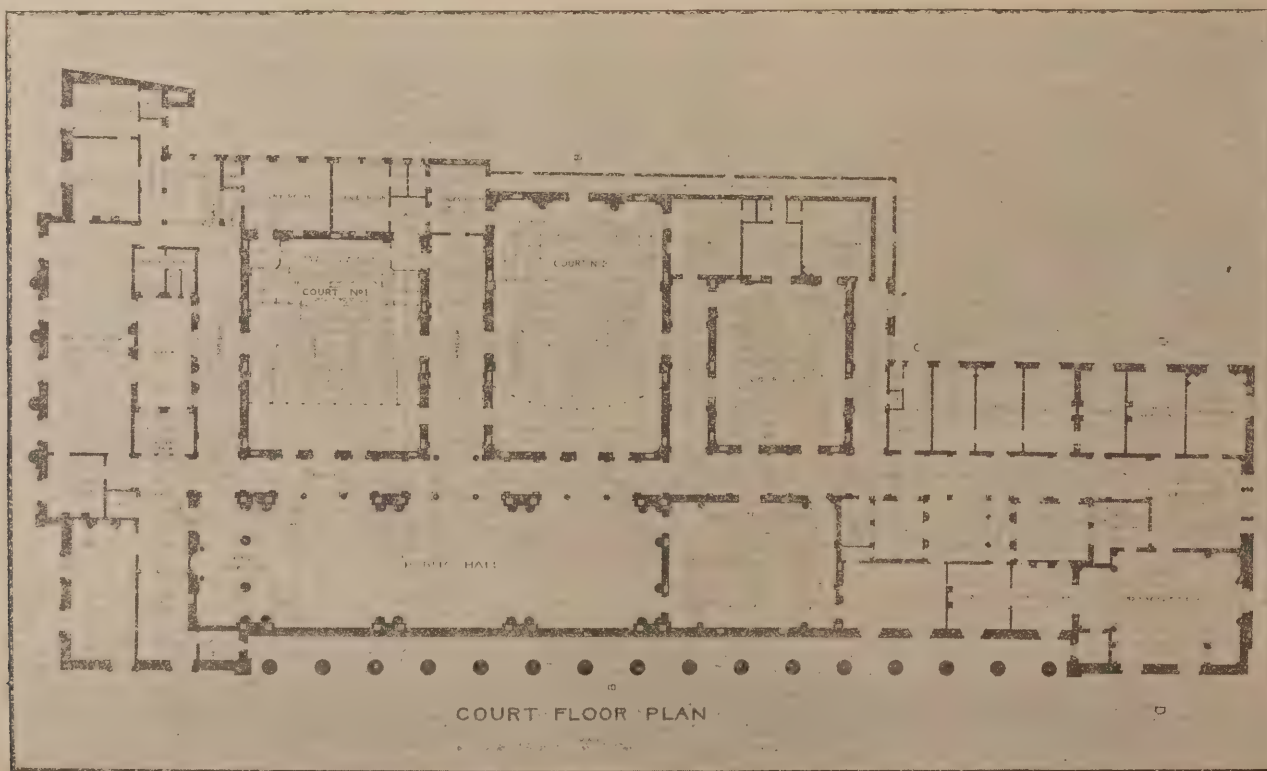
NEW SESSIONS HOUSE: DESIGN BY J. M. BRYDON, F.R.I.B.A.

ticular instance depends entirely on this and the manner of lighting. Colour of a strength pleasing in the case of a large fixed statue suitably balanced by accessories would be intolerable in a small movable figure.

The Hellenic sculptors will be found to have observed some such principles as the foregoing. Small terra-cotta figures were coloured in a modified degree, as was also the case with statues that had no relation to architectural surroundings. Such statues as the great chryselephantine works of Phidias and other celebrated temple idols, though more splendid

with colour, were never treated realistically. It is known, for instance, that the hair of the Venus de Medici was a dull gold, that the Hermes of Praxiteles has remains of red colouring on the hair and drapery, and the eyes of the Athene Parthenos were inlaid with precious stones. It must not be supposed that the great Hellenic artists "painted" their masterpieces of marble in the sense that archaic figures were painted with ceremonial daubs, or as modern waxworks in imitation of nature. Realistic flesh painting was never attempted; the process applied to the nude

parts may be better described as staining with a flat tint, a mere suggestion of flesh colour, without concealment of the texture of the marble. (Pliny N.H. xxxvi. 22. Translucet ergo pictura tenuissimis capillamentis, lenique adhiatu simulacra refovente præter ingenium artificis, ipsa materia, quamvis occulta, in pretio operis intelligitur.) Stronger encaustic colouring may have been laid on the drapery and special features, as eyes, lips, or hair. The marks of metal ornaments on marble statuary are of frequent occurrence, as in the frieze of the Parthenon and the Hermes of Praxiteles.



NEW SESSIONS HOUSE: DESIGN BY J. M. BRYDON, F.R.I.B.A.

Bronze statues do not seem to have been painted, but sufficient play of colour was obtained by the use of various patinas, gilding, precious stones, inlays of silver and coloured enamels.

The statue painter filled a recognised position among Hellenic artists. Several branches of the art are mentioned by Plutarch (Plutarch de Gloria Athen. 6. Ἀγαμέμνων ἐγκραυεῖται καὶ χρυσωτὰ καὶ βαφεῖς), and Pliny relates that Praxiteles himself said that his statues gave him the greatest pleasure when they had been completed by a certain painter, Nicias. If true, this alone would be sufficient proof that the Greeks coloured their sculpture, and *a fortiori* their architecture, from purely æsthetic motives.

Pompeii.

(The decorative use of architectural forms and landscape.)

The Romans were the first nation of antiquity to leave the surface of constructive building materials exposed to view. This abandonment of the use of external decoration becomes the more pronounced when the arch replaces the lintel as the main feature of architectural design. The first important result of this tendency was the frequent adoption and elaboration of the Corinthian order, which lent itself more readily than the Doric or Ionic to variations in the carving and ornaments. The Roman builders were thus enabled to give the temples of different gods an appropriate character as had been previously accomplished in a more refined manner by the polychromatic decoration of the Greeks.

The ruins of Herculæum and Pompeii are the main source of information about the interior decoration of the Romans. And these must be considered as a later development of Hellenic art on a new soil rather than as the direct production of a native school. In the reign of art the statement that Greece had conquered her conquerors remained true. But still these decorations of the country villas of Roman gentlemen, painted about five hundred years after the presidency of Pericles, had probably the same relation to the paintings and decorations of the Athenians that the Louis XV. or Louis XVI. styles have to the works of Raphael and Michael Angelo: though the breadth of treatment, the fine sense of proportion, and the bold use of strong ground colours show that the great principles of Hellenic art were not yet entirely lost.

The Pompeian wall paintings are particularly interesting as examples of two important means of decoration—the use of architectural forms and the use of landscape. Architectural forms, fantastically distorted, were employed with the utmost freedom, either as leading motives or as settings for figure subjects. This style of decoration met with the disapproval of Vitruvius, who seems to imply that the older Hellenic painters had employed architectural features as decorations in more correct proportions. However this may have been, the conventionalised architecture of the Pompeian decorators is far more decorative than the orthodox forms and true perspectives of the Italian painters. The undeniable value of architectural accessories as a means of applying dignity and balance to figure compositions has been recognised in the majority of great schools of painting, a tribute to the all-embracing, all-controlling character of architecture.

The Pompeian landscape decorations comprised many of the subjects used by modern painters, such as gardens, mountains, pastoral scenes, and seascapes, besides heroic exploits and the stories of the gods. These, however, were treated in a decorative manner that has not since been successfully practised in European painting. Attempts at decorative landscape have, however, frequently been made in tapestry, where the beauty of the material has excused the imperfect technique. There seems to be no valid reason why landscape should not again be employed in decorative compositions, provided the feeling of space and light is conveyed to the mind by the association of ideas rather than by the illusion of the eye.

(To be continued.)

Bricks and Mortar.

"It is not sufficient that an artist, when he has completed his work, shall remark, as many do in excuse for its defects, 'it has the exact proportions of the antique and has been copied from good masters,' seeing that a sound judgment and correct eye avail more in all cases than does the mere adjustment with the compass."

VASARI.

An Interesting Discovery.

CONSIDERABLE alterations are at present being effected in the old "Hen and Chickens" Hotel, Bridge Street, Berwick, and while the walls of a front room in the second storey—which are very old—were being stripped they were found to be adorned with quaint paintings representing caryatides, the capitals of Corinthian pillars, with acanthus leaves, and other floral emblems. Above the fireplace is the following inscription, painted in Old English letters:—

"Wyssdome, a science whiche we surely fynd, Shuld not be writ in bookes but in minde."

Steps are to be taken to preserve this interesting and curious relic of the art of a bygone age.

The Tower Guard-house.

THE new guard-house which the War Office has built at the Tower is now almost finished. A portion of the wall of the old guard-house—some of it of immense thickness—which is supposed by many antiquarians to be part of the early Roman "citadel" or "station" that existed hereabouts before the Tower of London was built, has been retained in the lower frontage of the new guard-house, and antiquarian feeling has been further studied by the ingenious retention at the rear of the building of an old Roman well, although it rather interfered with architectural plans. It was 56ft. deep, with a great depth of water, and will be one of the sights of the Tower. At the eastern end of the new guard-house a sundial is to be placed.

Results of Competitions.

THE following premiums have been awarded in the competition for new grammar schools at Bury:—1st (£100), Mr. W. V. Gough, 24 Bridge Street, Bristol; 2nd (£60), Mr. H. Teather, Gateway Chambers, Castle Street, Shrewsbury; 3rd (£30), Messrs. Woodhouse and Willoughby, 100, King Street, Manchester. The estimates ranged between £19,000 and £20,000.—In the competition for new offices for the Mersey Docks and Harbour Board the following premiums have been awarded:—1st (£300), Messrs. Briggs and Wolstenholme and Messrs. F. B. Hobbs and Arnold Thornley, all of Liverpool; 2nd (£200), Messrs. Woolfall and Eccles, 60 Castle Street, Liverpool; 3rd (£100), Mr. J. H. Cook (Messrs. T. Cook & Sons), 12 George's Crescent, Liverpool.

Dante's House.

THERE has been a great deal of excitement and annoyance at Rome recently over the sale, to a private individual, of one of the houses in which Dante lived and wrote, and which has always been called "Dante's House." It is a little villa at Mulazzo, near Geroa, which stands remote and isolated, and belonged to Marquis Franceschino Malaspina, who gave hospitality to the great poet. It stands at the foot of a tower, called the "Poet's Tower," in memory of Dante, and is surrounded by charming scenery. Here Alighieri wrote the first six cantos of the "Inferno," and lived serene and retired from the world which had so despitefully used him. The press is justly indignant at the sale, saying the house should have been bought by the State, or by one of the many Dante Alighieri societies, who lay such stress on their love and veneration for the national poet.

Open-air Theatres.

A WEEK or so back the boys of Bradfield College played the "Agamemnon" of the great Æschylus in their Greek theatre, in celebration of the fiftieth year of the school's

existence. This theatre is the result of an ingenious adaptation by the Warden (Dr. Gray) of a disused chalk-pit. The first idea was to utilise the pit as a swimming-bath, but the Warden, having had the happy idea of building a Greek theatre, designed and erected the auditorium and stage buildings, on the ancient Greek model, in 1890. The stage represents the front of a Greek house, and the auditorium, which is, of course, in the open air, is an amphitheatre made of concrete, seating about two thousand spectators. This example of re-modelling a useless place and making it serve utilitarian ends is one that may well be followed in many other directions, and we must congratulate Dr. Gray for having so successfully utilised such a site as a disused chalk-pit.

Lesser-known Queensland Timbers.

EFFORTS have been made from time to time to direct attention to some of the lesser-known Queensland timbers, several of which are of a choice character, but, in consequence of the want of knowledge on the part of the "timber-getters," are ruthlessly cut down for the commonest purposes. Thus, in the Laidley district, a valuable timber, a so-called rose-wood, of considerable utility, by reason of the beauty of its colouring, for cabinet-making purposes, is largely used for building selectors' homesteads. A kind of forest oak, found at Laidley Creek, is very red, and shows beautiful markings. The common yellow-wood is much used for building purposes, as the white ant will not touch it. It is also used by carriage builders. Among the lesser-known timber-trees is the cockspur thorn (*Cudrania javanensis*), the wood of which is a rich dark yellow colour. It would be much appreciated by cabinet-makers, being of an extremely fine grain, and taking a high polish. Another neglected timber is the common *Elaeodendron australe*, which has a pinkish or flesh-coloured wood, with a close grain, and capable of a high polish. The black brigalow should have a good sale among cabinet and picture-frame makers, as it splits well, takes a fine polish, and when old closely resembles ebony. We are able to publish the foregoing particulars through the courtesy of the London Correspondent of "The North Queensland Herald," 3 Temple Chambers, E.C.

Model Workmen's Dwellings.

PERHAPS the most interesting feature of the Vincennes annexe at the Paris Exhibition, now practically finished, is the little village of workmen's cottages, which illustrate the highest pitch to which the housing of the working classes has arrived in half-a-dozen European countries. Belgium is represented by a neat but somewhat featureless abode in brick, Switzerland by a cottage which has the merit of picturesqueness, Austria by a wooden bungalow used as a hospital for Herr Arthur Krupp's workmen at Berndorf, whose flower-covered verandah and log-built walls suggest a rustic environment. A German paint firm has erected a little cottage, built in white stucco and covered with a red-tiled roof, the six small rooms of which are as clean as mortal *hausfrau* could make them. The German Ministry of War sends a cottage of nearly the same pattern as inhabited by employees of the State Arms Foundry at Spandau. Last, but by no means least, comes the typical English cottage, which Messrs. Lever Brothers, of Port Sunlight, have sent from the banks of the Mersey. The lower storey is of red brick, the upper of the pebble and plaster of which so much exists in the streets of Chester. Red tiles cover the roof, and the interior is a picture of comfort, tasteful and solid. A bath-room is provided, while the decoration of the little parlour, in the opinion of many Continental visitors, deprives the cottage of its claim to be considered a workman's dwelling. To those whose acquaintance is limited to the average abodes of the same class in France and Germany, the criticism is perhaps permissible. A strip of garden, filled with pansies, is planted round the tiny porch, and gives a home-like air to the building. In all, this exhibition is most interesting and instructive.

Views and Reviews.

ACADEMY PICTURES.

There are critics—of the cynical kind—who would say that having once visited the Royal Academy the best thing you can do is to forget it. But, judging from the fact that so many reproductions of the pictures are published every year, there would seem to be a not inconsiderable number of the public who wish to have, in more or less permanent form, a souvenir of the pictures they have seen. For this purpose Messrs. Cassell's "Royal Academy Pictures" are admirably adapted, but we confess to being unable to see any other reasonable use for them. Regarded on its merits as a collection of pictures, this publication is a most depressing one; the sole reason for reproducing many of the pictures is that they happened to be accepted by the Hanging Committee. On no other principle could the compilers have included reproductions of uninteresting portraits of uninteresting people and of landscapes that owe whatever merit they possess entirely to their colouring, which is, of course, lost in reproduction. The publication is not without merit, but it is a mechanical rather than an artistic merit; the illustrations are good examples of half-tone process work, carefully printed on good paper, but as regards five-sixths of them there is no valid reason—except a purely commercial one—why they should have been produced at all.

"Royal Academy Pictures," in five parts; price 1s. each. London: Cassell and Co., Ltd.

WORKING-CLASS HOUSES IN URBAN DISTRICTS.

This book, which takes somewhat the form of an illustrated catalogue of workmen's cottages, appeals more to the speculator and builder than to the architect. It is an attempt, and in many respects a successful one, to improve upon the ill-considered type of plan so often adopted for this class of house, and an endeavour, by the discriminating use of the ordinary materials at command and the elimination of superfluous and oft-times offensive embellishments, to obtain a pleasing exterior not entirely devoid of character.

Several of the model plans proposed show considerable skill, and are quite suitable for their purpose, use being made in many cases of a broken party-wall line. The dwellings treated of are all terrace houses, and an arrangement of which the authors appear to think very highly is suggested for the laying-out of the ground between the backs of adjoining terraces. This peculiarity consists of shortening the back-yards and providing a common open space between them, somewhat in the manner of the London "squares" that are often provided for terrace houses of a much better class. The authors point out that this space would afford not only an excellent playground for children, but would also allow of the collection of dust and the delivery of fuel without passing through the houses, and that a combined drain taken down the centre would obviate the necessity of the house-drains passing under each building to the main road. These advantages would be great and quite worth the decrease in size of the back-yards; but we think the authors have overlooked the difficulty of maintaining this common ground in anything like decent order, and have not considered that the combined drain would be a public sewer repairable by the authorities. Those who, like ourselves, have had experience of the better-class squares will know the difficulty of obtaining funds to keep a common ground in order, a difficulty which in the case of working-class dwellings would appear to be insuperable. Of course, we do not imagine that the authors propose to lay this space out as a garden, but some expense would be necessary to keep the ground clear and in order, or it would become a sort of "no man's land," and the receptacle of all the rubbish of the neighbourhood, whilst in many cases the authorities would object to keep up an additional sewer, the ordinary sewer in the road being still requi-

site. In addition to the description of the various plates, a table of sizes of rooms, cubic contents, cost, &c., is given in convenient form to allow of comparison; and extracts from the Local Government and County Council by-laws are also included. The book is well got up, and should prove of considerable value to owners and builders of working-class property. Its utility is marred, however, by the unfortunate way the respective elevations and plans are arranged on the plates. In hardly any case is an elevation on the same page as the plan to which it refers, and the two frequently do not correspond with each other. This is a point which causes considerable irritation to anyone really studying the book, and one which we shall hope to see altered in a subsequent edition.—J. E. N.

"Houses for the Working Classes in Urban Districts," By Sidney White Cranfield, A.R.I.B.A., and Henry Ingle Potter, A.R.I.B.A. London: B. T. Batsford, 94 High Holborn, W.C. Price 15s.

THE CENTRAL LONDON RAILWAY.

By CHARLES G. HARPER.

OF all the many deep-level electric railways proposed for the needs of London since the opening of that pioneer line, the City and South London in 1891 inaugurated a new era in Metropolitan communications, the Central London, which was opened last week, is at once



THE ROUTE OF THE CENTRAL LONDON RAILWAY.

the simplest, the longest, and the most important. It is a little over six miles in length, its course is almost mathematically straight, and it will serve districts whose necessities have brought into being perhaps the most crowded traffic to be found in the streets of the world. It was the successful construction of the City and South London that led to the formation of the Central London Railway Company; for the making of the first electric railway was largely in the nature of an experiment, both as regards the tractive power and the methods of construction. Electric lines already existed in other countries, but reports as to their efficiency and economy were conflicting, while the system of deep-level tunneling introduced by the late Mr. J. H. Greathead was on its trial. No sooner was it evident that the City and South London was progressing to a successful conclusion than a syndicate of far-seeing people prepared the Central London scheme, which was fought through Parliament in 1891, in the face of a bitter opposition from the Metropolitan and District railways, and from the omnibus companies, whose interest in the route to be followed by the projected railway from Shepherd's Bush to Liverpool Street was direct.

The tunnels of the Central London and other electric railways are practically pipes; they are 11ft. 6in. in diameter, and are lined with iron rings. The method of construction seems simplicity itself, after years of the costly and laborious "cut and cover" principles of underground railway engineering in force until recently. Two tunnels are provided, one for "up," the other for "down" traffic, and the depth at which they lie varies from 65ft. at the Bank to the extreme depth of 98ft. beneath the crest of Notting Hill; these varying depths being chiefly caused by the rise and fall of the roads en route. Occasionally, however, the narrowness of the roadway above, which pre-

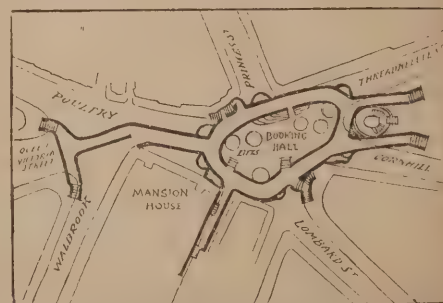
cludes the tunnels running side by side, has led to their being placed one above the other.

The construction and equipment of the railway to Liverpool Street was estimated at £3,244,000. The section between the Bank and Liverpool Street has been abandoned for the present, but the cost has actually been, it is said, nearly four millions.

The capital of the company was subscribed in 1895, and amounted to £2,850,000, with powers for borrowing an additional £950,000. With available funds thus amounting to £3,800,000, the work was begun in 1896, being entrusted to a subsidiary company formed largely from interests identical with the Central London—the Electric Traction Company, Limited. The first steps taken were the acquisition and demolition of the house property which covered the sites of twelve of the thirteen stations (the remaining one at the Bank being wholly beneath the roadway), and the purchase of land and houses adjoining Wood Lane, Shepherd's Bush, where the Generating Station and works have since been erected. Shafts were then sunk at six different points along the route, and from them the headings for the tunnels were driven so that the line has been in progress from six places simultaneously. The description of material to be excavated has been London Clay throughout, varied only at a point opposite Stratford Place and in the Holborn Valley by intervening stretches of Water-bearing Greensand. On reaching the required depth, a heading was excavated by pick and shovel in the stubborn London Clay, and the tunnelling device invented by the late Mr. Greathead, and called the "Greathead Shield," was installed at each

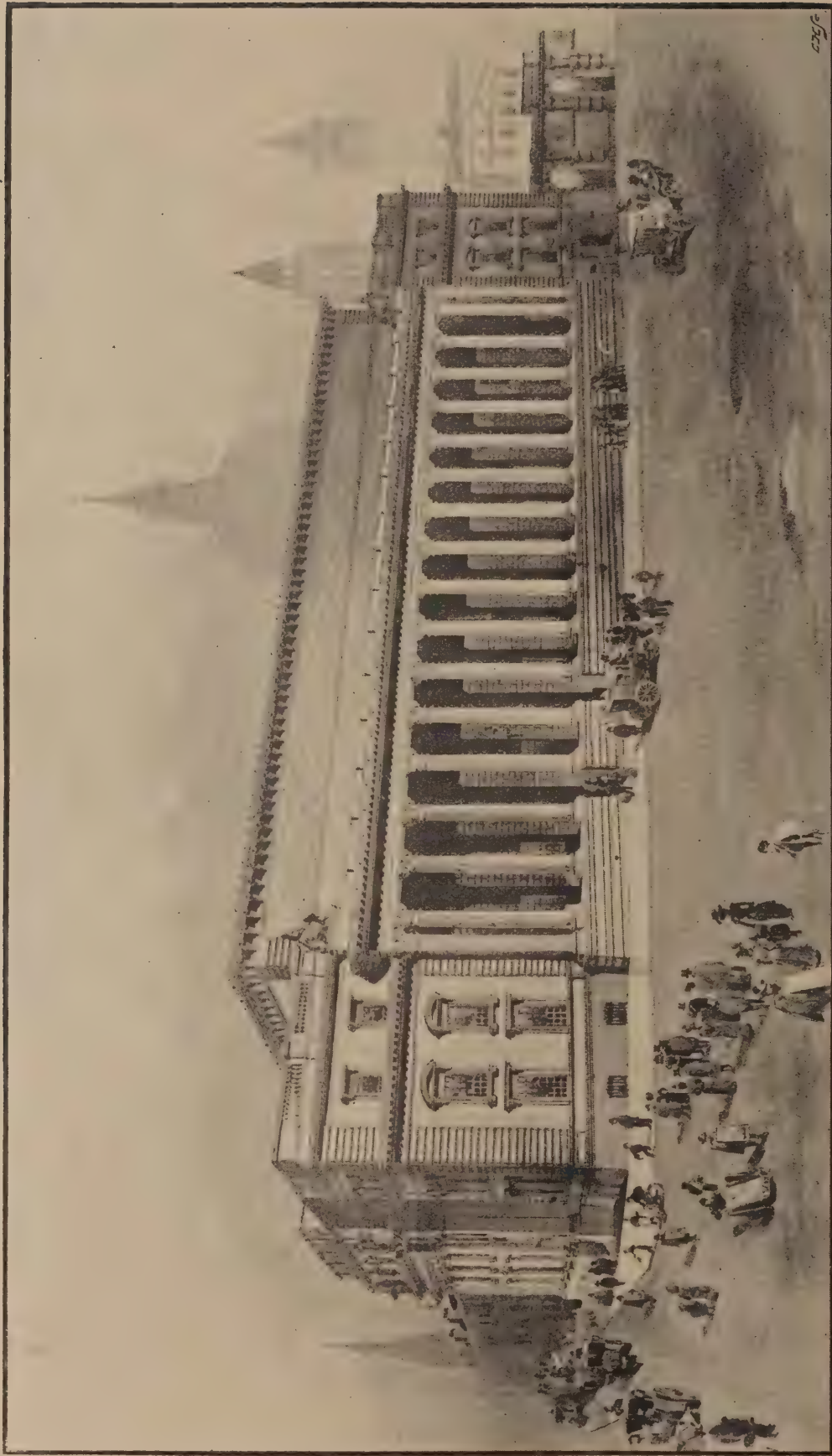
of these headings. This invention may succinctly be described as a steel cylinder built up to fit the heading, and 7ft. in depth, the forward edge cut to the fine point of a keen knife, the rear fitted with a number of hydraulic rams which forced the cutting edge into the clay, causing it to fall into the cylinder, in which it was broken up into smaller pieces by navvies, and loaded up in trucks and carted away. The labour-saving on the working of this contrivance is enormous, while the building up and riveting inside the shield of the steel segments forming the lining of the completed tunnel and left behind by the shield in pursuing its slow but irresistible course secures the works against any possibility of subsidence. The daily progress of the shields on their several sections was, on the average, from 12ft. to 14ft. At one period the Central London works had no fewer than thirty shields in operation at once, and made a record of 500yds. of tunnelling completed in one week.

A narrow space left between the clay circumference and the steel lining after the progress of the shield was filled in by a specially-devised "grouting apparatus," which under hydraulic pressure forced liquid cement through the rivet-



BANK STATION OF CENTRAL LONDON RAILWAY.

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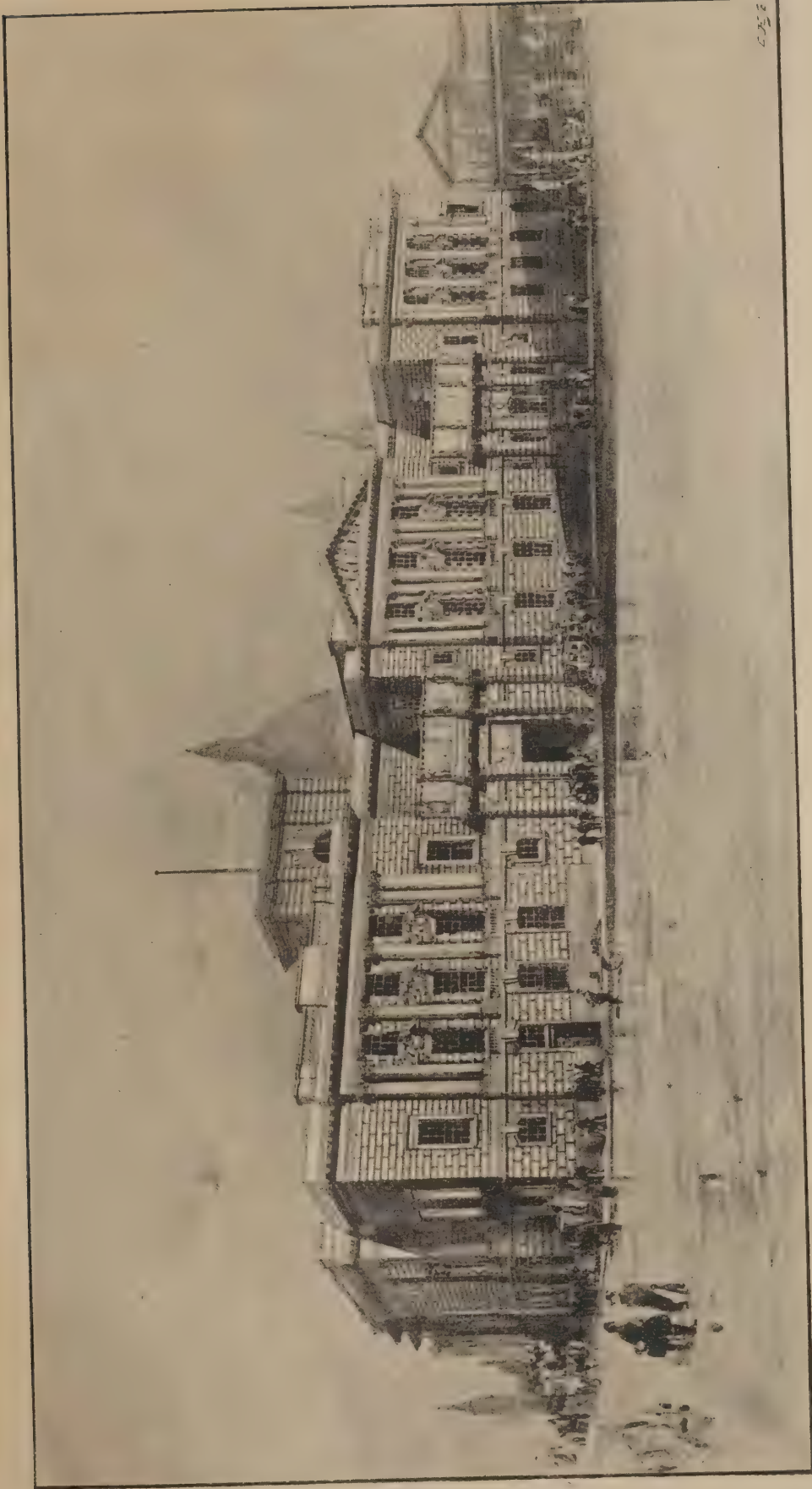
NEW SESSIONS HOUSE IN OLD BAILEY. DESIGN BY J. M. BRYDON, F.R.I.B.A. (*For Plans see p. 402.*)

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Supplement to
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
Wednesday, July 4th, 1900.



NEW SESSIONS HOUSE IN OLD BAILEY. DESIGN BY H. T. HARR, F.R.I.B.A. (*For Plans see pp. 398 and 399.*)



NEW SESSIONS HOUSE IN OLD BAILEY. DESIGN BY FRANK T. BAGGALLAY, F.R.I.B.A. (*For Plans see p. 400.*)

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NEW SESSIONS HOUSE IN OLD BAILEY. DESIGN BY H. L. FLORENCE, F.R.I.B.A. (*For Plans see p. 409.*)

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holes of the lining, thus securing an absolutely air-tight fitting. The thorough efficacy of this method was seen when, in the course of some alterations involving the removal of a short length of this steel protection, the grouting was seen to have been forced some three or four feet back into the clay. The station tunnels are of greater diameter than that of the other part of the way, measuring 21ft.; while the "cross-over" tunnels made at various points for convenience of access between "up" and "down" tunnels measure 25ft. These were excavated by the aid of larger shields. Only at the two water-logged districts already named was it found necessary to work with the bulkhead fitted to the rearward end of the shield closed, and under compressed air. A somewhat anxious time was that which witnessed the driving of the tunnels beneath Holborn Viaduct, whose numerous piers, imposed directly upon the ground to be traversed, added an element of uncertainty to the work. Those piers and the burden of arches and roadway they carry constitute an enormous weight. No subsidence, however, has been noted here. In addition to the other tunnels, each station has its cross tunnel for passengers, connecting "up" and "down" platforms; but in the case of Notting Hill Gate, Chancery Lane, and the General Post Office stations the platforms are one above the other, owing to the narrowness of the roadway above, and communication is by a continuance of the shaft from booking office to platform.

The Bank station is unlike any of the others, and indeed quite unlike any other station in the world. Here, if anywhere, is the romance of engineering. Situated beneath that broad open space, where the heaviest and most continuous traffic of the greatest and busiest city in the world converges from seven streets, the complicated series of works was executed without ever disturbing or hindering that traffic throughout the two years while those works were in progress. The station consists, first of an approximately circular subway for passengers, 11ft. below the asphalted surface of the roadway, approached by staircases at the end of The Poultry, Walbrook, Princes Street, Threadneedle Street, Cornhill, Lombard Street, and beside the Mansion House. From this subway short flights of stairs conduct to the spacious booking hall, whence lifts give access to the platform, some 50ft. deeper. Below this, again, are the tunnels of the City and South London, running from Lombard Street to Moorgate. The stations of the City and South London in Lombard Street and of the City and Waterloo in Queen Victoria Street are reached by intercommunicating passages, which, like those of the subway first mentioned, are lined with white-glazed tiles and lit by electric light. The public subway was thrown open by an arrangement between the company and the City Corporation. Its roof, and that of the booking hall, supported on myriads of iron pillars and a network of girders, is but a thin sheet of steel troughing laid with asphalt, and all day long and far into the night the sounds of horses' hoofs and of heavy vehicles traversing that asphalt roadway are heard down below, like muffled thunder. Only by working without intermission in day and night shifts was it possible to excavate the earth beneath this open space, to remove patches of the surface, and to replace them with the steel troughing and new asphalt without the slightest hindrance to the traffic; and only by similar methods was it possible to divert the bewildering network of underground pipes, wires, and cables that criss-crossed below the level of the pavements. The highly specialised work of re-organising the gas and water mains, the telephone, telegraph and electric-lighting wires, and the pneumatic despatch tubes, and of bestowing them all in a subway of their own, where they are always easily accessible, without the necessity of breaking up the roadway, was entrusted to Mr. George Talbot, whose foretaste of such labour in the construction of the Glasgow Subway marked him out for the post.

The next most interesting thing on the Central London is the great Generating Station at Shepherd's Bush, occupying 19 acres of ground and containing the finest electric installation in the world. Two great chimneys,

each 200ft. in height, mark the boiler-house, 150ft. long by 85ft. wide, and containing sixteen multitubular boilers, for feeding which a huge water-tank, capable of holding a day's supply, has been sunk outside, in the event of the mains failing. Bunkers have been provided for coal, to hold 900 tons; but economy has been fully considered in fuel by the installation of Green's Economisers, by which the water for the boilers is passed across the hot blast between furnaces and chimney-stacks, entering the boilers already heated almost to boiling-point.

The power house adjoins, and measures 200ft. by 85ft. It houses six Allis engines, made at Milwaukee, of 1,300 h.p. each, in direct connection with three-phase generators, and running six dynamos generating an alternating current of 5,000 volts pressure. This is transformed to a direct current of 500 volts at the four electrical sub-stations at Notting Hill Gate, Marble Arch, Davies Street, and the General Post Office. The carriage sheds and repairing shops are models of up-to-date efficiency. The carriage sheds can house 12 complete trains of seven carriages each, and the repairing sheds have an almost equal capacity. All the machinery is driven by electric current, as will be the lifts at all the stations. At the Bank and Post Office stations there are five lifts, each to accommodate 100 passengers, and travelling at the rate of 200ft. a minute. They have been installed by the Sprague Elevator Company, of New York.

The system of electric traction employed on the Central London is the "third rail," the electric locomotives deriving their motive power from a brush forming the necessary contact. Locomotives and carriages have also been constructed in America. It is proposed to run a service of trains every two and a half minutes, starting at about 5.15 a.m. and closing at half an hour after midnight. The Company estimates an annual traffic of from fifty to sixty millions of passengers; but the actual capacity of the line is some twenty millions greater. The elevations of the various stations have been familiar to Londoners for some time past, and are inoffensive combinations of buff terra-cotta with red-brick externally, and white-glazed tiles within. Staircases lead down to the trains for the use of those who prefer them to lifts. A subway will be made at the Oxford Circus station to communicate with the station of the Baker Street and Waterloo Railway at this point, now under construction.

THE NEW RESERVOIRS AT STAINES.

GREAT progress has been made with the new reservoir works at Staines, and it is expected that they will be complete in a couple of years. The sluice and screening house at the intake, situate about 300yds. above Bell Weir, in Bucks, has been completed during the past year, and the pumping-house at Staines is ready to receive the machinery necessary to pump the water as it runs through the conduit. Altogether, the works cover an area of 421 acres, and the reservoirs will be large enough to add 35,000,000 gals. per day to the existing water supply of London; while, in case of emergency, this quantity may, with the consent of the Local Government Board, be increased to 45,000,000 gals. daily. The land secured is singularly well adapted for reservoirs, the sand and gravel excavated from the interior forming an excellent material for building up the high banks by which they are enclosed. But, to guard against leakage, the contractors are laying down a puddle wall upon the London clay, 6ft. thick at the top and 7ft. thick at the ground level. It is said that this construction will make the reservoirs—the largest yet seen near London—perfectly watertight. The inside slopes are being lined with concrete blocks 5in. thick, for a vertical depth of 15ft., and the average depth of the water will be about 30ft. In the first place, attention is being concentrated upon the two main reservoirs, which will together cover an area of 210 acres, and these, it is anticipated, will be finished in the course of the next twelve months.

New Patents.

The following specifications were published on June 23rd, and are open to opposition until August 7th. The names in italics within parentheses are those of communicators of inventions.

1899.—9,390, HARDY, combined governor and self-lighting gas burner. 10,871, WAHL, method of and apparatus for the manufacture of felt. 11,164, MESSINESI, wood-working machinery or apparatus. 11,181, PREAUBERT, method for the production of coloured wall-hangings. 11,543 SOC. CH. PREVET ET CIE., filtering apparatus. 11,857, JENTZSCH, locks. 11,911, NELSON & NELSON, treatment of sewage, urine, and refuse materials, and the production of fertilisers therefrom by the application of spent oxide. 12,195, SPENCE, air-heating furnaces or stoves. 12,303, ISSELS, apparatus for generating acetylene gas. 12,479, BUTLER, paraffin oil lighting system. 12,950, LANGHANS, manufacture of incandescing media for lighting purposes. 13,145, HUSSON, acetylene generators. 13,280, SMITH, channel rails and current supply for electric tramways. 13,419, MORGAN, method of ventilating sewers. 14,023, TATHAM & COPE, gas burners. 14,848, JACKSON, method of and devices for joining together the ends of driving and similar belts. 15,247, BROADBENT & BROADBENT, machines for breaking stone. 15,388, MORELEY & BARKER, jointing and stopping of pipes or mains. 15,440, VON RECKLINGHAUSEN, VOGT & NERNST ELECTRIC LIGHT, LTD., electric incandescent lamps. 15,521, SUGG, incandescent gas lighting. 15,527, GOUDIE, calculating rules. 15,720, CROMPTON & CO., LTD., HODGSON & TUBBS, electric arc lamps. 16,349, HURST, joint for lead and other piping. 18,870, BOULT (*Jungbluth*), manufacture of electrical insulating material. 19,197, BRIGHTMORE, SWANN & GOODWIN, bacterial treatment of sewage and effluents from sewage works.

1900.—800, HAGUE, means for securing pipes to buildings. 3,749, THAAERUP & DOHLMANN, manufacture of artificial stone. 3,947, CRANE, heating and hot-water supply boilers. 4,740, BOULT (*Roberts*), machines for making fences. 5,193, LEBIODA, apparatus for impregnating wood. 5,279, LAKE (*Dickinson*), ball-cocks. 5,290, GUDE, screw-driving apparatus. 6,706, PAUL, apparatus for heating buildings. 7,165, HAHN & V. RECUM, wood-sawing machines. 7,316, SERRAZANETTI, means for damming torrents. 7,503, MUIR, filling for the interstices existing between paving blocks. 7,534, BROWN, pontoon cranes, derricks, or like structures. 7,595, THOMPSON (*Simonini*), self-lighting gas burners. 7,695, GALSWORTHY, wall plugs for electric lighting and heating. 7,762, JOHN, folding chimney cowl with revolving hood. 7,847, SUGG, supports for mantles for incandescent gas lighting. 7,911, RÜTGERS, solutions or emulsions of tar oil suitable for the impregnation of wood. 7,919, LABOUCHERE, ornamental tiles. 8,128, WISE, carriage for lifting and transmitting timber, &c. 8,140, KEARNEY, fireplaces. 8,143, OLDENDORF, apparatus for producing coloured cement tiles.

The following specifications were published on Saturday last, and are open to opposition until August 13th.

1899.—12,099, SIMPKIN, spike for securing iron work to timber and fastening timbers. 12,395, MARLES & BUTT, carving machines for wood and other mouldings. 13,951, MOSSMAN, cranes. 15,998, BOUSFIELD (*Abbott*), filters. 16,066, SIEMENS BROTHERS & CO., LTD. (*Siemens & Halske Aktien Gesellschaft*), process for purifying water by the joint action of iron and ozone. 16,565, YOUNG & SHAW, raising of water. 19,281, KOOPMAN, manufacture of improved illuminating gas. 21,457, JACKSON, street gas lamps.

1900.—5,632, WHITE, clips for glazing bars. 8,213, BASS & PEAKE, stack pipes.

CARPENTERS' COMPANY EXAMINATION.

THIS annual examination is always preceded by a short course of lectures intended to help candidates and others. The course this year was largely attended, and the number of entries exceeded all previous years with the exception of 1899. The examiners have been careful not to lower the standard required to gain the Company's certificate, but in spite of this the percentage of passes is very good. We are glad to note the highly practical nature of the examination, and to learn that the questions set are plain and straightforward. The Carpenters' Company inaugurated these examinations so long ago as 1888, and ever since the value of their certificates has steadily increased. The gold medal has only been gained three times, so that Mr. F. Hartnoll has obtained a rare distinction this year. Among the names of the examiners we see those of Professor Roger Smith, Mr. John Slater, B.A., Mr. J. Greenwood (president of the Institute of Builders), and Mr. Baster, of the London School Board (Manual Training Department). The following is a list of the successful candidates, arranged in order of merit:—First class: F. Hartnoll (gold medal); J. W. Devonshire and H. Harrington (silver medals); F. C. Brown, W. J. Collins and F. E. Drury (bronze medals); F. Tompkins, H. Colliver, J. Sandham, H. T. Carter, J. T. Maskill, L. H. Bennett and F. Batten (aeq.). D. Grant, H. D. White, E. W. F. Martin, E. Groombridge, S. W. Hayward, H. Hey, H. Elston. Second class: H. Bolton, P. E. Phillips, W. W. Taylor, J. C. Kane, D. W. Thomas, F. B. Self, and T. Stedman and G. E. Taylor (aeq.).

SESSIONS HOUSE DESIGNS.

Nos. 1, 2, 3, AND 5.

WITH last week's issue we published designs Nos. 4 and 6 (respectively of Mr. Mountford and Mr. Belcher) for the new Sessions House in the Old Bailey. This week we are able to give the remaining four designs, and some particulars of each. A criticism will be found on page 395.

Design No. 1, by Mr. H. T. Hare. It was proposed that the whole of the frontages should be faced with Portland stone, except the base, or plinth, which would be of Cornish granite, unpolished. The whole of the cells, with their corridors, witnesses' rooms, lavatories, &c., and the small open area, to be lined with glazed bricks. The construction throughout to be fireproof, the record rooms being rendered specially secure. The whole of the joinery, including the panelling and fittings in the courts, to be of wainscot, except the Lord Mayor's parlour, where it was suggested Spanish mahogany should be used. Corridors to be lined with Devonshire marbles, of which all columns would be made. The upper part of the central hall to be lined with Ancaster stone. Statuary marble to be used for the sculpture. Corridor floorings on the first and second floors to be of marble, and those on ground floor to be of mosaic. Heating by low-pressure steam; courts, cells, and central hall to be ventilated on the "plenum" system. The estimate is as follows:—1,750,000 cubic feet, at 2s. 6d. per cubic foot, £218,750; additional for work and buildings in van-yard, £5,000—total, £223,750.

Design No. 2, by Mr. H. L. Florence. Portland stone from the brown bed to be used for the façades. Columns in the hall to be of solid steel, covered (like the walls) with faience. Corridors to be glazed up to 6ft. and plastered above. Fittings in the courts to be of oak. Heating by low-pressure hot water, the foul air being extracted at ceiling-level into chambers formed over the corridors, and thence conducted through flues in the walls to other flues communicating with the furnace shaft. Fresh air for the cells and courts to be taken from the top of the tower, heated, and forced into the rooms. Estimated cost, £199,164.

Design No. 3, by Mr. J. M. Brydon. Façades of Portland stone, floorings of wood, heating by low-pressure steam on two systems—"plenum" and direct steam heating by radiators. Esti-

mate: 2,256,000 cubic feet, at 2s. per cubic foot, £225,600.

Design No. 5, by Mr. Frank Baggallay. External facings to be of brown Portland stone. Ventilation on the "plenum" system. Estimate: 1,724,000 cubic feet, £215,500.

Putting the estimates together in consecutive order we get:—

Mr. Brydon's design	£ 225,600
Mr. Mountford's design	225,173
Mr. Hare's design	223,750
Mr. Belcher's design	217,000
Mr. Baggallay's design	215,500
Mr. Florence's design	199,164

OLD LONDON BUILDINGS.

An Alarming Collection of Facts.

THE object of the Committee for the Survey of the Memorials of Greater London is to examine certain areas in London, and in them to register whatever may be deemed to be of historic or aesthetic interest. The work is not confined to buildings only; any valuable open space, any remnant of an old village green, any beautiful tree, any object of local life or custom, or interesting piece of handiwork, comes within the committee's survey.

The London County Council had recognised the work of the Committee, and agreed, upon certain conditions, to print such of its records from time to time as went to the making of the body of the register. It was arranged that the work should be done in parishes, beginning in the eastern districts of London, the Committee taking up a western district as soon as possible. The first volume, dealing with the parish of Bromley, will shortly be issued to members. The second deals with the parish of Bow. The third will deal with the parish of Chelsea. The Committee has already started forming its Chelsea collection, and a series of drawings of the houses on Cheyne Walk has been partly made.

A reference to the Bromley volume, said Mr. C. R. Ashbee at the recent meeting of the Committee, would show what might have been done in that parish. The beautiful conformation of the old High Street had been spoiled, its line disregarded, and everything in it sacrificed to the immediate requirements of the moment. Where stood the picturesque seventeenth and eighteenth century houses with their tiled roofs and richly moulded timber cornices and canopies, now stood a grim and melancholy casual ward. Where was the stately house of the Adams' time was now the goods depot of the London and Tilbury Railway. Where stood Tudor House in its garden was now the somewhat conventional open space, with a view of factory chimneys beyond; and where, next it, was the old palace of James I., was now a gaunt uninteresting Board school. The Committee did not wish to imply that a good deal of this was not inevitable, but they pleaded that a good deal was unnecessary and could with proper direction or advice have been prevented.

A Remarkable List.

He read a list, made up from information that had been sent him—by no means claiming that it was complete—of objects threatened or destroyed, in whole or part, in London during the last six years.

Inside the City and County of London these included Stratford Place, the work of Robert Adam, destroyed in part; Haymarket Colonnades, one of the best-planned late Georgian streets in London; Adam Street, Adelphi, one of the finest specimens of Adam's work, almost entirely destroyed; the Rolls Chapel, containing the monument of Dr. Young, the work of Torrigiano, and also the mediæval chancel arch; City churches—the church of St. Michael, Wood Street, of ancient foundation, rebuilt by Wren after the Great Fire, and pulled down in 1897 under the Union of Benefices Act; St. Michael Bassishaw; St. George, Botolph Lane, condemned under the same Act; the old palace of Bromley; Tudor House, Bromley; Alfred Stevens' lions before the British Museum railings; the Embankment Garden of the Chelsea Hospital, in part; the

old Bell Inn, the last galleried inn in London on the Middlesex side of the water; Church Row, Hampstead, in part; the interior of the church of St. Mary Woolnoth; old merchants' houses in the City, Nos. 10 and 11A Austinfriars, and No. 4 Coleman Street; the seventeenth-century houses on the south side of Barnard's Inn; Clement's Inn; Hare Court, Temple, in part; Dick's Coffee House, No. 8 Fleet Street; Ashburnham House, Dover Street, now replaced by flats; Coleherne Court, Earl's Court; Bullingham House, off Church Street, Kensington; the fourteenth-century crypt of Laurence Pountney Hill, let by the Merchant Taylors' Company on building lease and destroyed; the last portion of the Blackfriars Monastery on the north side of Ireland Yard, destroyed this year; Bedford Square, many Adam interiors destroyed; Russell Square, the whole planning of the square spoiled by block buildings, and the façades of many of the houses spoiled; Fitzroy Square, the elevations spoiled and stonework painted over; Hanover Chapel, Regent Street; the Cock Tavern, Fleet Street; Harley House, Marylebone Road, with beautiful timbered garden and some of the finest planes in London; Emanuel Hospital, Westminster; Church Row, Aldgate; Cass's School, Aldgate; the Wardrobe, Stepney, destroyed by the London County Council in widening the thoroughfare; seventeenth-century merchants' houses, Bow; Mitre Square, Aldgate, with the remains of the Priory; Palestine Place, Bethnal Green, a group of eighteenth-century buildings; the Catherine Wheel Inn, Bishopsgate; the eighteenth-century rectory and boundary wall, Bow; Sir Francis Drake's house, No. 35 Basinghall Street; and so on.

This was followed by a list of objects and buildings destroyed outside the City and County, but within the survey; and a further list was read of

Things Threatened during the Last Six Years.

these including Chelsea Hospital; Trinity Hospital, Mile End; St. Mary-le-Strand Church; St. Clement Danes Church; St. Mary's, Stratford-atte-Bow; the Inner Temple Gatehouse, together with 17 Fleet Street, the reputed Chancery of Cornwall, now saved by the action of the City and London County Council; the Jewel Tower, Westminster; the church of St. Ethelburga, Bishopsgate; Lincoln's Inn Fields, the western side, with the Inigo Jones mansions; Christ's Hospital; Sir Joshua Reynolds' house in Leicester Square; Turner House, Chelsea, now saved; Thomas Carlyle's house in Cheyne Row, now saved mainly by the enterprise of Chelsea residents and American subscriptions; Golder's Hill Estate, Hampstead, since saved; Churchyard Bottom Wood, since saved; Latchmere Allotments, Battersea, &c.

Examination showed that the responsibility or blame in these cases rested with such bodies, among others, as the London County Council, the London School Board, the Charity Commissioners, the Elder Brethren of the Trinity House, the Office of Works, and the Bedford Estate. The fact of its being possible to draw up within six years such a list was in itself a very serious indictment against the common-sense and administrative capacity of the citizens of London. He did not suggest that the municipality should buy up every old house, and so forth; but he urged that there should be some means whereby the public should be first consulted when any question arose that affected the history and dignity of London. The proper body to supply this means would seem to be the London County Council, which had obtained the necessary statutory power. A Committee ought to be formed to put itself in touch with all the various social agencies that were seeking to work in the direction of raising the standard of life in the community.

Weights of Large English Bells.

The weight of "Great Paul" at St. Paul's is 16½ tons; "Big Ben" at Westminster 13½ tons; "Great Peter" at York, 12½ tons; "Tom" at Christ Church, Oxford, 7½ tons; and "Tom" at Lincoln, 5½ tons. The oldest bell in England is a bell in the church at Cloughton, Lancs, which dates from 1296.

Property and Land Sales.

On the Oombe Neville Estate.—In the highly-favoured district between Wimbleton, Norbiton, Hampton Court, and Surbiton.—An important area of about 72 acres of valuable Freehold Building Land, immediately adjoining Coombe and New Malden Station on the L. and S.W. Rly., and affording an admirable opportunity for building societies, builders, or dealers in land, with a view either to the creation of ground rents or for sub-division and sale in lots. Messrs.

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are favoured with instructions from Admiral Adolphus FitzGeorge and Colonel Augustus FitzGeorge, to SELL, at the MART, on TUESDAY, July 17, at two, a most important FREEHOLD BUILDING ESTATE, having an area of about 72 acres, with frontages on the western side to a main road, and on the south side to a new road. All let on short tenancies, so that early possession may be had. The land is in the midst of a favourite and populous neighbourhood, and is undoubtedly quite ripe for building operations. Particulars of Messrs. Farrer and Co., Solicitors, 63 Lincoln's Inn Fields, W.C.; of Messrs. Clutton, Land Agents, 9 Whitehall Place, S.W.; and of the Auctioneers, 80 Cheapside, E.O.

GLEBE LANDS ACT, 1883.—PARISH OF OCKLEY, SURREY.—FREEHOLD BUILDING AND ACCOMMODATION LAND at the Southern entrance of the village, with a long frontage to the main road.

MESSRS. WHITE & SONS, with the sanction of the Board of Agriculture, will SELL by AUCTION at the RED LION HOTEL, Dorking, on THURSDAY, July 5th, 1900, at TWO for THREE o'clock, the principal portion of the Glebe Land of the above parish, consisting of 169 a. 3 r. 9 p., a portion being Eligible Building Sites for the erection of Small Houses, the remainder available either as sites for residences of a good class, as Pleasure Farms, or accommodation land. The property will be divided into nine lots varying from half-an-acre to fifty-five acres in extent.—Particulars, with conditions of sale and plan attached, may be obtained 14 days prior to the day of sale, of Messrs. DOWN, SCOTT & DOWN, Solicitors, Dorking; or of Messrs. WHITE & SONS, Land Agents, Auctioneers, and Valuers, Dorking and Leatherhead.

R.I.B.A. EXAMS. PREPARATION, personally or by correspondence, in three, six, nine, or twelve months' courses. Architectural Lending Library. Special three months' finishing courses.—For full particulars apply to Messrs. HOWGATE and BOND, Associates R.I.B.A., 115 Gower Street, W.C. (close to the British Museum).

MODELS. For Exhibitions or Law Cases. Illustrations sent of Work Executed. JOHN B. THORP, 93 Gray's Inn Road, W.C.

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Full particulars, description, and price, stating where the plant may be inspected, to be addressed to "Granite," care of John Ross, 27 King Street, Liverpool.

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PAYMENTS TO QUANTITY SURVEYORS.

AN IMPORTANT CASE.

THE case of *Mellor v. Britton* was heard before Mr. Justice Bigham in the Queen's Bench Division of the High Court of Justice on June 26th. It was an action by a quantity surveyor against a builder to recover £411 for preparing quantities. A Mr. Sanderson had entered into a building agreement with the freeholder of certain land at Chelsea to erect flats, to be called Burton Court, which when completed were to be leased to Sanderson. He employed the plaintiff to prepare plans and to take out quantities on which builders were invited to tender. The defendant was amongst the builders who tendered. His tender, amounting to £28,000, was accepted by the building owner. The defendant in the usual way included in his tender the amount of the plaintiff's charges, and in the ordinary course the plaintiff would have been paid by the defendant out of the first instalment of the contract price received by the defendant from the building owner, but when the first instalment became due it was not paid, and the defendant thereupon entered into an arrangement with Sanderson by which the defendant took over the latter's agreement with the freeholder, and released him from all claims, present and future, under his contract; but Sanderson was given an option to purchase the building when completed on paying the defendant the contract price and interest. Up to the present time the building had not been completed, and in these circumstances the defendant denied his liability to pay the plaintiff the amount of his charges.

Mr. Bailhache, for the plaintiff, said that the custom of the trade that the quantity surveyor should be paid by the builder out of the first instalment of the contract price, although the contract of employment in the first instance was with the building owner, had been judicially recognised (see *North v. Bassett*, 1892, 1 Q.B., 333). Here the defendant had not been paid in money by the building owner, but he had received an equivalent in kind, having taken over the whole adventure and given the building owner an absolute release.

Mr. W. H. Stevenson, for the defendant, contended that his client was not liable. The case was like *Campbell v. Blyton* (Hudson's "Building Contracts," vol. 2, p. 105), where the building owner had given a mortgage to the builder, and Mr. Justice Wills there held that the builder was not liable to the quantity surveyor. The undertaking of the defendant was to pay out of a particular fund—namely, the first instalment—and that fund had not as yet come into existence.

Mr. Justice Bigham, in giving judgment, said that the plaintiff was entitled to judgment. In the first instance the plaintiff could call upon the building owner to pay his charges, but as soon as the latter had entered into a contract with a builder and had put him in a position to pay by providing him with money, the building owner's liability to the plaintiff came to an end. Then what were the contractual relations between the plaintiff and the defendant? The defendant had undertaken to pay him as soon as he himself received his first instalment from the building owner. That placed on the defendant the obligation to get the first instalment. He was not bound to try and get blood out of a stone, and if he could not get payment from the building owner he was under no liability to the plaintiff; but if he could get the money or an equivalent he was liable. A difficulty arose in this case about the payment of the first instalment, but it was not an insurmountable difficulty, for having regard to the amount of work which had been done the building owner might have raised the money. If proper steps had been taken the building owner would have been able to pay. What happened was that the defendant for reasons of his own took from the building owner an out-and-out assignment of the agreement with the freeholder in full satisfaction of all the defendant's claims under his contract. The position was, therefore, that the defendant

had chosen to accept, instead of cash, the assignment of the building agreement, carrying with it the benefit of all the work done up to that point (which far exceeded the plaintiff's claim) and also the possibility of future benefits. If the builder chose to vary his relations with the building owner he might do so, but not so as to prejudicially affect the claim of a third party who had nothing to do with the arrangement. There would be judgment for the amount claimed with costs.

A stay of execution was applied for and refused.

RELATIVE COSTS OF WATER WASTE AND ITS DETECTION.*

By A. J. JENKINS, Assoc.M.Inst.C.E.

THE waste of water is a subject that is almost daily before every member of this association, and its growing importance has been recognised by water engineers for many years. The establishment of the now almost universal system of constant supplies, so far at least as this country is concerned, is largely due to the means adopted for the detection and prevention of waste. The usual methods of detection adopted are very generally understood, and the results arrived at are easily obtainable, but the actual cost of the operations is seldom given.

In order to avoid repetition as much as possible, it is proposed to give a description of the Cardiff system of detection and prevention of waste, with particular reference to the cost and the value of the results obtained, comparing them with the few figures available of results obtained in other towns.

It can be shown that the cost of an efficient system of detection and prevention of waste is amply repaid by the value of water saved, and when it is considered that the average pressure throughout the town of Cardiff is but 34lbs. per sq. in. it may safely be inferred that where pressures are higher greater saving may be expected, because, other things being equal, a greater pressure must result in greater waste. At the outset it may be well to review briefly the extent to which waste may go on, and to show to what extent it has been reduced.

As early as 1859 the Norwich Waterworks Company obtained an Act of Parliament to enable them to prescribe in detail the nature of all fittings and pipes and the work connected with them, and to interdict the use of existing fittings and pipes which, in their judgment, might tend to waste, with the result that within a few years the consumption of water was reduced from 40gals. per head per day (intermittent supply) to 15gals. (constant service). In the following year (1860) the Manchester Corporation obtained similar powers, and quickly reduced the domestic consumption under constant supply from 35gals. per head per day to 14gals. The system of inspection and supervision of fittings employed at Norwich and Manchester proved abortive in Liverpool, and in 1874 Mr. Deacon introduced the waste-water meter system with immediate beneficial results, the domestic consumption being reduced by about 6gals. per head per day, and the intermittent supply (averaging 12½ hours per day) converted into a constant supply.

The daily consumption of water in Cardiff for all purposes averages about 20gals. per head per day in winter, and has run up as high as 28gals. in the hottest days of summer; 25.5gals. being regarded as the average hot-weather consumption. Of this the quantity registered by meter, almost wholly for trade purposes, is between 7gals. and 8gals. per head per day.

It may be well to note that Cardiff is entirely a water-closet town, 15,400 closets being supplied directly through cisterns; there are also 10,200 baths directly connected, no additional charge being made for either. The system of inspection to be described costs £500 per annum for a population estimated at about 200,000, but this does not include the

cost of any repairs, except the gratuitous renewal of tap-washers.

Cost of Water.

The cost of water to the Cardiff Corporation is at the present time about 7.5d. per 1,000gals.; but the works are capable of giving a larger supply if increased filtration area is provided, and it is probable that the cost will ultimately be reduced to 6d. per 1,000gals. The average for the eight London water companies is 7.1d. per 1,000gals. In comparing the cost of water saved with the cost of detection and prevention of waste, 6d. per 1,000gals. is adopted by the author as being a fair average, and within the mark as regards Cardiff.

The staff of waste inspectors employed within the borough numbers six, the whole being under the direction of the chief inspector; two outside districts are looked after by their district inspectors, who act also as turncocks and meter inspectors in those districts, with occasional help from the town staff. The borough is divided into six districts, and each is periodically examined by means of a house-to-house inspection, when every fitting is examined and every service sounded for hidden leakage. The number of houses within the borough is about 29,700.

In the meter-controlled districts a test is made once in six months. If the waste-line shows a loss of less than 2gals. per head per day in a district made up of cottage property, or 3gals. per head per day in a district of villa property, the district is considered to be in a satisfactory condition; it is found, however, that one test in two (average) indicates a loss greater than the above, and a house-to-house inspection is proceeded with, but under no conditions is a district allowed to go for more than two years without such an inspection, the increased revenues resulting from the discovery of chargeable items being about £50 per annum.

Referring to the leaks discovered as the result of waste inspection, and calculating the probable amount of leakage on the figures ascertained from the meter-controlled districts, we get a daily waste of more than 544,000gals., or one-tenth of the total supply of the district, detected and remedied at an annual cost to the Corporation of £500. This quantity is sufficient for the supply of 20,000 persons, and the value of it is £4,964 per annum.

The Use of Stop-Taps.

Since the year 1890 the Corporation have introduced outside stop-taps. All new services have been provided with them, and the existing services are being fitted as opportunity occurs. In all, about 2,400 are fixed annually, so that at the present time of the total of 29,700 premises within the borough about 24,000 are provided with these useful fittings. As the town is at present overbuilt, the number of removals and empty houses is large. The advantage of the outside stop-taps for temporarily shutting off the supply from these houses as a preventive of waste will be appreciated from the fact that no less than 1,628 were closed last year in consequence of removals, non-payment of rates, and temporary closing of houses during absence from home of the occupiers. The advantage of shutting off each house for repairs rather than shutting off the supply of the street is considerable, and does away with what used to be a great inconvenience to the consumers.

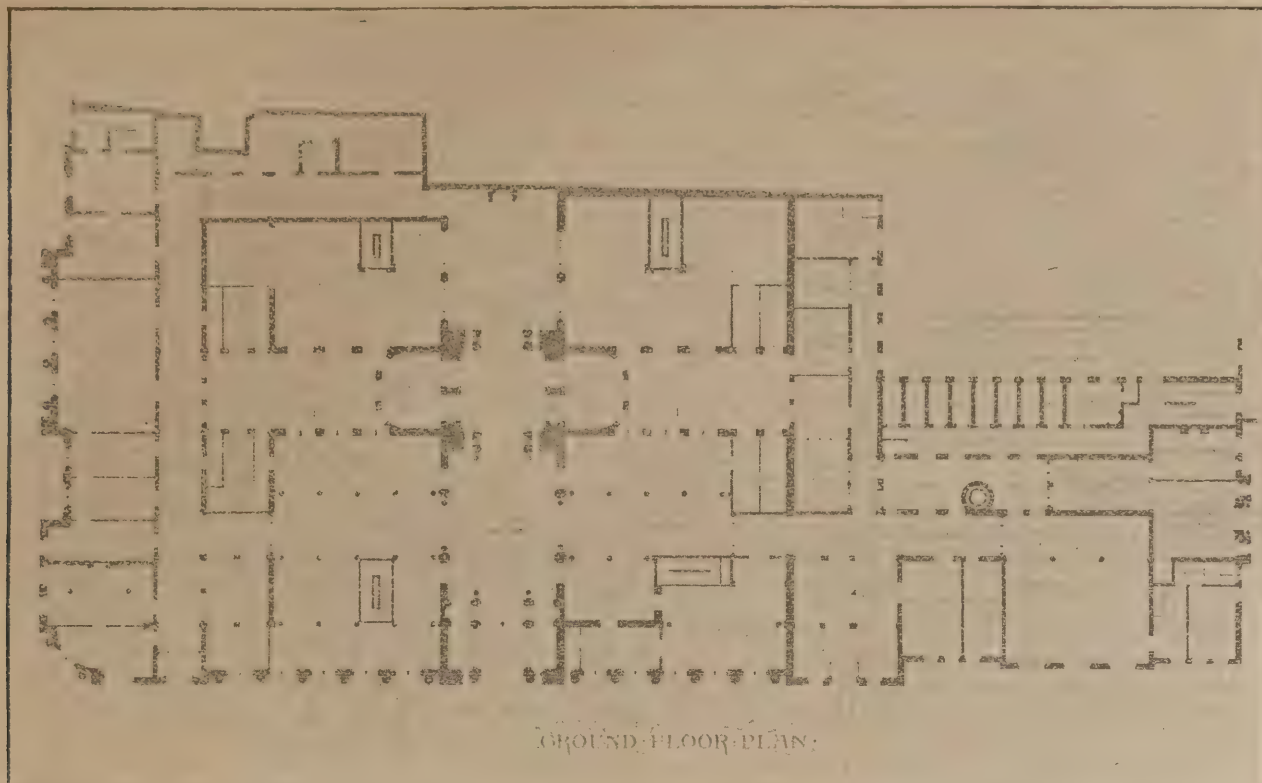
The cost of providing and fixing a ½in. stop-tap of first-class make, with guard and cover complete, is 11s. 6d. on an old service and 7s. 6d. on a new.

The stethoscope used in Cardiff is one of straight-grained ash, 24in. long for inside work (house inspection), and 36in. for street work, conveniently shaped at the top to place against the ear. The results obtained are excellent, and the inspectors have, by sounding along the ground and without direct contact with the pipes, located leakages so small as to be almost invisible when uncovered. Metallic stethoscopes are found to be too sensitive, as they lead to confusion of sounds.

The Sources and Extent of Waste.

Waste may be classified under three heads: (1) that due to overdrawings and leaving taps running after use; (2) defects in mains and

* Summary of a paper read before the meeting of British Association of Waterworks Engineers, held at Cardiff on June 26th, 1900.



GROUND FLOOR PLAN.

NEW SESSIONS HOUSE: DESIGN BY H. L. FLORENCE, F.R.I.B.A.

service pipes; (3) inferior taps of all kinds and siphon cisterns. For the first of these there appears to be no remedy; self-closing taps cannot be regarded as a satisfactory cure.

Defects in mains and services are a great source of waste, though in point of number they amount to less than one-fifth of the total number of leakages, and, being for the most part hidden from sight, they may be expected to remain longer undiscovered.

It may be noted that the increased use of wood paving or asphalt for roadways, with their underlying bed of impervious concrete, tends to prevent leakages showing at the road surface to a very marked extent.

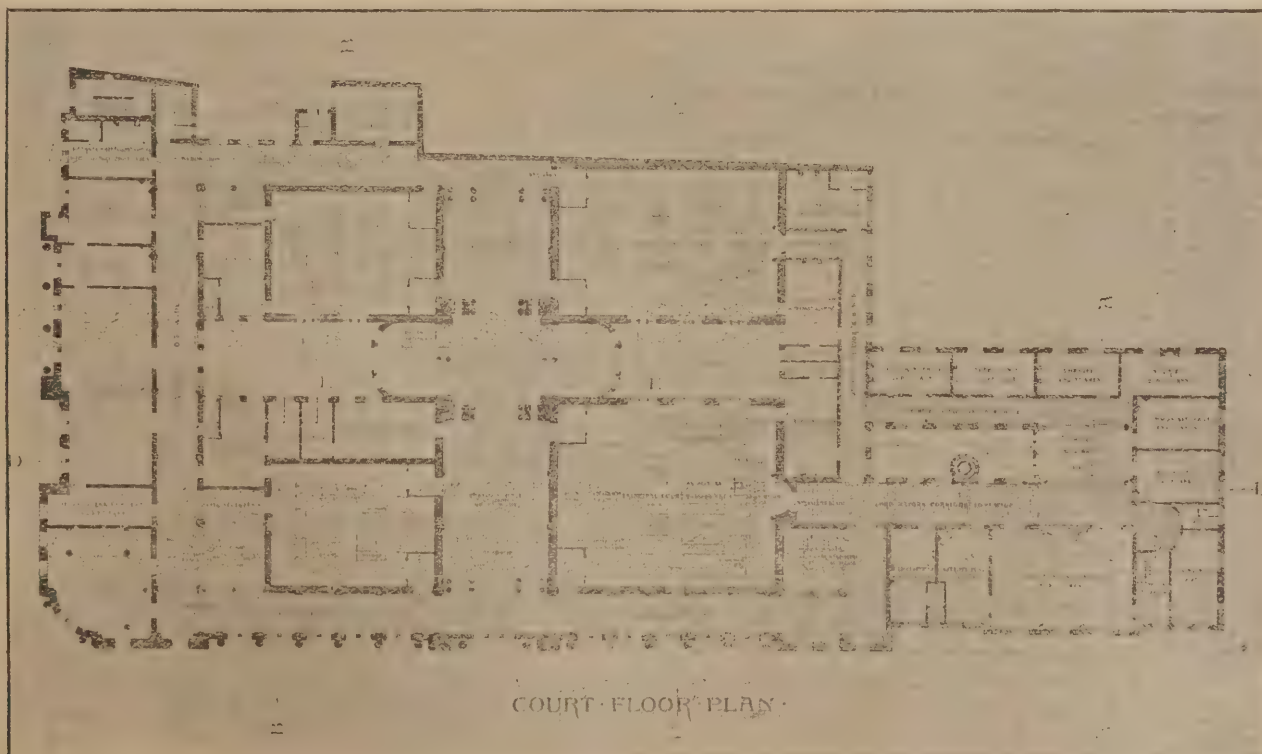
Inferior fittings are probably the most fruitful

source of waste. The system of control in this respect exercised by the Cardiff Corporation only partially mitigates the evil. No system of testing and stamping each fitting has yet been introduced, though it has been under consideration; but all fittings and siphon cisterns must be those of approved makers who have previously deposited sample fittings with the Corporation. It is the duty of a turncock to examine the fittings on a new service before the water is turned on to see that they are by an approved maker and that they are equal to the deposited approved sample, but this examination is necessarily very superficial, and therefore unsatisfactory.

The requirements of the Corporation with

regard to bib or stop taps are that they shall not be less than the following weights:—1in. diameter, 32oz.; $\frac{3}{4}$ in., 21oz.; $\frac{1}{2}$ in., 12oz.; $\frac{3}{8}$ in., 8oz.; double-valve bib-taps— $\frac{3}{4}$ in. diameter, 24oz.; $\frac{1}{2}$ in., 14oz.; $\frac{3}{8}$ in., 10oz.; and they shall be capable of resisting a pressure of 250lbs. to the square inch.

Experience indicates that if the following small points were more carefully observed by makers the number of leaking taps would be immensely reduced. The first is that the thread on the spindle is frequently too short, so that when the washer wears down there is not sufficient thread to allow the valve to be screwed down on its seat; secondly, the seating is generally faced too wide, whereas it is



COURT FLOOR PLAN.

NEW SESSIONS HOUSE: DESIGN BY H. L. FLORENCE, F.R.I.B.A.

preferable that the seating should be narrow and slightly raised, so that it may wear a groove into the washer, and thus secure a tight joint when the valve is screwed down without requiring the exertion of too much strain.

The requirements as regards siphon cisterns are more satisfactory, but as a sample cistern only is examined at the waterworks depot there is no control beyond that of superficial examination when the cistern has been fixed. It has been the practice for many years to renew the washers of all leaky drawing-taps free of cost to the consumers, with the result that on the average 11,000 have been repaired annually at a cost not exceeding 2d. per tap. That this has proved economical there can be no doubt, because the time lost in compelling the property owner to get the tap repaired and in seeing that it is done would be far more costly of itself, apart from the amount of water that would be wasted in the meantime.

Conclusion.

The necessity for the husbanding of supplies must become more pressing every year; the requirements of sanitation naturally lead to an increased domestic consumption, the requirements of trade are upon the increase, and the growth of populations in the larger towns is progressing at an enormous rate; it is true there are still large areas of gathering grounds unappropriated, but for the most part they are at great distances from large towns; each year the cost of works is increasing, and if economies can be made in existing supplies and the increased demands be partially, if not wholly, met by the prevention of waste, then it behoves water authorities to make those economies. This point is specially referred to, as a matter of great importance, in the final report of the last Royal Commission on the London Water Supply. Attention is drawn to the fact that the Grand Junction Company supplied 44, 48, and 48 gals. per head per day as compared with 29, 31, and 29 gals. per head supplied in the same years by the Kent Company. The explanation given by the engineer of the Grand Junction Company was that they found it cheaper to pump water to waste than to prevent waste; this does not appear to be the experience of the majority of the London water companies, who have lately prosecuted very vigorously the inspection for the detection of waste, and have applied "Deacon" waste-water meters to parts of their district.

To summarise the matters dealt with in this paper, the author submits the following conclusions: (1) That to keep the supply of a district within reasonable bounds an efficient system of inspection is necessary. (2) That a regular and systematic inspection can be carried out at a very reasonable cost, which will certainly be repaid in the value of the water saved. (3) That the prevention of waste will be facilitated by the introduction of a system of testing and stamping of all fittings. (4) That within certain limits the expenditure incurred by the execution of "free repairs" is warranted by the saving of water resulting.

SANITARY CONDITION OF FURNISHED HOUSES.

THE case of *Harman v. Simpson*, which was heard recently before Mr. Vevey, Official Referee, in the High Court, raised important points regarding the standard of sanitary condition covered by the implied warranty given by the landlords when letting furnished houses. The defendant agreed to take a furnished house, 33 Pandora Road, Hampstead, from the plaintiff for twelve months, but on being advised by his sanitary surveyor that the house was unsafe as a place of residence he declined to take it. The sanitary inspector of the Hampstead Vestry was called for the plaintiff. He gave it as his opinion that the sanitary arrangements of the house were satisfactory, and equal to 99 out of every 100 houses in Hampstead. The following facts were admitted by witnesses on both sides:—w.c. on bedroom floor not against an external wall; this w.c. had an earthenware trap with putty joint at connection with soil pipe; the soil

pipe was of light iron rainwater piping, rusty, and with putty joints, also in the centre of the house throughout its whole course; there was no disconnecting trap with air-inlet between the sewer and the house, and the only ventilator to the drain was the iron soil pipe already mentioned. In cross-examination the Vestry Inspector admitted that in consequence of a complaint made in January he tested the soil pipe and found a defect which he saw made good; that in February a further complaint was made, and on again testing the soil pipe he found two new defects; these he saw made good. In May Mr. Simpson agreed to take the house furnished, but before entering into occupation had a sanitary survey made, the result being that the house was condemned, and on behalf of the defence it was said that a w.c. and soil pipe as described were dangerous to health, and it was urged that the evidence of the Vestry Inspector proved that a thin iron soil pipe with putty joints could not be relied upon even from month to month, defects not existing in January having been discovered in February. This view, however, did not commend itself to the Official Referee, and judgment was given for plaintiff for £70 damages.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Proportions of Rooms.

AYR.—J. W. writes: "What should be the length, width, and height of a dining-room containing, say, 260 superficial feet of floorage, to be considered in good proportion? Kindly give also the sizes of a drawing-room in the same way."

There can be no definite rules laid down as to any exact proportions either for a dining-room or a drawing-room. The latter, if not intended for large receptions, may often with advantage be made of irregular shape and proportions. In the dining-room there are certain practical points which to some extent dictate the proportions. Thus, in a small room it is more convenient for serving if the plan is nearer the square, whereas for a large dining table the plan may with advantage approach the double square, provided sufficient height can be given to the room. The largest room on any floor often fixes the height of all the rest, and Chambers recognises the impossibility on this account of employing the best proportions in the smaller rooms. The following suggestions are taken from Gwilt:—For square plan and flat ceiling, height to be not less than $\frac{2}{3}$ the side, nor more than $\frac{3}{4}$; for longer proportions the height may equal the width; where a cove is employed the proportions should be increased. One of Palladio's rules for long rooms (as opposed to square) was to add length to width and take $\frac{1}{3}$ the sum as height. The appearance of a room having too great a height may be improved by a predominance of horizontal lines in its decoration, and vice versa.

A. G. B.

Architectural Sketching in the Vicinity of Leeds.

STUDENT writes: "Kindly give me full particulars as to situation of Kirby Hall, best mode of visiting it from Leeds, and name of present tenant. Also give a list of buildings near Leeds that are worth sketching and measuring."

A Leeds architect favours us with the following reply:—"Your correspondent does not say which Kirby Hall he wishes to sketch—Kirby Hall, Northants, or Kirby Hall in Yorkshire. The latter is, as far as I can gather, about fourteen miles from Ripon, and is rather a good Late Renaissance mansion. 'Student' will find plenty of subjects to sketch and measure near Leeds. He couldn't do better than measure up

one of the fine, simple Yorkshire granges, such as Swinsty Hall, Fewston; Riddlesden Hall, Keighley; Oakwell Hall, Birstall; Lumb Hall, Driglington; and numerous smaller, but very interesting, homesteads. If he wishes to sketch ecclesiastical work there is Kirkstall Abbey, Adel Church, Methling Church (some very fine tombs here), and Henewood Church. Selby Abbey and Bolton Abbey are also within easy reach."

A Question of Signboards.

EPFING.—Constant Reader writes:—"Is it technically correct to state on a signboard the original date of the establishment of a business of which the present owner has only had a few years' possession?"

In our opinion it is correct. If John Brown founds a business in 1850 and John Thomas buys it from him in 1900, John Thomas has every right to state that the business was founded in 1850, for in purchasing it from John Brown he acquired all the benefits belonging to that gentleman in respect to the business.

Book on Building Construction and Sanitation for Beginners.

DUBLIN.—DUBLIN FUSILLIER writes: "Kindly name a book on building construction for a beginner to study; also one on sanitary work."

"Rivington's Building Construction," four volumes—vols. i. and ii. 8s. each; vol. iii. 16s.; vol. iv. 11s. 6d. "Building Construction and Drawing," first stage or elementary course, by Charles F. Mitchell, price 2s. 6d. "The Plumber and Sanitary Houses" (6th edition), by S. Stevens Hellyer, price 10s. 6d.

Architectural Sketching in Norfolk.

BATHER writes: "Kindly give me the names of some towns in Norfolk where there are good subjects for making architectural sketches."

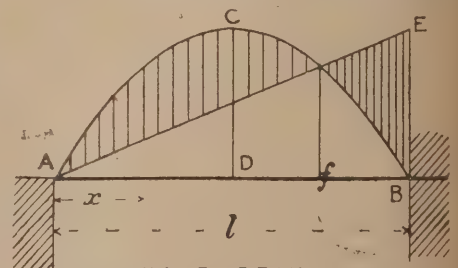
There are opportunities for good sketching anywhere around the Norfolk coast from Lynn to Yarmouth; either of these places would give "Bather" plenty of work. It all depends on the kind of work he wants; there are numerous churches, a quantity of domestic work, with halls, manor houses, &c.; but of course your correspondent would have to travel about by train, bicycle, or walking trips for these objects of interest. Cromer, Sheringham, Mundesley, Cley, or Hunstanton would probably provide a more congenial holiday centre: the country and architectural objects around all of these places are equally good.

GEORGE W. SKIPPER, F.R.I.B.A., and F. W. SKIPPER, Norwich.

Strength of Beams.

HOLLOWAY, N.—ENIROL writes: "What is the safe distributed load for a fir-beam, 12in. deep, 9in. wide, and 13ft. long, of uniform cross section, supported at both ends and by a storey-post placed under its centre? Is it approximately correct to treat each half as a beam fixed at one end and supported at the other?"

Calculate the strength in the following manner: A beam of uniform section, uniformly



HALF BEAM
DETERMINING STRENGTH OF BEAM.

loaded, supported at both ends and resting on a storey-post in the middle, is under the conditions of a continuous beam over two spans. Continuous beams are calculated by the "Theorem of Three Moments" (Adams's "Handbook for Mechanical Engineers," p. 77; also Rankine and Molesworth), but it is perhaps sufficient to note that provided the supports are perfectly level the

effective load will be three-sixteenths of the total at each end and five-eighths of the total on the storey-post in centre, instead of one-fourth at the ends and one-half in the centre, as would have been expected. The distribution on the supports will, however, vary when the level is altered, viz., increasing in the centre when the centre is raised and *vice versa*. From the reaction on the supports the bending moment at any point can be calculated the same as with an ordinary beam similarly loaded. If the case proposed each half of the beam will be virtually the same as a beam supported at one end and fixed at the other. The bending moment at x measured from either abutment will be

$$Mx = \frac{wx}{2}(l-x) - \frac{wlx}{8}$$

l = span of one bay (centre to centre of bearing surfaces)

w = distributed load per unit of length.

The bending moment at centre over storey-post $M_B = -\frac{wl^2}{8}$. The point of contrary flexure f is such that $Af = 0.7336$. The bending moment midway between A and $f = M = \frac{9wl^2}{128}$

which is thus seen to be less than the bending moment over the storey-post.

By diagram ACB is a parabola whose ordinate at centre $CD = \frac{wl^2}{8}$, and BE is the same height. The shaded portions show the bending moments. We must now equate the bending moment to the moment of resistance in order to find what the beam will carry.

The greatest bending moment $= \frac{wl^2}{8}$, and the moment of resistance of a rectangular beam $= \frac{Cb\bar{d}^2}{6}$, where C = constant for fir = 6600 (ultimate stress lb. per sq. in.), b = breadth in inches, \bar{d} = depth in inches. Factor of safety, say 6.

Then $\frac{wl^2}{8} = \frac{Cb\bar{d}^2}{6}$
whence $w = \frac{8Cb\bar{d}^2}{6l^2} = \frac{8 \times 6600 \times 9 \times 12^2}{6 \times (7 \times 12)^2} = 1616$
and $\frac{1616}{8} = 202$ lb. per ft. run safe load.

$$\text{Total load over 13 ft.} = \frac{202 \times 13}{112} = 23.4 \text{ cwts.}$$

HENRY ADAMS.

"Petrifite."

MANCHESTER.—J. W. C. writes: "Can you give me the name of the firm or company who manufacture 'Petrifite'? It is a white powder used for solidifying without mechanism almost any material that can be named."

The Petrifite Company's office is at 24 Finsbury Square, London, E.C., and their works are at Orchard Yard, Blackwall, London, E.

Method of Working Mastic.

RISHTON.—J. H. A. writes: "What are the proportionate parts of masticot, commonly known as mastic, for pointing the outside of a chemical chimney?"

Mastic is known by various names, but with the exception of mastic cement the materials and proportions of each are nearly alike. London mastic consists of 100 parts of ground stone, 50 parts of fine river sand, and 15 parts of litharge: these are all dried and mixed and passed through a fine sieve. When required for use it is mixed with raw and boiled linseed oil (in equal proportions) until of the consistency of fine mortar. It requires long and frequent working and beating; in fact the more it is knocked up the better it works. The addition of 15 parts of red lead is sometimes used to increase the tenacity of the mastic. Old mastic is composed of fine sand, pulverised stone, pottery, scharff, glass, flint, to which are added different oxides of lead, as grey oxide, litharge, the whole being intimately incorporated with linseed oil. The proportions are as follows:—To any given weight of sand or pulverised pottery were add two-thirds of the weight of pulverised stone. Then to every 500lb. of this mixture add 40lb. of litharge, 2lb. of pulverised glass or flint, 1lb. of minium, and

2lb. of grey oxide of lead. The whole must be thoroughly mixed together. To every 30lb. of the dry mastic add 1 quart of linseed oil, and thoroughly incorporate the whole mass together, either by treading or with a trowel. Walls or other surfaces to be plastered or pointed with these mastics should be first brushed with linseed oil. All mortar joints should be well raked out and the surface swept with a coarse broom before the oil is applied. Mastic cement consists of 60 parts of slaked lime, 35 parts of fine sand, 3 parts of litharge, and from 7 to 10 parts of linseed oil. The whole mass must be well mixed and beaten until thoroughly plastic. This mastic cement is impervious to damp, and is not affected by atmospheric changes. Mastic if well made, manipulated, and properly laid is waterproof, heat-resisting, and adheres to stone, brick, metal, and glass with great tenacity.

W. MILLAR.

Building Information about Exeter.

SEAFORTH.—BLACK AND WHITE writes: "(1) Kindly name the different classes of building stones in Exeter, prices per cubic foot, colour, nearest quarry. (2) What is the nature of the soil in the neighbourhood of Exeter? (3) What is the price of bricks per thousand around Exeter? (4) Which is the best book on estimating?"

(1) There is no quarry in Exeter; the nearest is Pocombe. The stone is of a red colour, and is not used for tracery. Prices vary much, according to selection. It is a Trap rock. (2) The soil in the neighbourhood of Exeter is generally light loam. Substrata are varied: gravel, marl, shale, red sandstone. (3) 27s. 6d. (4) "Estimating," by George Stephenson, price 5s. 6d.

Cost of Church Buildings.

UPPER CLAPTON, N.—W. F. writes: "What is a price to cube a rather plain Wesleyan Church (red brick and stone dressings); also a Sunday-school, near the Lancashire coast? What is a good and cheap stone to use in the church—a lightish colour preferred?"

We believe that Longridge stone will be found a useful kind to use for the purpose required; some particulars are to be found in Rivington's "Building Construction," Part III., Materials, in the table of Sandstones. It has been extensively used in Blackpool, Southport, and other towns, the town-hall at Preston being an example of forty years' weathering. The prices on trucks at the quarries (Tootal Height Quarry Company, Limited, Longridge) vary from 1s. 3d. per ft. cub. of best brown-coloured stone for jambs, heads, sills, &c., to 1s. for blue stone. It is a little stiff in the working. There is little difference in estimating the cost of buildings per ft. cube between London and the Lancashire coast; at one office it is customary to take 8d. as the price for high-class brickwork in residences and from 10d. to 1s. for stone-dressed or all-stone buildings. In comparing the price of brick and stone it is useful to notice that stone at 1s. is equal in price to bricks at 70s. per thousand.

A. G. B.

Cubic Air Spaces in Convalescent Homes.

LONDON, W.—T. H. G. writes: "What cubic air space is necessary in a seaside convalescent home for dayrooms (adults), dayrooms (children), bedrooms (adults), bedrooms (children), isolation wards? Also, is there any objection to the windows of isolation ward being near those of ordinary bedrooms?"

Galton ("Hospital Construction") gives some useful notes on the subject of convalescent homes, but definite rules cannot be laid down as in the case of hospitals. In his opinion children should be alternated with adults in the same dormitories, and he says that the system of ventilation is a more important factor than cubic space; such dormitories may be more restricted than ordinary hospital wards, as they are used only at night. A comparison of two or three examples recently erected gives an average of from 500 to 800 cubic feet per patient in the dormitories, whether for children or adults; a dayroom provided in one instance

(in addition to the dining-hall) gives 120-150 cubic feet for each convalescent. For isolation wards the rules for infectious hospitals are: a minimum of 2,000 cubic feet per head with from 140 to 160 feet super of floor-space.

A. G. B.

Quantity Surveying.

MANSFIELD.—Q. S. writes: "Which are the best books on quantity surveying? Are there any examinations held in this subject; if so, when and where?"

"Quantities," by the late Professor Banister Fletcher, price 6s.; "Quantity Surveying," by John Leaning, F.S.I., price 12s.; "Quantities and Quantity Taking," by W. E. Davis, price 3s. 6d. These books can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C. "Q. S." should bear in mind that every quantity surveyor has his own system, and whatever system is adopted by him must be gone through with. Quantity surveying is usually learnt by apprenticeship. The Surveyors' Institution (Great George Street, Westminster) include in their syllabus an examination in quantities.

Strength of Concrete Floor.

ILFORD.—ECONOMIST writes: "What would be a safe load per sq. ft. for a concrete landing 7in. thick, 30ft. long, and 10ft. 6in. span, consisting of three-parts coke-breeze and one part Portland cement, resting on brick corbelling, and with 3½in. x 1½in. rolled steel joists, embedded in same 3ft. apart? Also, could the strength be increased to any appreciable extent by the addition of more cement, say, two and one?"

The proportion of three to one will make a strong concrete, and no higher proportion of cement would be advisable. There are no experiments recorded from which the strength of the proposed floor could be estimated with any degree of certainty. The concrete alone would safely carry about 1½ cwt. per ft. sup. at the end of three months providing it is well made, has 4in. width of bearing on each wall, and the walls are substantial. The rolled joists alone would carry about ½ cwt. per ft. sup., but they are too shallow for the span considered by themselves. Used in conjunction with the concrete they should be at the lower surface, and as the flange is too narrow to rivet on end cleats, there should be two angle brackets riveted on to the web at each end to serve as cleats and compel the concrete and rolled joist to divide the load between them. In that case the concrete would take the compression and the rolled joists the chief part of the tension, and the floor would be increased in strength, but to what extent it would be impossible to say. In laying the concrete it would be advisable to separate it into, say, 10ft. lengths, and grout up in between.

HENRY ADAMS.

Books on Lettering and Sign-writing.

NEWPORT, MON.—F. W. W. writes: "Where can I get books on the subject of sign-writing; books of designs with different styles of lettering, with explanations; or books giving explanations alone; or else sets of books relative to sign-writing?"

The best small book on lettering is Mr. Day's work "Alphabets Old and New," price 3s. 6d. net. Another good book is Decompe's "Album de Lettres," containing twenty-five coloured plates in portfolio, the price of which is 18s. 8d. post free from Mr. B. T. Batsford, 94 High Holborn, W.C. Messrs. Cassell and Co. also publish in their series of 1s. "Work" handbooks, one on "How to Write Signs, Tickets and Posters," with 170 illustrations.

SOUTH-EASTERN RAILWAY EXTENSION.

THE main objects of the works now in active progress on various parts of the South-Eastern and Chatham Railway system are to secure better approach to the metropolis, and to afford greatly increased accommodation at London Bridge, Cannon Street, and Charing Cross.

The scheme has been worked out in detail by Mr. Alfred Willis, the general manager, and Mr. Percy C. Tempest, the engineer-in-chief, and

contemplates material changes at each of the three termini named. The low-level station at London Bridge is to be converted into a passenger station possessing four platforms with a total length of 2,356ft., and a separate booking-office and a footbridge to the present station. There will be large office and warehouse accommodation, goods being received in Gravel Lane, immediately underneath the dépôt, and raised to the railway level by hydraulic lifts.

Waterloo Junction Station has already begun to assume a new shape. The old station, being entirely inadequate for present requirements, is to be replaced by a structure more worthy of such a busy centre. An additional platform has been laid upon the space secured by widening the viaduct, and the total length of the four platforms in the new station will exceed that of the existing platforms by more than 1,400ft. The new station will possess more than twice the existing accommodation, and no less than 34,000ft. super. of glazed platform roofing are now required.

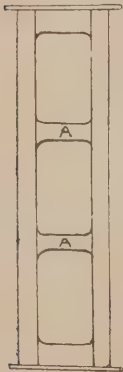
The company will make a considerable addition to Charing Cross Station by extending the structure on each side. The result will be to secure 2,440ft. of new platform space, and to keep the main line and continental line quite separate from the local traffic. It has also been decided to enlarge Spa Road Station, and to provide independent platforms for up and down local trains; while, in view of the constantly growing population of the eastern districts, it has been determined to construct a new station at Rotherhithe New Road. Between St. John's and Orpington the railway is being widened, and the station at Hither Green is to be made still larger by the construction of two new platforms, devoted exclusively to main line traffic. The directors have also sanctioned certain improvements at Ashford and Tunbridge Wells, and agreed to erect extensive new sheds near the former station, so that in course of time the locomotive and carriage works may be wholly concentrated there, instead of being divided, as at present, between Longedged and Ashford.

Correspondence.

Cast-iron Stanchions.

To the Editor of THE BUILDERS' JOURNAL.
KIRKCALDY.

SIR,—I am not quite satisfied with Mr. Henry Adams's reply to "Cronje" on page 174 in your issue for April 11th with regard to the strength of cast-iron stanchions. Referring to the accompanying sketch, I believe that bracing the two legs together as at A *must* necessarily strengthen the framing, in spite of Gordon's or Hodgkinson's formulæ, even if the risk of bending is alone considered. I know of no formula by which this design of stanchion may be calculated and I do not consider that Gordon's or Hodgkinson's formulæ are applicable except in connection with isolated single stanchions or columns where no such bracing exists.



It has been found that *single* stanchions—as I call them—when of a height not exceeding five diameters yield wholly by crushing, and from five to thirty yield partly by crushing and partly by bending; therefore it would seem evident that if the chances of bending are reduced by the insertion of braces that the stanchion becomes very much stronger.

Then, again, there seems to be such a great jump from five to thirty diameters that one would think that the formula applied to a column or stanchion of, say, six diameters could not give justice to one of thirty diameters. However, it is the two-legged stanchion in which I am most particularly interested, and I hold that, if braced together, it would be very much stronger than two isolated columns or stanchions, each equal in section to the leg of the double one.—Yours faithfully,
D. FORBES SMITH, A.R.I.B.A.

A.A. SUMMER VISITS.

CHRIST'S HOSPITAL SCHOOLS, HORSHAM.

ON Saturday last, June 30th, the second summer visit of the Architectural Association took place to the new Christ's Hospital Schools at Horsham.

This magnificent series of structures is being erected, and is now partially completed, from the designs of Mr. Aston-Webb, A.R.A., and Mr. Ingress Bell, by whose kind courtesy the members were enabled to thoroughly inspect the buildings.

Stow, the antiquary, tells us that this celebrated school owes its foundation to a remarkable sermon preached at Westminster, by Ridley, Bishop of London, before King Edward VI.; wherein in the most powerful manner he laid before the king the poverty, difficulties, and the neglect of the poor by the wealthy classes of the day, and in the name of humanity and religion demanded an instant remedy. The young king, we are told, was so impressed that he sent for Ridley after the service, and, at the end of a long conversation, requested his assistance, and that of the Lord Mayor and citizens, to remedy the distress; the result being the foundation of the celebrated hospitals of St. Bartholomew and St. Thomas; and for the children the magnificent buildings of the Grey Friars Monastery in Newgate Street, which were in perfect preservation—and lasted so until the great fire—were used, the first number placed in them being 350 poor children. When restored the school after the fire, and built the very beautiful red brick and stone front towards Newgate Street that we see to-day, together with the present church, which he erected upon the foundations of the ancient monastic choir. The buildings contain only one side of the mediæval cloister, and some other remains. The place underwent another remodelling in 1829 by an architect named Shaw, who made the place as we see it. About 1890 a discussion arose as to the removal of the school to the country. Finally an estate at Horsham was purchased, and a select number of eminent architects prepared designs in competition for a new school, the result being that the first place was awarded to Messrs. Aston-Webb and Ingress Bell.

As a plan it may be pointed out that this magnificent scheme consists of an entirely symmetrical arrangement of buildings grouped around—in the first place—a great quadrangle that measures some 300ft. by 200ft.; at its northern end is placed the nearly-completed dining-hall, a building about 150ft. by 50ft., and a trifle more, internally, than 40ft. high. This hall is a very original and fine design; on the side facing the quadrangle is a series of five square mullioned bay windows, the two end ones having their mullions brought almost to the floor level; between each bay is a picturesquely treated door with a window above. These windows on Saturday were in appearance extremely magnificent, being filled with the costly old stained glass emblems removed from the windows in the great hall in Newgate Street. The roof is panelled in Oregon pine; the interior generally is to be panelled, but it is not yet fixed; the general effect nevertheless is extremely fine. Behind this hall rises the tower; and beyond there is the great kitchen block, with its entire service departments, steward's house, &c. At the southern end of the quadrangle and connected with it by a cloister on either side are the great hall, with a large building on either side intended to contain class-rooms for the 850 scholars, the chapel with accommodation for 1,000 people, and the music school. The foundations of these buildings have been laid; they have yet to be erected. The science schools on the east side have been built, together with the art school.

Stretching away to the east and the west of the dining-hall, and communicating with the service department behind it by an underground passage very cleverly planned, are the boarding-houses, built on the "block" plan, usually associated with hospital design. Each of these houses contains dormitories for 100

boys; six of them have been built, and the remaining two are in course of construction. The western line of houses terminates in the preparatory schools, the eastern in the large infirmary. About 140ft. from the centre of each of these houses are the dwellings of the masters, and adjoining the chapel is the head master's residence. In the design throughout it has been the aim of the architects to obtain full sunlight to every department together with a complete circulation of air to the whole of the buildings; these are warmed by steam and lighted by electricity.

Throughout the elevations are treated in an original rendering of the style of the sixteenth and seventeenth centuries, in red brick and stone, with mullioned windows, gables, and red-tiled roofs, obtaining by good proportions and great restraint and disposition of masses an extremely picturesque yet monumental effect.

Everything was shown to the members personally by Mr. Aston-Webb and Mr. Ingress Bell with the most painstaking care and trouble possible. H. D. W.

NEW SEWAGE WORKS AT BRIGHOUSE.

THE large sewage scheme which has been undertaken by the borough of Brighouse, and has been under construction during the last five years, is now nearing completion. Mr. A. M. Fowler, C.E., of Manchester, formulated the scheme. The site is situated on the south side of Cooper Bridge railway station, bounded on one side by the main line of the Lancashire and Yorkshire Railway, and on the other three sides by the River Calder, the fifty acres of land (secured at a cost of £15,000) being really a triangular plot. Contracts for the construction of the works were let in 1896. The principal constructor was Mr. G. Taylor, of Blackburn, whose contract for the outfall works and certain specified sewers amounted to £42,747 0s. 1d., while for tanks, buildings, &c., at the outfall works the amount was £18,655 5s. 11d. Eight large settling tanks have been erected, into which sewage will flow by natural gravitation, the scheme of the engineer being to collect all the sewage to one point by natural gravitation, and there treat it by means of lime, possibly with the addition of sulphate of alumina. The solids will be precipitated as the sewage passes through the tanks, and the effluent water, after it flows from the tanks, will be turned on to about 40 acres of farm land, and will then, in a purified state, find its way into the river. The outfall works have been designed with a view to be adaptable to any kind of chemical treatment. The buildings include an engine-house, a spacious caretaker's residence, two committee-rooms, and other offices, and sheds, &c., for various purposes. A tall stone chimney-stack has also been erected. The buildings have been built of local stone.

Starting from the outfall works, there is a huge bricked trunk sewer, by means of which the whole of the sewage is carried down the Calder Valley from Brighouse to the outfall works. Inside the borough itself there are no fewer than nine main sewers, all of which unite and empty into the main trunk sewer. The scheme provides for a flow of sewage equal to 30 gals. per head per diem of the population, and the main sewers have been designed to meet the requirements of double the present population, which (including out-districts) may be put at 37,000. Each of the eight tanks of the reservoirs at the sewage works measures 75ft. 6in. by 37ft. 6in., and is 6ft. 9in. deep. The machinery in the buildings at the outfall works includes an apparatus for compressing the sludge. The settling tanks at the works, it is estimated, will take eight hours' flow of sewage, and at the present rate more than a day's flow. The Local Government Board have already sanctioned an expenditure of £119,000 for sewage works purposes, and it is confidently anticipated that more money will have to be borrowed before the completion of the scheme, but whether the sum total will reach £150,000—the Mayor's estimate—remains to be seen.

Mr. Rudyard Kipling, our readers may be interested to know, was an "architect, or house-builder," before he became an author.

COMING EVENTS.

Thursday, July 5.

INSTITUTION OF CIVIL ENGINEERS.—Reception at Guildhall. 9 p.m.

SOCIETY FOR THE PROMOTION OF HELLENIC STUDIES.—Annual Meeting.

ROYAL INSTITUTE OF PAINTERS IN WATER-COLOURS.—Soirée Musicale in aid of the Francis Joseph Institute.

Saturday, July 7.

NORTHERN ARCHITECTURAL ASSOCIATION.—Annual Excursion to Leyburn, &c., and to visit Spennithorne, Middleham, and Jervaulx.

PEOPLE'S PALACE ARCHITECTURAL SOCIETY.—Visit to Metropolitan Fire Brigade Station, Southwark Bridge Road, S.E.

Wednesday, July 11.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of the General Purposes and Finance Committee, 3.30 p.m., and of the Election Committee, 5 p.m.

Saturday, July 14.

ARCHITECTURAL ASSOCIATION.—Third Summer Visit to Mr. O. Eames Rempes' House, Hayward's Heath, and to Cuckfield Place.

Saturday, July 21.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-UPON-TYNE.—Council Meeting. 1.30 p.m.

Saturday, July 28.

ARCHITECTURAL ASSOCIATION.—Fourth Summer Visit to Stowe House, Buckingham, and Buckingham Church.

Engineering Notes.

Mr. Frank Howarth, of the London County Council staff, has been appointed chief water engineer of the Plymouth Corporation.

New Water-Supply Works at Tomintoul, Banffs., have been executed by Messrs. Jenkins and Marr, C.E., of Aberdeen. Mr. J. H. Clark, Elgin, was the contractor, and Mr. Thomas Drysdale acted as superintendent.

St. Charles's Catholic Church, Liverpool, is being warmed by Messrs. John King, Limited, engineers, of Liverpool, who are at present installing the latest improved hot-water apparatus.

Electricity in Bulk.—The preambles of the electric power supply Bills now before Parliament have been proved. The South Wales Bill has a capital of £1,000,000; the Durham Bill, £360,000; and the Lancashire Bill, £4,000,000.

The New Workhouse Infirmary, Skipton, is being warmed and ventilated by means of Shorland's patent Manchester stoves, patent exhaust roof-ventilators, and special inlet panels—supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Electric Lighting at Poplar.—The Poplar District Board of Works is about to complete its municipal electric lighting installation, which has been laid down at a cost of £70,000. The cables have been laid, and in the majority of the main roads the arc standards have already been placed in position. It is anticipated that in the course of a month or so the large generating station at Bromley will be ready to be opened.

Electric Trams for South London.—A Select Committee of the House of Commons passed last week the Bill promoted by the London County Council for the use of electric traction on their tramways from Westminster Bridge to Tooting, and from Blackfriars Bridge to Streatham. The Bill further provides for the construction of a generating station at Camberwell, and for the extension of eleven lines in North London.

Sir Alexander R. Binnie, Chief Engineer to the London County Council, was last week presented with the honorary freedom and livery of the Turners' Company. In returning thanks he said that he regretted that the water supply of London stood now in the same position as it occupied ten years ago. At the bottom of the question there was the great financial difficulty involved in taking the water supply out of the hands of private enterprise. He quoted a

sentence from the report of Lord Llandaff's Committee, to the effect that it was to be wished that someone could now purchase and take over those areas in Wales from which London water must ultimately come.

Tramways.—The following table, showing the extent of the tramways of the United Kingdom and the means by which they are worked, is taken from a little pamphlet entitled "Tramway Statistics," issued by the Ocean Accident and Guarantee Corporation, Limited:—

Style.	Length of route.		Length of track.	
	Miles.	Per cent.	Miles.	Per cent.
Steam	242	21.11	297	17.89
Cable	34	2.95	68	4.08
Electric	303	26.37	460	27.70
Horse	569	49.57	835	50.33
Total	1,148	100.00	1,660	100.00

Manchester Tramways: New Works.

—An important step towards the establishment of municipal electric tramways throughout Manchester and the district was taken recently, when the foundation-stone of the car shed which is to be built at Queen's Road, Cheetham, was laid. It is estimated that the shed will be the largest of its kind in Europe. Accommodation will be provided for 252 cars. The area of ground to be covered is about four acres, and the works, when completed, will consist of a front building towards Queen's Road 255ft. long by 33ft. wide, comprising offices, guards' and drivers' mess-room, mechanics' shop, store and other rooms, and a house for the yard foreman. There will be an entrance gateway 16ft. wide in Queen's Road to a covered approach road 48ft. wide, with track lines leading to fourteen bays of sheds (each 37ft. wide) arranged at right angles thereto and parallel to Queen's Road. The principals of the shed roofs will consist of about 400 tons of steel, carried by steel girders on about 100 cast-iron columns; the roofs will be covered by boards and slating and about 60,000 sq. yds. of patent glazing. The total estimated cost of the work is £11,000.

Surveying and Sanitary Notes.

Yarmouth "Rows" Threatened.

A movement is on foot in Yarmouth to improve away some, at least, of the "rows" for which that town is famous.

Improvements at Wisbech.—The Wisbech Town Council has adopted a scheme for paving and improving the streets in accordance with an estimate prepared by the Borough Surveyor, and for widening Walsoken and Blackfriars bridges, at a total cost, including contingencies, of £9,250.

Sewerage Question at Stamford.

At the last meeting of the Stamford Town Council the Mayor's proposal to proceed at once with a new sewerage scheme, with outfall works, &c., was negatived, though the present system is that known as the "tub" system, and is costing the town £1,300 a year. The Council has been directed by the Local Government Board to effect an improvement within two months.

What Widening Schemes Cost in London.—At last Friday's conference of members of the London County Council and representatives of Metropolitan Vestries and District Boards, held at the County Hall, Spring Gardens, the chairman (Mr. Dickinson) said that the Ludgate Hill widening (15ft.) resulted in an expenditure at the rate of £2,000,000 per mile; the Fleet Street widening (10ft.) £3,000,000 per mile; and the Strand widening £6,000,000 per mile.

For the New London Boroughs.

Canon Barnett, the head of Toynbee Hall, has issued a document in which it is insisted that an adequate staff of sanitary inspectors shall be appointed in connection with the new

London boroughs, the minimum being one inspector to 15,000 of the population. Some of the inspectors should be women. It also advises that a house-to-house inspection shall be made at frequent intervals, and that the sanitary part of the work of the new councils shall be performed with the greatest stringency. Also, that the councils shall insist on efficient paving, watering, and cleansing of the roads and streets, make provision for more open spaces, and shall take full advantage of the Housing of the Working Classes Act.

New Companies.

New Clyde and Tyne South African Syndicate, Limited.

This company was registered on June 6th, with a capital of £50,000 in £1 shares, to adopt and carry into effect an agreement with the Clyde and Tyne South African Syndicate, Limited, for the acquisition of the business of the said company, and, generally, to carry on in all or any of their respective branches the businesses of quarry owners, stone merchants, brick and tile makers, lime burners, dealers in sand, lime, and cement; as cabinet makers, carpenters, builders, timber merchants, &c. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories to the memorandum of association, Messrs. A. C. Berthon, C. S. Jacottet, H. R. J. Aphorpe, A. E. Stone, E. d'Avray, A. F. Lee, and C. H. Norton.

Yorkshire Estate Company, Limited.

This company was registered on June 9th with a capital of £50,000 in £10 shares, to acquire any real or personal property, lands, estates, buildings, &c., in Hull or elsewhere, and, generally, to carry on in all or any of their respective branches the businesses of builders and contractors, decorators, painters, plumbers and glaziers, general merchants, dealers in every description of stone, sand, lime, brick, tile, and terra-cotta manufacturers, dealers in slates, timber, hardware, and building requisites generally. The first directors (of whom there shall be not less than five nor more than nine) are W. A. Gelder, R. Foster, F. Crampton, T. Middleton, G. Tether, W. R. Smith, W. C. Bradley, and W. W. North.

Seacombe Pressed Brick and Tile Works, Limited.

This company was registered on June 12th with a capital of £30,000 in £10 shares to carry on the business of brick, tile, pottery, earthenware, terra-cotta, ceramic ware, and artificial stone manufacturers, &c. The first directors (to number not less than three nor more than five) are D. B. Rappart, W. H. Wilson, T. Wilson, C. B. and Walter J. Wigg.

Bracknell Brick and Tile Company, Limited.

This company was registered on June 12th with a capital of £6,000 in £1 shares to carry on the business of brick and tile manufacturers and merchants. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

James E. Beard and Co., Ltd.

This company was registered on June 14th with a capital of £5,000 in £1 shares to carry on the business of builders' merchants, dealers in earth, chalk, clay, gravel, sand, stone, coal, granite, marble, wood, iron, concrete, cement, mortar, lime, bricks, tiles, pipes, and other materials and accessories, &c. The first directors (to number not less than two nor more than seven) are J. E. Beard and J. S. Robertson, the former being permanent governing director and chairman.

The site of the Blue Coat School, in Newgate Street, is proposed to be acquired for St. Bartholomew's Hospital. The school is being removed to Horsham.

CURRENT PRICES.

OILS AND PAINTS.

Castor Oil, French ..	per cwt.	1 8 0	1 11 6
Colza Oil, English ..	do.	1 9 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate ..	do.	1 2 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 15 0	—
Petroleum, American ..	per gal.	0 0 6½	0 0 6½
Do. Russian	do.	0 0 6½	0 0 6½
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	3 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 5 0	1 7 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 16 6	—

METALS.

Copper, sheet, strong ..	per ton	83 0 0	—
Iron, Staffs, bar	do.	10 0 0	11 10 0
Do. Galvanised Corru- gated sheet	do.	14 0 0	—
Lead, pig, Spanish	do.	17 7 6	17 12 6
Do. do. English common brads	do.	17 15 0	17 17 6
Do. sheet, English, 3lb. per sq. ft. and upwards ..	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in. Do. floor brads	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	8 15 0	9 5 0
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	146 0 0	146 10 0
Do. English ingots	do.	150 0 0	—
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Veille Montaigne ..	do.	24 5 0	—
Do. Spelter	do.	19 2 6	—

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel ..	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	3 16 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 2	0 1 3
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	18 0 0	—
Do. do. 4th & 3rd	do.	13 5 0	—
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow ..	do.	14 0 0	16 10 0
Do. do. 2nd	do.	8 15 0	14 10 0
Do. do. Unsorted	do.	14 5 0	—
Do. do. White	do.	11 5 0	—
Do. Swedish	do.	16 15 0	18 0 0
Do. White Sea	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st ..	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	8 10 0	10 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	9 5 0	10 15 0
Flooring Boards, 1in. prepared, 1st	per square	0 10 6	0 10 9
Do. 2nd	do.	0 9 6	—
Do. 3rd &c.	do.	0 8 0	—

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4½	—
Do. Honduras	do.	0 0 3½	—
Do. Tobasco	do.	0 0 4½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ..	per ft. sup.	0 0 4½	—
Do. African	do.	0 0 3½	—
Do. St. Domingo	do.	0 0 6½	—
Do. Tobasco	do.	0 0 4½	—
Do. Cuba	do.	0 0 6½	—
Oak, Dantzic and Memel ..	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks ..	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk) ..	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 6	0 3 5

Keystones.

The Spire of the Parish Church at Cold Overton, Leicestershire, was recently struck by lightning and levelled to the battlements.

Change of Address.—Mr. Robert J. Beale, A.R.I.B.A., has removed his offices from 9, Victoria Street to Broadway House, Westminster, S.W.

Flats with no Stairs are now being built in New York. The upper floors are reached by an elevator, and a fire-escape runs down the outside of the building from each storey.

At St. Patrick's Roman Catholic Church, Dundalk, a new three-manual organ has been erected by Messrs. Henry Willis and Sons, of London, at a cost of £1,800.

Building Trades Gift to the Nation.—At a meeting of the Executive and Stewards held on Wednesday last it was stated that the contributions in kind and money had reached £2,2500.

New Asylum Buildings for North Wales.—In the North Wales Counties Lunatic Asylum report it is announced that £99,000 will have to be spent on additional asylum buildings.

The Ancient Abbey Church of Sempringham, in Lincolnshire, famous in monastic annals, has been enriched by the addition of a porch over the finely-carved Norman doorway, as a memorial of Her Majesty's Diamond Jubilee.

Ilfracombe Building Society Scandal.—Joseph Braund, formerly Secretary of the Ilfracombe Permanent Building Society, has been sentenced to three years' penal servitude for embezzling the moneys of the society.

Builders' Clerks' Benevolent Institution.—At a special meeting of this institution held last week the son of the late Mr. C. J. Hick, a former pensioner, was elected for presentation to the Orphan Working School, Haverstock Hill.

Public Improvement in St. Luke's Parish, E.C.—The narrow thoroughfare known as Central Street, St. Luke's—a continuation of the improved Golden Lane—is to be widened by the London County Council at a cost of £77,750.

No. 8 Parkshot, Richmond, Surrey.—A correspondent to a contemporary pleads for the preservation of this house (as its demolition is imminent), because George Eliot there wrote the "Scenes of Clerical Life" and practically all of "Adam Bede."

The Late General Wauchope's Memorial.—The memorial which is to be erected to the late General Wauchope at Niddrie, Midlothian, takes the form of a Celtic cross, 9ft. high; with the stepped base it reaches a height of 14ft.

Barry Carpenters' Dispute.—The dispute between the Barry master builders and the carpenters and joiners in the district has now lasted two months. The masters have rejected the overtures of the men, and both seem determined to see who can wait the longest.

New London Hospital.—The foundation-stone of the new Belgrave Hospital for Children in Clapham Road, S.W., was laid on Wednesday by Princess Henry of Battenberg. The building will cost £50,000, and has been designed by Mr. H. Percy Adams, F.R.I.B.A.

The Death is Announced of Mr. Melford Teulon, F.R.I.B.A., at the age of seventy-eight. He was the originator and designer of the Strand improvement scheme and the new street from the Strand to Holborn. He was also the founder of the City Churches and Churchyards Protection Society.

Gladstone Statue in Athens.—Preliminary works have been commenced in the University Square, at Athens, for the erection of the statue to Mr. Gladstone. The statue was subscribed for some years ago by the students of the University of Athens, and was there executed by the sculptor to whom the order was given.

Fleet Street Improvements.—A correspondent to a contemporary urges that, in view of the rebuilding of the southern side of Fleet Street at the Ludgate Circus end, the approach to St. Bride's Church should be widened. This would be very desirable, but land is extremely valuable in Fleet Street, and it is to be feared that curtailment rather than widening will be effected.

Archæological Discoveries in the City.—While workmen were digging the foundations for commercial buildings to replace old tenement houses in Ireland Yard, a narrow passage near Doctor's Commons, they came upon several vaults packed with human bones. The mouldings of an Early English window and a well-preserved Norman column and capital, of which the London and Middlesex Archæological Society has taken drawings, were also discovered.

Work Abroad.—In Victoria (Australia) there is a good demand for a limited number of thoroughly skilled plumbers on the Melbourne drainage works. In Queensland there is a moderate demand for carpenters, stone-masons, and bricklayers. Western Australia has a sufficient supply of building trade workmen. Further information can be obtained from the Emigrants' Information Office, 31 Broadway, Westminster, S.W. Persons are warned against going to South Africa in search of work while the war lasts.

St. Katharine's Church, South-bourne, near Bournemouth, has just been completed by the addition of a chancel and two bays to the nave. The style is Early English, and one of the special features is a kind of ambulatory at the back of the choir, so that communicants can return to their seats without passing through the chancel. A series of stained-glass windows in the aisles are

PERFECTION

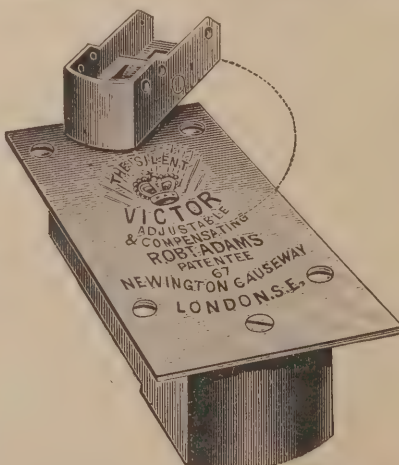
IN

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IN

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filled with representations of notable personages who have been connected with the Diocese of Winchester from the earliest times. The additions to the building have cost about £5,000.

The Jenny Lind Infirmary, Norwich.—was opened on Saturday by the Prince of Wales. A description of the building will be found on pp. 310-11 of our issue for May 30th last.

Architects for the New Street.—The eight architects who will submit designs for the buildings fronting on to the Strand in connection with the great new street are:—Mr. Mervyn Macartney, Mr. E. W. Mountford, Mr. Ernest Runtz, Mr. Leonard Stokes, Mr. Reginald Blomfield, Mr. Ernest George, Mr. William Flockhart, and Mr. Henry T. Hare. The first four were chosen by the Improvement Committee of the L.C.C., and the last four by the Royal Institute of British Architects. The time for sending in designs has been extended to September 17th.

Court of Common Council.—At last Thursday's meeting of the Council the Streets Committee recommended that they should be authorised forthwith to take the necessary steps for the removal of all derelict and unidentified wires in the city. The Court agreed.—This committee, in a report as to the necessity for cleansing, painting, and repairing the bridge over Farringdon Street, and the statues on the Holborn Viaduct, also recommended that they should be authorised to have the works carried out at an estimated cost of about £500. The Court approved.—The tenders of Messrs. John Mowlem and Co. for mason's and pavior's work for three years (terminable at the end of the first or second years), at 15 per cent. above schedule prices, were accepted. The tender of Mr. A. Woodhouse for the reparation of sewers for three years (terminable at the end of the first or second years), at 8½ per cent. above schedule prices, was also accepted.

"Architectural Review" Competition.—Owing to difficulties in obtaining site plans, the closing day for this competition (which is for a villa on the Riviera) has been postponed.

Trade and Craft.

Messrs. Kent and Sons.

The well-known and much-respected firm of G. B. Kent and Sons, brush manufacturers, having head offices at Farringdon Road and factories at Victoria Park, have decided to form their business into a limited company, and the prospectus (showing a capital of £160,000) will be found in another part of this week's number. The issue will be for Five-and-a-Half per Cent. Preference Shares, and as these will carry half interest in the profits after 10 per cent. has been paid on the Ordinary shares, they should form a most attractive investment for the public. We have an assurance that the trade will have a preferential allotment, and no doubt a large number of members of the trade will take full advantage of this opportunity. The prospectus is being issued through the offices of Messrs. G. H. and A. M. Jay, of 17 Old Broad Street, E.C. Messrs. Kent and Sons inform us that the prices of bristles having steadily advanced since they issued their painting-brush catalogue at the commencement of this year, it is necessary now to again raise the prices of bristle brushes. For orders received after June 30th the present ruling prices of all brushes in their painting-brush catalogue from pp. 7 to 20, and glue brushes, p. 31, will be advanced 10 per cent.

Wood-working Machines.

Though the architecture of the nineteenth century has little that it can call its own, and is rapid in most of its details, the science of engineering possesses quite a different record—in fact, it may be said that never before has the employment of mechanical aids for utilitarian ends been so extensive. This is specially noticeable in connection with wood-working machines. During the past twenty-five years a great number of improvements in wood-working machines have been introduced, with the result that those now obtainable do marvellous execution. But with all this speed and all this output a new danger has arisen, that of injury to the workmen employed in working the machines, a danger which created that ambiguous and intricate statute—the Workmen's Compensation Act. To cope with

it, various forms of guards have been devised. The guard for verticle spindle-moulding machines made by Messrs. F. W. Reynolds and Co., saw-mill and general engineers, of Acorn Works, Edward Street, Blackfriars Road, London, S.E., consists of a plate to cover the cutters which rises and falls on a standard fixed by two screws to the table; it can also slide on a horizontal arm to accommodate long or short cutters. It is quickly removable and costs 45s. The non-automatic emery grinder made by the firm for planing and moulding irons carries a cup emery wheel at one end of a horizontal spindle for grinding plane irons and an emery disc at the other end for moulding irons. Fast and loose pulleys, guards, and a slide worked by hand for carrying the plane irons are provided. The price of the machine for grinding irons up to 18in. long is £10 10s. In designing a guard for a circular saw Messrs. Reynolds endeavoured to obtain the greatest safety to the workman with the least hindrance to his work. This result has been achieved by making the guard flat and supporting it horizontally over the saw on the arm of a standard fixed to the bench. The features of the guard are that it is simple, strong, and does not require adjustment for different thicknesses of wood. An excellent machine made by Messrs. Reynolds and Co. is one that will plane, try-up, joint, rebate, work mouldings or sash-bars, groove, chamfer, stop-chamfer, and do a large variety of work up to 12in. wide. The material is passed by hand over the cutters and follows off true on the finishing table, which is 3ft. long. The tables are carried on four inclined guides and can be moved by screws, while the fence is made to cant 45 deg. for bevel planing. Another useful machine is the "Queen" hand-power combined circular and band sawing machine with self-acting feed and rising and falling spindle. The bench table is 3ft. 10in. by 2ft. and is perfectly clear at each end for cross-cutting to any length. The band saw will cut up to 7½in. deep and is driven from the power shaft by simple spur gearing, which increases its speed and makes it cut cleaner than if it were driven direct; the circular saw will cut up to 4½in. deep. The price complete is £28 10s. Those who use or require wood-working machines of any kind will do well to consult Messrs. Reynolds and Co., who are well known as makers of really efficient apparatus at moderate prices.

COMPLETE LIST OF CONTRACTS OPEN.

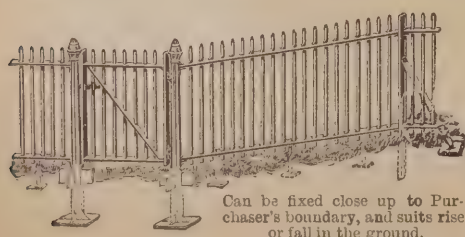
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDINGS.			
July 6	Banogue, Ireland—Alterations	Guardians	Rev. J. Halpin, The Presbytery, Banogue.
" 6	Bucksburn, Aberdeen—Additions	School Board	A. Taylor, Roseville, Bucksburn.
" 6	Kettering—Home		Gotch and Saunders, Architects, Bank Chambers, Kettering.
" 7	Chesterfield—School		W. Cecil Jackson, 29 Knivesmith Gate, Chesterfield.
" 7	North Ormesby, Middlesbrough—Police Station	Committee of Second Presbyterian Church	County Surveyor, Northallerton.
" 7	Boardmills, Lisburn, Ireland—Repairing		The Manse, Boardmills, Lisburn, Ireland.
" 7	Keswick—School	Corporation	Austin and Paley, Architects, Castle Park, Lancaster.
" 7	Stafford—Cottages		W. Blackshaw, Borough Hall, Stafford.
" 7	Winchester—Wards	Asylum Governor	Colson, Farrow and Nisbet, 45 Jewry Street, Winchester.
" 9	Armagh—Alterations	Urban District Council	J. O. Boyle, The Mall, Armagh.
" 9	Beckenham—Brick Transformer Stations	Asylums Committee of the L.O.C.	J. A. Angell, Council Offices, Beckenham.
" 9	Bexley, Kent—Farm Buildings		Clerk, Asylums Committee, 6 Waterloo Place, S.W.
" 9	Bootham, Yorks—School Works	School Board	W. H. Thorp, 61 Albion Street, Leeds.
" 9	Farnham—Additions	Corporation	E. Kempson, 121 West Street, Farnham.
" 9	King's Lynn—Extensions	Shoreditch Vestry	H. J. Weaver, Town Hall, King's Lynn.
" 9	London, E.—Town Hall Extension	Paving and Sewerage Committee	Clerk, Town Hall, Old Street, E.C.
" 9	Warrington—Gangway	Markets Committee	T. Longdin, Town Hall, Warrington.
" 9	Warrington—Roof Extensions	Harbour Commissioners	T. Longdin, Town Hall, Warrington.
" 9	Wicklow—Works	Joint Committee	F. W. MacPhail, Harbour Commissioners, Wicklow.
" 9	Stanstead Abbots, Herts—Lock-up	Joint Hospital Board	County Surveyor, 41 Parliament Street, Westminster.
" 10	Brighouse—Laundry	Urban District Council	Sharpe and Waller, 32 Bradford Road, Brighouse.
" 10	Mountain Ash, Wales—Bath-room		J. Williams, Town Hall, Mountain Ash.
" 10	Salford—Gymnasium	Gas and Electricity Committee	Borough Engineer, Salford.
" 11	Stockport—Stables		S. Meunier, Gas Office, Stockport.
" 12	Huddersfield—Alterations	Great Eastern Railway Co.	J. Kirk and Sons, architects, Huddersfield.
" 13	Newmarket—Station	Corporation	Engineer, Great Eastern Railway Station, Liverpool Street, E.C.
" 13	Croydon—Sheds	Upper District Committee	Deputy Borough Engineer, Town Hall, Croydon.
" 13	Glasgow—Bridge		G. B. Walker, 65 Bath Street, Glasgow.
" 14	Donaghadee, Ireland—Villa	Urban District Council	W. J. Fennell, Scottish Provident Buildings, Belfast.
" 14	Farnborough—Cottages	School Board	W. T. Taylor, County Surveyor, The Castle, Winchester.
" 14	Londonderry—Front	Great Western Railway Co.	W. E. Pinkerton, architect, Dermond, Londonderry.
" 14	Pontypool—Water-Closets	School Board	J. Powell, Town Hall, Pontypool.
" 16	Hellingly, Sussex—Asylum	Guardians	R. Blaker, 211 High Street, Lewes.
" 16	Wimbledon—Alterations	Visiting Committee	Council Surveyor, The Broadway, Wimbledon.
" 17	Patcham, Sussex—Premises	Corporation	Clayton and Black, Architects, Patcham.
" 17	Ashperton, Worcester—Station Buildings	Markets Committee	Engineer, Great Western Railway Station, Gloucester.
" 17	Glyncorrwg, Wales—Works	Guardians	G. F. Lambert, Architect, Bridgend.
" 17	Watford—Boiler House and Chimney Shaft	Corporation	C. P. Ayres, 14A High Street, Watford.
" 21	Bodmin—Farm Buildings	Markets Committee	R. P. Edyvean, Clerk, Bodmin.
" 24	Birkenhead—Car Shed	Guardians	C. Brownridge, Town Hall, Birkenhead.
" 26	Bury—Market	Corporation	A. Neill, 18 Cookridge Street, Leeds.
" 27	Lichfield—Casual Wards	Guardians	W. H. Woodroffe, 24 Great Dover Street, London, S.E.
" 30	Cardiff—Town Hall and Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
Aug. 15	Irvinestown, Ireland—Shooting Lodge		T. Elliott, 37 Darling Street, Enniskillen.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
ENGINEERING.			
July 6	Kilmarnock—Waterworks	District Committee of the Ayrshire County Council	W. R. Copland, 146 West Regent Street, Glasgow.
" 7	Madrid—Electric Tramway	Spanish Government	Commercial Department, Foreign Office, S.W.
" 7	Ballinasloe, Ireland—Range		J. F. Fuller, 179 Great Brunswick Street, Dublin.
" 9	Haslingden, Lancs.—Bridge	Lancashire County Council	County Bridgemaster, County Office, Preston.
" 9	Swansea—Reservoir	Corporation	R. H. Wyrille, Guildhall, Swansea.
" 9	Leeds—Boilers	Tramways Committee	City Engineer, Municipal Buildings, Leeds.
" 9	Frome—Boiler	Guardians	W. R. Kent, Clerk, Frome.
" 10	Bexley Heath, Kent—Footbridge	Urban District Council	W. T. Howse, Public Offices, Bexley Heath, Kent.
" 10	Mountain Ash, Wales—Boiler	Urban District Council	J. Williams, Town Hall, Mountain Ash.
" 10	Newtonstewart, Ireland—Water-supply Works	Strabane Rural District Council	J. E. Sharkie, Clerk, Strabane.
" 10	Coalville, Leicestershire—Sinking Well	Urban District Council	J. B. Everard, 6 Millstone Lane, Leicester.
" 11	Salford—Lime-Mixing Plant	Corporation	Borough Engineer, Salford.
" 13	Hull—Bridge	Corporation	A. E. White, Town Hall, Hull.
" 14	Dublin—Refrigerating Machinery	Corporation	G. T. Harrap, 5 Budge Row, London, E.C.
" 14	Middlesbrough—Reservoir	Tees Valley Water Board	J. Mansergh, 5 Victoria Street, Westminster.
" 14	South Shields—Electric Lighting	Guardians	J. W. Coulson, Union Offices, South Shields.
" 16	Salford—Overhead Equipment	Corporation	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
" 17	Trindon, Durham—Lighting	Parish Council	T. W. Wilkinson, Parish Council Offices, Trindon Hall, Trindon.
" 17	Enniskillen, Ireland—Alterations and Water Supply	Guardians	R. Wilson, Clerk, Workhouse, Enniskillen.
" 18	Bury, Lancs.—Filters	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 23	Blackpool—Tramways Extension	Corporation	R. C. Quin, Borough Engineer, Blackpool.
" 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5 East India Avenue, E.C.
" 23	Kolbergmünde, Germany—Dredger	Harbour Superintendent	Der Hafenbaulektor, Harbour Works, Kolbergmünde, Germany.
Sept. 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depot, Hammerton Street, Bradford.
IRON AND STEEL.			
July 7	Midhurst, Sussex—Fencing	Rural District Council	Surveyor, Council Offices, Midhurst.
" 10	London, S.W.—Lamp Standards	London County Council	Engineer, County Hall, Spring Gardens, S.W.
" 11	London, N.E.—Lamp Pillars	Electric Lighting Committee of the Hackney Vestry	R. Hammond, 64 Victoria Street, Westminster, S.W.
" 12	Cardiff—Rails	Corporation	W. Harpur, Town Hall, Cardiff.
" 12	Pembury, Tunbridge Wells—Staircases	Guardians of Tonbridge Union	F. W. Stone, 23 Church Road, Tunbridge Wells.
" 18	Bury, Lancs.—Valves	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 18	Bury, Lancs.—Pipes	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 25	Southend-on Sea	Southend and District Light Railways	A. Fidler, Borough Engineer, Southend-on-Sea.
PAINTING AND PLUMBING.			
July 7	Sheffield—Painting	Corporation	Superintendent, City Road Cemetery, Sheffield.
" 9	Llanelli—Painting	School Board	I. W. Watkins, Clerk, Llanelli.
" 10	Newport Pagnell—Painting	School Board	C. W. Powell, Clerk, Newport Pagnell.
" 11	Bacup—Painting	School Board	S. Nuttall, School Board Clerk, Bacup.
" 12	East Stonehouse, Devon—Painting	School Board	R. R. Rodd, 52 Union Street, East Stonehouse.
" 16	Darlington—Painting	School Board	Clerk, School Board Offices, Darlington.
ROADS.			
July 6	Hetton-le-Hole, Durham—Materials	Urban District Council	W. Pattison, Engineer, Hetton-le-Hole, R.S.O.
" 7	Sunderland—Materials	Rural District Council	T. Young, Council Offices, Sunderland.
" 7	Swinton, Lancs.—Setts	Urban District Council	H. Entwisle, Council Offices, Swinton.
" 7	Bexhill, Sussex—Street Works	Urban District Council	G. Ball, Surveyor, Bexhill.
" 7	Wainfein, near Pontypool—Widening	Abersychan Urban District Council	E. Cooke, Council Offices, Abersychan.
" 8	Jarrow—Road Works	Improvement Committee	J. Petree, Borough Surveyor, Grange Road, Jarrow.
" 9	London, N.W.—Street Works	Hendon Urban District Council	Engineer, The Boroughs, Hendon, N.W.
" 9	Quarry Bank, Staffs.—Street Works	Urban District Council	Surveyor, High Street, Quarry Bank.
" 10	Willesden—Road Works	District Council	O. C. Robson, Public Offices, Dyne Road, Kilburn, N.W.
" 10	Halifax—Improvement Works	Improvement Committee	J. Lord, Town Hall, Halifax.
" 10	Tynemouth—Paving	Tynemouth Corporation	J. F. Smillie, Borough Surveyor, Tynemouth.
" 11	Ramsbottom, Lancs.—Paving	Urban District Council	J. Halliwell, Council Offices, Market Place, Ramsbottom.
" 11	Shotley Bridge—Paving	Benfieldside Urban District Council	J. Dixon, Council Offices, Bank Buildings, Shotley Bridge.
" 16	Wimbledon—Yard	Urban District Council	Council Surveyor, Broadway, Wimbledon.
" 17	Epsom—Making-up	Rural District Council	T. E. Ware, Waterloo Road, Epsom.
" 18	Frinton-on Sea, Essex—Works	R. P. Cooper, Esq., J.F.	Homer and Co., Estate Offices, Frinton-on-Sea.
" 21	Lewes—Granite	Town Council	M. S. Blaker, Town Hall, Lewes.
" 25	Wembley—Gravel and Hoggins	Urban District Council	C. R. W. Chapman, Public Offices, Wembley.
SANITARY.			
July 6	Brighton—Drain Pipes	Town Council	F. J. O. May, Town Hall, Brighton.
" 9	Quarry Bank, Staffs.—Sewers	Urban District Council	W. Fiddian, Old Bank Offices, Stourbridge.
" 9	Ilford—Drainage Works	Urban District Council	H. Shaw, 7 Cranbrook Road, Ilford.
" 9	Tutbury, Burton-on-Trent—Sewerage Works	Rural District Council	Oakden and Son, Surveyors, Duke Street, Tutbury.
" 9	London, N.W.—Drainage Works	Hendon Urban District Council	Engineer, The Burroughs, Hendon, N.W.
" 10	Willesden—Sewers	District Council	O. C. Robson, Public Offices, Dyne Road, Kilburn, N.W.
" 11	Hambleton, Surrey—Sewerage Works	Rural District Council	F. Smallpiece, Clerk, Guildford.
" 14	Great Ouseburn, Yorks—Sewers	Rural District Council	Fairbank and Son, 13 Lendal, York.
" 14	Waterford—Drainage Works	Corporation	M. J. Fleming, Town Hall, Waterford.
" 23	Newmarket—Sewerage Works	Urban District Council	Clerk, Town Hall, Newmarket.

COMPETITIONS OPEN.

DATE DESIGNS TO BE SENT IN.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
July 14	Moir, Ireland—Cottages		W. J. Corner, Council Office, Lurgan.
" 16	Falmouth—Sewerage Scheme	£100, £50, £25.. .. .	J. H. Genn, Town Clerk, Falmouth.
" 31	Cheadle—Cemetery		J. H. Duckworth, Public Offices, Cheadle, Cheshire.
Aug. 1	Sunderland—Church		William Wilson, 7 Azalea Terrace, South Sunderland.
" 25	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	" Architectural Review."



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SLATE SLAB GOODS:

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TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BRIGHTON.—For additions to public library, museum, &c., Pavilion Estate, for the Town Council. Mr. F. J. C. May, C.E., Town Hall, Brighton:—
Parsons & Son .. £28,160
Field & Co. .. 37,998
General Builders, Ltd. 87,900
Rowland Bros. .. £27,685
Longley & Co., Crawley 37,080
* Accepted.

ESHER.—For three detached villas, Lee Estate, Esher, for Mr. C. O. Wyllie. Mr. Herbert Knight, architect, 75 Aldermanbury, E.C.:—
Wheatley & Sons .. £4,200

GARDOLDSHAM. For alterations and additions at Gardolisham Manor, Norfolk. Messrs. Herbert J. Green and Newton Stephenson, architects and surveyors, 81 Castle Meadow, Norwich:—
J. Shillito & Sons, Bury St. Edmunds .. £4,850
J. S. Smith, Norwich .. 5,300
Gillow & Co., Ltd., London .. £3,095
* Accepted.

GREAT YARMOUTH.—For the erection of a Boys' Home at Gorleston, for the Guardians of the Poor of Great Yarmouth. Mr. A. S. Hewitt, A.R.I.B.A., architect, Great Yarmouth:—

A. E. Bond .. £299 0 0	Carter & Wright .. £289 0 0
J. D. Harman .. 350 0 0	A. Wright .. 890 0 0
Moore & Sons .. 950 0 0	Pulley .. 844 0 0
J. E. W. Bray .. 925 11 6	S. & F. Smith .. 820 0 0
T. Howes .. 900 0 0	E. G. Bland (with-drawn) .. 785 0 0
Cockrill Bros. .. 900 0 0	

* Accepted.

HIGH WYCOMBE.—For the construction of roads, sewers, &c., for the Rt. Hon. Earl Carrington, G.C.M.G. Messrs. J. Carter Jonas & Sons, surveyors, Cambridge:—

G. Wilson .. £5,265 0 0	Free & Sons .. £3,897 0 0
T. Adams .. 4,664 9 2	Lee & Son, High Wycombe .. 8,746 0 0
T. Smart .. 4,685 0 0	J. C. Trueman .. 3,512 1 0
S. Kavanagh .. 4,615 0 0	J. J. Trimm .. 3,259 8 8
W. Wadley .. 4,442 17 7	G. Hebburn .. 8,221 0 0
G. R. Mann .. 4,374 14 8	Saunders & Co. (with-drawn) .. 3,003 0 0
Wimpey & Co. .. 4,368 0 0	B. Ballard (with-drawn) .. 2,997 0 0
Hunt & Son .. 4,187 0 0	
Wilson, Border & Co. 4,040 2 2	
Bentham & Co. .. 3,900 0 0	

* Accepted.

HUNSTANTON (Norfolk).—For the erection of "The Glebe Hotel." Messrs. Herbert J. Green and Newton Stephenson, architects and surveyors, 81 Castle Meadow, Norwich:—

J. Youngs & Son, Norwich .. £7,622 0 0
Kerridge & Shaw, Cambridge .. 7,548 18 8
Bardell Brothers, King's Lynn .. 7,465 0 0

Robert Dye, King's Lynn .. £6,818 0 0
R. Shanks, Chatteris .. 6,083 0 0
Giddings & Parren, St. Ives .. 5,477 0 0

* Accepted.

LONDON.—For alterations and additions at Nos. 202, 204 and 206 Camberwell Road, for the Davis Gas Stove Co., Ltd. Mr. T. Weir, architect, 17 Victoria Street, Westminster. Quantities by Mr. Fred. Burrows:—

Courtesy & Fairburn .. £4,069	Davenport .. £3,849
Holliday & Greenwood 3,993	W. Smith .. 3,788
W. Johnson .. 3,981	H. Eames, Hill Street, Peckham .. 3,700
V. Goad .. 3,929	

* Accepted.

LONDON.—For the erection of residential flats, Kennington Road and Walnut Tree Walk, Lambeth, for the Trustees of the Walcott Charity Estate. Messrs. Waring & Nicholson, architects, 38 Parliament Street, Westminster:—

Godson & Sons .. £10,713	Sabey & Son .. £9,696
T. L. Greene .. 10,578	Smith & Sons .. 9,629
H. & H. F. Higgs .. 10,961	Thomas & Edge .. 9,428
J. O. Richardson .. 10,358	Martin, Wells & Co. .. 9,424
Balaam Bros. .. 10,284	Lapthorne & Co. .. 9,117
B. E. Nightingale .. 10,178	Wm. Smith .. 9,417
Chessum & Sons .. 9,988	C. Ansell .. 9,383
Howell J. Williams .. 9,985	H. L. Holloway .. 9,300
J. Appleby .. 9,970	John Marsland .. 9,165
Whitehead & Co .. 9,879	Burman & Sons .. 8,790
J. Christie .. 9,860	

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VOL. VI.

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FOUNTAINS & STATUES,
BALCONIES,
VERANDAHS,
PORCHES,
BROSELEY
"LIGHTMOOR"
ROOFING TILES.

TENDERS—(Continued.)

LONDON.—For rebuilding Nos. 71 and 73 Aldermanbury, E.C., for Mr. H. Bailey. Mr. Herbert Knight, architect, 75 Aldermanbury, E.C.:—
Braid, Pater & Co. £4,500

LUTON.—For the erection of engine-house, boiler-house, &c., for electricity works, St. Mary's Road, for the Town Council. Mr. A. J. L. Evans, C.E., Borough Engineer, Town Hall, Luton:—

P. Banyard	£5,095	G. Smart	£5,365
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Saunders & Son	5,450	Neville Bros.	4,881
T. H. Coleman	5,890	Main, Kendall & Main,	
		Loughborough	4,175

* Accepted.

PAIGNTON.—For the erection of pavilion and stand in the new recreation ground for Paignton Urban District Council. Mr. Alexander Leaman, architect, Paignton. Quantities by Mr. Vincent Cattermole Brown, of Paignton:—

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Bovey & Sons	1,415 0	H. Drew	1,174 0
W. Smead	1,356 10	Webber & Sons,	
T. Brown	1,337 0	Paignton*	1,188 0

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Birchall Bros. £1,090 | J. Stringers, Sandbach* £1,775

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SWINDON.—For the erection of a pair of semi-detached villas in The Sands, for Mr. W. W. Hunter. Mr. R. J. Beswick, architect, 35 Regent Street, Swindon:—
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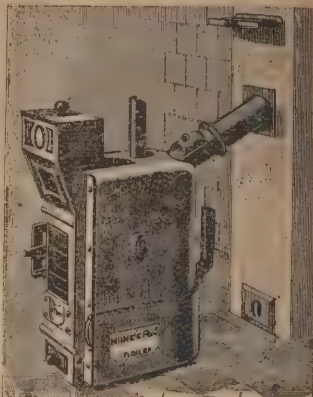
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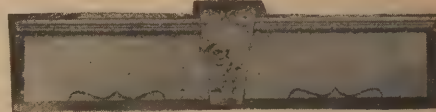
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No. CCLXXXIII.

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An Architectural Causerie.

Some Humours of Stone-laying.

"BEWARE," says Thoreau, "of the occasion which requires new clothes!" The warning has been brought home to us anew by a curious postcard, enclosed with an invitation, now lying before us, to a public ceremony performed in London but a few days ago. The card is directed to a well-known firm of tailors, and evidently relates to a footnote on the ticket:—*Academic dress will be worn.* On the back is a printed form to be filled in by the intending visitor:—"Please have ready for me at Gate . . . the following costume (please say whether *new or hire*)—Gown, hood, and cap, degree . . . University . . . My height is . . ft. . . in. Hat measurements, length . . breadth . . . Name and address . . . N.B.—We shall be present to attend to the robing." There is something distinctly modern in the idea of this enterprising costumier waylaying us in the lobby to deck us in garments proper to our scholarship, but so unfamiliar to our person that they must be specially ordered for "stone-laying day." It might almost be said to "add a new terror" to those architectural celebrations which make life worth living to the florist and the pickpocket, bring lusty patriotism to the roofs and windows, and hopelessly disorganise the omnibus traffic for the best hours of the day. The affectation of changing our usual attire on festive occasions for "best clothes" of a much more purgatorial character has been satirised often enough. But to assume, instead of them, a uniform which we never really wear in the exercise of those talents which it symbolises, is to reduce a graceful piece of public ritual to the level of a fancy dress ball.

It is difficult, of course, in our present civilisation to awaken any real public enthusiasm over a new building, or the civic institution which it stands for, so small is the general interest in architecture, so far removed are the arts and handicrafts from the topics of conversation in the street. On the other hand, how dearly the British public delights in pageantry—how it hails an excuse for a dressing-up and a procession—the recent patriotic carnivals have amply shown us. The problem is to restore this natural instinct for the processional to a higher place in social life, and to relate it to matters no less worth joyful acclaim than military prowess, and to make the ceremonial itself more sincere, intelligent, and beautiful. At the best, we are too sternly practical a nation to make a festival of nature worship, to go forth like the Japanese to greet the almond blossom in spring, or to watch, like our Druid forefathers, the sun rise over the altar of Stonehenge on Midsummer Day. We reserve our thanks-

givings—too exclusively perhaps—for events of social life and human achievement. And to those who heard Miss May Morris's lecture at the Arts and Crafts Exhibition on "Pageantry and the Masque" it appeared that the seamy side of such festivities was less sordid in the Middle Ages than to-day. Patronage was not then so commercial in spirit: craftsmanship was more democratic: the celebration of a stone "well and truly laid" was not a matter of a select lunch for the mayor, the architects, the titled visitors, and a few privileged ticket-holders.

How different must such ceremonies have been to the happy builder untrammelled by modern difficulties of sites and tenders! No painful memories of demolished slums intrude

the luncheon-tent, and the academic dress lays hideous snares for the footsteps of the unpractised wearer. Sometimes even, when he should be attending to the Doxology, the National Anthem, or the "Absent-minded Beggar," a doubt may assail him as to whether certain structures lightly thrown up as a building to be "opened" on a date convenient to Royalty will really hold together on the day of the ceremony, or may not open themselves with an "unrehearsed effect" of a disastrous character. There is at the present moment a technical institute in the North which is being confessedly "scamped" to get it ready for that festive occasion, and with the full intention of pulling it down and rebuilding properly when the Royal visit is over! Then there is the photographer with the pocket kodak, whose single care is to find that place in the proscenium where he will be



A SKETCH ON A GERMAN TOUR (see p 417). BY J. HUTCHINGS, A.R.I.B.A.

between the white tablet and the silver trowel—not designed in those days by one of the juniors in the office, who had already done more to the "practical working out" of the plans than the firm always cared to acknowledge. The palaces of the Goths were never hindered by long and ignominious squabbles with the owners of tenement property, or sudden outbursts of sentiments of hygiene and justice from "ancient light" holders who had formerly betrayed no weakness for sunshine and air. These are but a few of the oppressions which weigh upon the spirits of the modern architect when the gay bunting flaps loudly in the wind, and the caterer flits worriedly about

in everybody's way, and where the ordinary visitor, detecting him, will go in bodily fear of being "snapshotted" at any moment.

The sufferings of the architect at the hands of the Board or Corporation with whom the undertaking lies would afford another interesting chapter in his diary, and he might find it difficult to say which of the two masters he would rather serve—the committee of a charitable institution, or a municipal body with ten thousand implacable burghers behind it. In either case the pioneer of new ideals in architecture will often think with sympathy of the builders of Jerusalem, whose task was divided between the trowel and the sword.

E. W.

Architecture as an Applied Art.

ARCHITECTS with a desire—a right and laudable desire—to magnify their calling sometimes claim that architecture is one of the Fine Arts. I would suggest that we consider it as an applied art—an art applied to works of utility. The old distinction between "Fine Art" and "Industrial Art" is illogical and misleading. Every art is *fine* if it assists in rendering the surroundings of our daily life finer; and every art is *industrial* if it requires the work of more than one individual in its production. The better division is that of Pure Art and Applied Art. Pure Art, in which the work of art exists in itself independently of any other object and for the primary purpose of influencing the emotions, such as the group of the Laocoon, the picture of the Transfiguration, the oratorio of "Elijah," the drama of the "Alcestis," or the poem of the "Inferno." Applied art is that in which the work exists independently of the art, and the art is applied for the primary purpose of adding beauty and pleasing the æsthetic sense—such as the terra-cotta festoons on the Pavian Certosa, the painted Pilaster ornaments at Pompeii, the drum-and-bugle music for military marching, or the "A-was-an-Archer" rhyme that teaches the alphabet. The art that is termed architecture, though the mother-art and the chief-art, being thus the result of buildings-made-beautiful (Building + Beauty = Architecture), must be considered as an applied art. It is well to clear the ground by this admission—an admission in one sense, but a great claim in another—the claim to be the art not of the few but of the whole; not the art which can be shut up in a courtyard, or a rich man's gallery, or heard only in a concert hall, or enjoyed only in a theatre, but the art that is outside and over all these, that is beheld of the people and understood of the people. This great embracing art, that surrounds us—that we cannot escape from—that no one can selfishly hide from us—that is one of the best forms of the history of our race, the traces of which exist in an unbroken chain from the earliest historic times to our own—that is our parish; and the student of this great applied art of architecture will avoid some mistakes by regarding it in that light. H. H. S.

William Morris's Practical Side.

MANY writers fail to do justice to the practical side of William Morris's character. His allusions to himself as a "dreamer of dreams, born out of my due time," were written in his early manhood, while still under the influence of the so-called Gothic Revival, and before his youthful enthusiasm had been tempered and chastened by contact with the world. Morris, early in life, in common with Nesfield, R. Norman Shaw, and other ardent followers of Pugin, abandoned the hope of reviving Gothic Art, and extended his admiration to all forms of art—Elizabethan, Jacobean, Renaissance, call it what you will. That Morris was not wholly a dreamer of dreams is evidenced by his attempts to revive the almost extinct industries of stained glass, wood engraving, tapestry weaving, embroidery, type cutting, book-binding, and other arts, in all of which he achieved a certain amount of success, if he did not actually realise all he had hoped to accomplish. He very soon discontinued the manufacture of stained glass as an article of commerce, although assisted by some of the most eminent designers in this branch of art, being convinced that no good results could be obtained from the manner in which the manufacture was conducted, and in this he showed his common-sense and practical wisdom. His endeavours to raise the position of the workman, to give him an interest in his work, and to lift him from the condition of being "a mere machine of a machine," in which he was not unsuccessful, must be set down to his practical character. J. H.

On Reflection.

German Architecture.

lar nation expresses the character and emotions of the race, and becomes, as it were, a tangible embodiment of the social history of the country, then you are under the necessity of declaring what form of mental disease modern Germany is afflicted with. The exponents of this theory will here find their opinions sorely tried, and although the idea has only so far been connected with the venerable buildings left us by the Craft Guilds and our forerunners, the probability is that future generations will judge German work by this method, and that our children's children may detect in our self-conscious and timid-looking buildings symptoms of the vacillation and unrest which characterise our present-day existence. Some philosophers hold to the opinion that the art of a nation increases in grandeur inversely as its political power declines. If there be any truth in the theory it is a somewhat appalling thought that art can only be achieved at the price of political decadence. Be that as it may, these philosophers and their disciples will doubtless agree that the militarism of Germany and its increasing power as a nation are at the bottom of the defects in its artistic production. But the architecture of Germany shows no loss of vitality, and herein confutes the idea given above, for her design is entirely novel and unconventional, and exhibits nothing of the mediocre copybook work which is the usual symptom of decline in art. Nor does the art-flourishing-in-time-of-peace theory fit the case better, for Germany has been at peace now for thirty years and her architecture to-day is worse than ever before.

Some Shocking Examples.

THAT German design is bad, however, is beyond question. The German architectural papers are a kind of artistic nightmare. Imagine, if you can, a house that has dragons and snakes careering over the outside and inside walls, trees rooting in the skirting-boards and blossoming in the ceiling, noisome beasts clambering all over the woodwork, windows without two panes the same size and shape, doors guiltless of a straight line, and metalwork that would do credit to the maddest imagination. Imagine this confection of horrors, and try and contemplate what life would be in such a home. Even as we write, the latest number of the "Berliner Architekturwelt" has come to hand, and we find a piece of detail for a house that merits description. This piece of sculpture occurs on the end of a one-storey outbuilding, probably part of the offices. There are two columns, carrying nothing, and between them is a recess. At the top of this opening is an enormous female head, on a scale about eight times larger than that of the building, cut off at the neck, and supported apparently by a bar that runs midway across the recess. The head is very plentifully supplied with hair, which trails down behind and below the bar, and also works its way behind the columns and coils itself into neat panels on the outer sides. Surmounting the head and the crown of water-lilies is a castle or building which bears a faint resemblance to Newgate Prison. Underneath the chin two imps with webbed hands are pushing their way through the coils of hair and scrambling over the bar. At the top of each column is a small armless nude female figure standing on a scallop-shell—stuck on to the column apparently—and to keep her from falling she is thoughtfully tied to the column with a double cord round the waist, knotted in the middle. We should like to know the meaning of this, and also what relation it bears to the building. We have mentioned it as an instance, a mild

instance, of what is being done in Germany, and as these monstrosities do not seem to be in accord with German life and character, we can only conclude that stress of competition has driven each German architect to designing something, no matter what, so long as it differs from the work of his professional brethren. No other hypothesis seems possible, for some of the designs exhibit an ingenuity that is akin to madness.

Builders' Copybooks.

THE proposition put forward at the recent Architectural Congress to compile pattern books of details for the use of builders engaged in speculative work, or work erected without the assistance of an architect, would seem worthy of adoption. The idea is, of course, to check the perpetuation of bad detail which at present disfigures such building, and to convince builders that it will cost them no more, but probably less, to erect a house that is simple, effective, and artistically sound. It is needless to say that such patterns would be of a simple and elementary character, and that there are many difficulties to be surmounted before the project can be realised. The composition of a book which will give general satisfaction is in itself no small task, and beyond that the promoters will have to bring the builders to their way of thinking. It is assumed that this will easily be accomplished, because it can be pointed out to builders that they will save money by the omission of the frippery which is complained of. This is a moot point, because it carries with it a further assumption that the public does not appreciate the builders' architecture and would welcome the proposed improvement. We have never suspected the speculative builder of spending more money upon his erections than he was absolutely obliged, and that he does spend much money upon bad ornament and tinsel attractions would seem to argue a stronger underlying reason than blind custom. It must not be forgotten that his object is to sell as soon as possible, and if the plain and severely simple house does not attract customers he stands to lose money on the speculation. We have sufficient faith that the general public would choose a more artistic type of house if they had the opportunity; but we do not think they would care to live in a house absolutely devoid of ornament. We do not believe any architect would care to do so either. If the proposition aims at the substitution of good ornament and detail for bad we wish it all success. If it aims at eliminating ornament altogether it will fail. But on the principle that things could not be worse and might be better we think some further steps should be taken in the matter.

Lay Criticism.

THE Architectural Congress is dismissed in one short paragraph in the current number of "The Review of the Week," and our contemporary opines that the reasons for the unsatisfactory state of architecture to-day are much deeper than a mere want of technical knowledge on the part of the public. This criticism is all right so far as it goes; but it goes very little way. We are inclined to agree that the public is blamed more than it deserves, but that does not help the situation much. "The Review of the Week" would better have earned our thanks if it had informed the outer world of these deeper reasons that are apparently within its immediate knowledge. Presumably the gentlemen responsible for its production are but laymen in matters architectural, but still laymen, we hope, possessing some artistic taste and common sense, and if they devoted some intelligent criticism to the subject as it occurs to them they might assist architects greatly in rehabilitating a national art. Such criticism would at least be purposeful and might tell us something that we do not already know.

A GERMAN TOUR.

By JOHN HUTCHINGS, A.R.I.B.A.

THE following remarks are merely intended to accompany and elucidate a series of sketches made during a brief tour up the Rhine and back through Strasburg and Rouen, and are accordingly of a meagre and incomplete character.

As the author travelled direct to Cologne, and there commenced his labours, he will ask his readers to transport themselves in spirit to that ancient historical city, equally resourceful in beautiful churches and subtle odours.

How curiously does the architecture here contrast with that of Britain! A new world of ideas is presented to the surprised and delighted eye of the English visitor. Not that our own work is in any sense inferior: the effect is mainly due to an element of novelty; huge mass is seen combined with fantastic, frequently uncouth, forms. It is at once rendered manifest that our architects did not always hit on identical solutions to the problems that confronted them in common with their Continental *confrères*, or that they necessarily chose the best ones; and no little instruction is to be derived from observing how differently the German thought and operated, and to what diverse results he was led. Other qualities are also abundantly evident, such as the national idiosyncrasy, the influence of native tradition, and varying ideals.

Therefore a singular pleasure is to be derived from wandering about the narrow tortuous streets of the older parts of the city; every turn in the road revealing new objects for reflection and enjoyment: a colossal church tower, some quaint feature of jutting gable, overhanging turret, carved bracket, or fretted window. The ancient municipal hall testifies to the trade of a bygone age; a crumbling fragment of palatial magnificence recalls a splendid but extinct aristocracy; past deeds of charity survive in hospitals for the sick, which, though to be condemned on sanitary grounds, remain a delight to the eye, instead of a blot on the landscape. Above all, religious faith has bequeathed to posterity nobler

Cologne.
J. Hutchings

records in unassuming monastery and majestic church.

But to descend from the general to the particular, the principal glory of Cologne lies in its wealth of ecclesiastic monuments—many of them dating back to times when the Archbishop of the diocese rivalled princes in dignity, wealth, and equipage, vied with them in the field at the head of a host of armed retainers, and excited their envy by his magnificent attire, splendid suit, and regal hospitality.

The Cathedral, whose mighty fabric required six centuries to rear, was commenced amid much pomp and ceremony in 1248. The choir was finished in 1322, and the work slowly and intermittently progressed until 1500. After a lapse of 300 years operations (recommenced by William III. in accordance with the original design) were steadily continued by succeeding monarchs to final completion.

This architectural Colossus secures our admiration as an exhibition of piety and a display of enormous expenditure, also as an illustration of German determination and perseverance; but an artistic creation it is not, despite the vast dimensions, unity of style, and mechanical exactness of detail. The necessity of correct proportions and harmonious composition was seemingly eclipsed by the all-absorbing idea of astonishing the world by a work of enormous magnitude. To the indiscriminating public, however, "to whom vastness is synonymous with sublimity, and exuberance of detail with beauty, the structure gives unmixed satisfaction."

The church of St. Martin, built in the round arched style, before the introduction of pointed forms, cannot fail to enlist the sympathy of the antiquarian, on account of its great age and native forms; nor is the appeal to the artist less powerful owing to the simple propriety of the details, due harmony between void and solid, and an expression of stability, suggestive of true dignity and strength.

St. Andreas still retains its old square tower with semicircular headed openings and arched corbel table; though the balustrade and domical two-storeyed termination are to be attributed to a Renaissance architect. The body of the church is typically illustrative of German Gothic, particularly the tall narrow windows, divided by long lean mullions, depending for support upon the iron stay-bars, to which the leaded glass is secured; as also the enormous mass of roof, from which one rightly conjectures that the three aisles are all of one height. There are some elegantly-carved Re-

naissance bench-ends, which slightly mitigate the barren, cold, and stilted effect of the interior.

There is no more advantageous position than the deck of the Rhine boat from which to obtain a general view of the city. The more important buildings stand out against the sky from amidst a swarm of roofs of every shape and colour. In particular the mighty "Dom" rears its enormous bulk high over every other landmark, and soars above them all, as a mighty mountain dominates the crags and hillocks crowding its base. Below, the wharves bespeak bustle and activity: swarms of lightermen file to and fro from ship to quay, as, threading its way between the lines of barges and steam tugs, the boat proceeds upon its voyage, flanked by the plain which extends in uniform insipidity to within a few miles of Bonn. Before reaching the latter place, however, the seven mountains loom majestically forth, threatening to bar the passage, and as the vessel winds amongst them, Königswinter is passed, whose quarries furnished the material for the great Cathedral. On speeds the boat through narrow defile and open country, a panorama of ever-changing aspect, dotted with villages, which appear clusters of quaint slated houses, with fantastic roofs, crowding round the still more fantastic church tower. Castles, too, of all periods, rude fortresses for the most part devoid of ornamentation occupying almost every available crag, suggest many a theme for pencil and brush. Here a monastery nestles amongst the trees, there stands a gloomy and threatening ruin, mayhap the scene of darker deeds than have been recorded in legend and story. Here fragments of fortification, accentuated by bastion, watch-tower, and gatehouse, proclaim a centre of military importance in past history; there a crowd of small craft and rows of ware-houses denote a place of modern commercial activity. Forward still, borne on the narrowing bosom of the stream, the pine-clad mountains encroach, and rocky precipices frown from their heights. Surely this is fittingly the land of fay and ogre; here lived and sported the giants and elves which adorn the pages of Andersen; with a swing to one side we pass the old toll-house—Pfalz, occupying a rocky islet—a building of threatening walls, connecting numberless towers and turrets, slated in the most grotesque forms, a regular fairy palace, which by some happy chance has survived to



STREET IN STRASBURG.

link this sceptical matter-of-fact age with the glamourous romances of ruder and more imaginative times.

But leaving behind the domain of myth and fable, Bingen is reached, where, abandoning the

Bingen.
J. Hutchings.



steamer, we proceed to investigate the streets, with an eye for anything of interest.

The prototype of the church might have been some huge barn, divided into three aisles of the height of the tie-beam, and the walls pierced with the usual lean windows, so conspicuously absent is the slightest indication of proportion. Yet to this ignominious body is attached a tower and slate spire of extreme elegance, decorated with a reserve and propriety lacking in many of the larger and more imposing examples.

A tiled roof is rarely seen in this district, local slates maintaining an undisputed monopoly. They are commonly cut into small diamond shapes, and laid in diagonal lines with the ridge and eaves, instead of in parallel rows after our custom.

The architect will not find his Elysium here, though a few tasteful features, such as an overhanging bay window decorated with carving and embellished with the Roman eagle, may reward his search. For the landscapist the neighbourhood abounds in good subject-matter.

Heidelberg, the scene of our next sojourn, held out great promises, yet expectation failed to exceed the limits of reality. Famous for a historical University and a no less historical Palace, the latter remains a worthy relic of that proud epoch in her career when the city occupied the position of capital of the Palatinate. The royal fortress, conspicuous from every part of the little town that lies at its feet, frowns high above it, set on a spur of Jettbuhl; its base is swathed in many-tinted foliage, and the upper portions are thrown out into strong relief against the pine-clad uplands beyond. Once the defence, and, if need occasioned, the scourge of the neighbourhood, it was then, as now, its richest ornament, and one whose peculiar charm is heightened by a setting of unrivalled beauty and grandeur. The group of buildings is composed of a number of diverse elements which lend an additional fascination to the *ensemble*.

The angle best seen from the plain is accentuated by the tall and graceful campanile of the horloge; a massive, lofty square erection named the Giant's Tower bars and dignifies the entrance. Styles of all periods are represented, from the massive tower, bastion, and walls designed to resist attack during the warlike Middle Ages, sparsely relieved by battlements and an occasional loophole, to the florid

times of Friedrich, when strongholds were superseded by palaces, in all respects luxurious, spacious, and well-appointed residences. The fretted and fantastic gables of the latter period stand in juxtaposition to their simple and sturdy prototypes; the unadorned majesty of the one challenges the extensive fenestration and elaborate embellishment of the other. And then the effects which time has wrought, leaving an ancient bastion practically as strong and forbidding as on the day of its completion, and a comparatively modern wing in a state of crumbling decay. Here and there ivy has lent a treacherous support to the gaping masonry, covering rent and fissure with a mantle of evergreen. Thus stands this antique castle, the finest ruin of its class in all Germany, and unsurpassed anywhere in beauty of situation. The approach from Leopoldstrasse ascends steeply to the comparatively level platform from which the fortress rises, and traversing one side by leafy walks, meandering among well-kept lawns, beyond the florid gateway (erected by Heinrich V. in honour of his English queen, Elizabeth), passes over a bridge and through the gateway of the Giant's Tower.

Flanking the spectator on the right stands a colonnaded wing of semi-Gothic character; beyond, on the same hand, the kitchen buildings, separated by the austere Ludwig's tower from the rich Italian front of Otto Heinrich (1556) rising to a height of three storeys, and rich in sculpture inspired from such widely divergent sources as German history, Christian lore, and pagan tradition.

The octagonal bell tower occupies the angle; whilst the elegant superimposed arcades of Friedrich II., the dual gabled addition by Friedrich IV. in rampant rococo, together with a modest little Gothic chapel, constitute the return wing. To the left, broken walls, the mere shells of what had evidently been handsome apartments, complete the circuit of the spacious irregular enclosure.

The terrace fronting Friedrichbau is one of the pleasantest retreats within the castle ward, and affords an admirable view of the town, spread out upon the plain far below, which stretches in unbroken sequence beyond manufacturing Mannheim, whose smoking chimneys are dimly visible through the distant haze.

The general plan of the city is simple. Three principal arteries run in parallel lines from end to end, intersected by numerous cross-ways. The most prominent object, and therefore the first to attract the eye, is the fifteenth-century Church of the Holy Ghost, a glorified barn possessing a lofty tower of

remarkable excellence. The nave of this edifice belongs to the Lutherans, who worship within its walls according to the traditions of their order; the Catholics have a vested interest in the choir, but satisfied with the sense of possession they wisely abstain from insisting upon their prerogative, to the inevitable annoyance of both parties.

Opposite the west end of this church a street leads directly to the "Alte Brücke" (see p. 415) which spans the Neckar, passing through a severe Classic gateway, flanked by two round Gothic towers, garnished with beautiful conical roofs.

The University, though an old foundation



THE RATH-HAUS, COLOGNE.

and doubtless a most useful building, presents an unedifying exterior, whence even the picturesque element is entirely absent.

Heidelberg's past has been extremely chequered, and owing to repeated and comparatively recent conflagrations few remnants of the Middle Ages survive. The inn, Ritter St. George, built by a French refugee from the massacre of St. Bartholomew, is an exception and an excellent example of its kind. The rest of the street architecture is of a low order, though here and there an elegant detail, such as the gateway illustrated, agreeably relieves the prevailing monotony.

The neighbouring Black Forest revels in enchanting scenery. We chanced one evening to arrive at Siegelhausen—an unimportant village, apparently pitched haphazard on the banks of the Neckar, and struggling up to the edge of a pine-clad slope. As we crossed the river by the ferry, many-mooded Nature presented us with a spectacle of unwonted grandeur. Huge rounded hills swept upwards from the valley, on whose sides the pines climbed and massed, looking black and jagged against the sky, still faintly illumined by the rosy trail of the departed sun, and casting nigrescent reflections upon the surface of the stream. On the unshadowed expanse a boat swung to her anchor, with tapering mast clearly defined against the fading distance. Close at hand appeared the dark houses of the village, the lighted windows irregularly mirrored upon the palpitating bosom of the river, and all the while the water murmured and swished as it hurried with an eternal onward motion to swell the volume of the majestic Rhine.

Baden-Baden, but a short journey from Heidelberg, and located on the skirts of the Black Forest, competes with the latter in beauty of situation and picturesque environment. But the onward march of modern improvements has metamorphosed the once ancient town into a city of straight boulevards



and broad squares. It is eminently respectable, mathematically regular, but excessively dull and commonplace. The Trinkhalle is worth visiting, on account of the Gotzenberger frescoes; and the Conversationhaus is palatial in scale and decoration. Public buildings, places of amusement, and churches of all denominations and nationalities abound to an extraordinary extent, but the chief attractions of this celebrated watering-place are the public gardens and walks.

Despite an indiscriminating epidemic of restoration and demolition, a few forlorn fragments still remain, a standing protest to the shoddy soulless work of the modern. One of the most noteworthy is the Neue Schloss, which, perched on an eminence overlooking the town, poses well from below. It also possesses a history not unmarked by event, though merely dating from 1479. Enlarged in 1570, it suffered severely from fire in 1689, underwent partial restoration, and is now a residence of the Grand Duke. The angle turrets, with their curious roofs, agreeably break the skyline and supply that element of the picturesque which is the life and soul of German mediævalism.

Beneath the shadow of the castle the abbey church projects its gaunt proportions from an open square. Indigenous in every particular, the exterior is poverty-stricken, the windows weak and attenuated, the entrances mean and insignificant. The tower, capped by dome on dome in diminishing stages, though far from spirited is the most interesting portion of the structure. These German towers call to mind very forcibly some of Wren's designs for London church steeples. The entrances, two in number, are at the sides in accordance with the tradition of the country, originated when the dual apse was in vogue, a plan which rendered a lateral position for the doorways imperative.

An extremely elegant stone fountain of Renaissance design stands opposite the west end of the church.

The Alte Schloss—1,550ft. above the sea level and two miles distant—is a mutilated unadorned shell, whose days of usefulness were numbered by the French in 1689. It is approached by an ascending roadway, winding through umbrageous pine forests, a cool and gloomy retreat from the oppressive midday



heat; and the top of the battered keep offers an extensive and magnificent prospect, affording a fair idea of the type of scenery that obtains in the Black Forest and Rhine basin.

Baden is a fashionable resort, Strasburg is a manufacturing and old-world city; the former has been brought to accord with modern taste, the latter is a conglomeration of all ages, the gradual accretion of centuries; the one attracts crowds by reason of its rich and varied scenery, the other exerts its spell upon a more select company—the lover of the antique, the artist and dilettante. The surrounding landscape devoid of beauty, in Strasburg centres the whole charm, but a charm, though differing in kind, as fascinating to the cultured eye of the architect as anything nature has to offer, with all her grandeur and breadth of resource.

Strasburg makes her *début* upon the stage of history under the name of Argentoratum, and



appears in the chronicle of events as the site of a great victory, won by Julian over the Allemanni in 357 A.D. Her citizens, ever foremost in the struggle for liberty against the usurpations of prince and noble, secured her enfranchisement as a free German town in the thirteenth century. These sturdy old burghers of the Middle Ages, relying more upon stone walls than municipal charters, proceeded to raise a fortification around them, and, so equipped by their enterprise and prudence, they were able to defy the unscrupulous rapacity of the feudal baron, and at times even dictated terms. While knight and soldier, fired by the fanatical spirit which animated the crusader, hankered for opportunities to slaughter the enemies of the Cross and to win for themselves renown and immortality at a blow, these practical old fellows stayed at home, seizing the opportunity to enlarge their privileges and to extend their trade. Many were the struggles in which Strasburg played a heroic part, many the sieges she has gallantly sustained. In 1681, owing to the treachery of Louis XIV., who took possession of the capital of Alsace in a time of peace, she became a portion of the French Empire, until wrested back by the strong hand of the German in 1870, after a resistance so stubborn and sustained that her fortifications were almost annihilated by the terrific bombardment.

On leaving the railway station, one is immediately lost amongst a bewildering maze of narrow tortuous streets, in which the picturesque element reigns rampant. In piquant irregularity appear quaintly-carved shop fronts, supporting overhanging storeys, widening as they mount upwards to such an extent that the sky is reduced to a mere strip; curious long low windows filled with leaded glass; gables decked out in twisted and carved parapets or richly decorated barge-boards, and furnished with doors and cranes for the hoisting and admission of goods. Open balconies protected by cut and turned balustrade and supported by column and post; high-pitched roofs covered with slate or pantile, or perchance a patchwork of both materials; turrets, towers, spires, domes of all imaginable shapes and sizes, twisted and

warped by the shrinkage of the timber, placed in every conceivable position—such objects are evident in endless variety. Here stands a building of stone, weather-worn and stained by a thousand storms; there a stucco front, streaked by the rain, and patched again and again. In one a fresh coat of colour thrusts itself upon the observer with aggressive crudeness, till he turns for relief to a less assertive neighbour, bleached and washed into variegated and subdued greys. Amongst the mass a fragment of old red brickwork peers out, and the medley is plentifully interspersed with timber framing dark and rich in tone, exhibiting all the resources of the carver's art, or severely constructive.

Sooner or later the wanderer's steps lead him to the Münster-Platz. The plan of the cathedral is of the orthodox cruciform type. The transepts (in one of which the round arch appears) and apse date back to the eleventh and twelfth centuries. The nave, erected during the thirteenth century, is on a much more extensive scale than the older portions of the structure. The west front, though divided into three somewhat rigid divisions, both horizontally and





HEIDELBERG CASTLE.

vertically, and covered with detail and carving of superb workmanship, but on a scale too minute and refined to justify their position, is a masterly conception; and despite want of repose and apparent stability the immense size, the wealth of decoration and marvellous delicacy of execution, together with much that is happy and artistic in form, more than compensate for the few defects, and produce a result which awakens the noblest and most delightful emotions. The octagonal tower and spire of pierced tracery, rising to a height of 468ft., are simply marvels of constructive skill and intricacy of workmanship, and they possess an appearance of lightness and airy elegance fanciful and captivating in the extreme.

The tall western screen, which is considerably higher than the nave roof behind, is evidently a survival of a similar feature still existing in some of the early Rhenish churches, and which in some examples assumed the form of a connecting gallery between two towers.

Many of the windows are adorned with fine glass, and the interior retains some good furniture in addition to several wrought-iron grilles of excellent design and execution. Mention must also be made of the celebrated astronomical clock, situated in the south transept—a perfect triumph of mechanical ingenuity.

Several of the more ancient and important buildings possess qualities of design worthy of special study—such as the Frauenhaus in the Schloss-Platz (16th century); also in Gutenbergs-Platz, the Hôtel du Commerce and several commercial houses.

The Germans worship genius no less than ourselves, an instinct which is demonstrated by the bust of Goethe in bas-relief distinguishing No. 36 Alte Fischmarkt, where the poet dwelt during his student days at the University.

Doorway
Heidelberg
Fischmarkt.

On market days, curious old-fashioned costumes are frequently seen, worn by peasants from the outlying villages, who still cling tenaciously to modes long since abandoned elsewhere.

The fascinations of Strasburg might still have held us in thrall but for the importunate calls of business, accompanied by an alarming decrease in our funds; and therefore, to avoid missing Paris and Rouen, we were obliged to hurry our departure.

After a brief sojourn at the metropolis we hastened to that splendid episcopal city Rouen, with which our own past history is so intimately connected. Sometimes termed the Manchester of France, it is fortunately but a seedling Manchester as yet, and though much has been destroyed and commercialised, much remains—enough to enable us to realise its pristine glory.

What a wealth of monumental art appears on every hand, the magnificent heritage bequeathed to us by the brilliant genius of a past age! While gazing, we—creatures of the nineteenth century, we, favourites of Nature, with our science and superior attainments—cease to sneer at the ignorance, narrow-mindedness and superstition of the mediæval; forced sadly to admit that, however we may excel in other fields of labour, our art appears incomparably mean against such masterpieces as these. And the well-worn question may well be asked again—Whether the loss of art has been sufficiently compensated by the gain in



luxury and scholarship. That knowledge is cheap at any price is a recognised truism, but no reason is forthcoming to show that art is incompatible with the highest mental development; rather the evidence suggests a reverse conclusion.

Rouen is *par excellence* a city of churches. It is impossible to go anywhere, however unlikely the locality, but a church appears prominently in the scene. Many of them are huge enough to fulfil the functions of cathedrals in less favoured lands, but here they take second or third rank, and all possess features of interest which space will not permit us to enlarge upon.

At the corner of two streets a tower of stately proportions is divided into a number of storeys occupied as tenement dwellings. In a narrow lane the nave of another once beautiful fane—judging from the solitary pinnacle and flamboyant window that survive—protracts a melancholy existence as a warehouse, regardless of its former glory and hallowed associations.

The matchless west front of the cathedral is familiar to all lovers of art and literature through the eloquent pen of Mr. Ruskin.

St. Ouen's, though decadent in detail, is otherwise a strikingly beautiful structure, of supreme elegance and lightness combined with immense height. This church embodies the ideal of fourteenth-century French architects; their object was to reduce the supporting area to a minimum, and to proportionally increase the size of the stained-glass windows. The

lofty lantern tower over the crossing almost suggests English influence.

The great church of St. Maclou has a very curious western portal.

The Archbishop's Palace is on a superb scale, and presents an imposing appearance, although a complete restoration of the exterior has robbed the structure of much of its individuality. The numerous slums form the most delightful sketching ground; quaintness and originality thrive where the courts are narrowest and foulest. Timber is here almost universally employed, and the arched barge-board recurs again and again, but with such happy application that the result is always pleasing and satisfactory.

But there is an end to all things. Yet, as we bade the Continent a reluctant adieu, we felt nerved and braced afresh for the great battle of life, and the example of the masters who had wrought so nobly convinced us that a still higher destiny awaits the human race, when it shall be revealed how impotent material well-being alone is to satisfy the aspirations of the expanding intelligence; and in those days our deserts of brick and mortar shall bloom and blossom into forms of exquisite beauty and grace, to which all the accessory arts shall contribute; the craftsman shall once again—and in a fuller sense than heretofore—find joy and gladness in his labour, and shall preach in his chosen material the gospel that is in him, and life shall be ecstatic, transcendental, divine.

CURRENT PERIODICALS.

The **A.A. Notes** for July are not of paramount interest, if one excepts the particulars of the Banister Fletcher Bursary, which appear on another page of this issue. Mr. W. M. Fawcett summarises the results of the recent congress, and finds "the by-laws now in force are harassing and annoying" and that "they do not even pretend to assist the artistic side of our work," as "they are only in existence to make buildings strong and sanitary—two very good objects." For the last phrase we are thankful. There is no reason of course why beauty should not be combined with sanitation and strength. But architects who wish to secure the removal of restrictions that hamper their art should be careful to avoid even the appearance of hostility to regulations that are really demanded in the interests of the public health and safety. We are glad to see the last of Mr. Bulkeley Cresswell's "Philosophy of Hall-marks," upon which no more fitting criticism could be passed than that appearing above the name of Mr. J. D. Grace in another part of the issue.

Architecture (New York) for June contains some amusing excerpts from a speech by Mr. Louis H. Sullivan at the annual dinner of the American Architectural League. Mr.

Strasbourg
St. Ouen.



Sullivan criticises thus trenchantly:—"American architecture is composed, in the hundred, of ninety parts aberration, eight parts indifference, one part poverty, and one part Little Lord Fauntleroy. You can have the prescription filled at any architectural department-store or select architectural millinery establishment." And again:—"That you have abundant reason for discontent needs no proof:—Let him read who runs through the streets. That you have cause, for discontent is evident. That you should feel discontent gives one a delightfully cynical sense of shock, and a new-born desire to believe in the good, the true, the beautiful, and the young." We hope Mr. Sullivan will not come to England—at least, not just yet.

The Canadian Architect and Builder for June calls attention to the fact that architects as a body know less about electrical work than they should. Possibly the ideals of our Canadian brethren differ from our own, and probably they believe that an architect should understand the principles of the work executed under his direction. It is to be regretted that on this side of the Atlantic there are some who appear to regard artistic taste as a substitute for practical knowledge.

The Architectural Review (Boston) for June contains an appreciative article on the art of Frank Lloyd Wright, whose work we should like to know more of; but the illustrations are too small, and, in the case of the plates, hardly clear enough to afford a very good idea of the detail by which the work would mainly be judged. His treatment is quite unconventional, and the exteriors are quiet and restrained. The difficulty of getting fair tenders for modern building work is, apparently, an evil that is not peculiar to this side of the Atlantic. Our contemporary, in a leaderette, remarks on the wide variations in a set of estimates, and says:—"This used to be attributed to incomplete plans or specifications, but now plans and specifications for estimating upon are pretty generally found to be complete and fairly perfect, but the wide variation of bids continues. It shows itself even in cases where there is no possibility of ambiguity in the material or labour to be performed. It can be accounted for only by the risks which the contractor runs and the extent to which he is ready to gamble on the chances. Risks on the price of material, which he cannot always contract for ahead; risks on the price of labour, which he cannot control; risks on strikes, which must mean, at the very least, loss of time, and, at the most, legal and other expenses as well; finally, risks as to the amount of work he can get out of his men. There was a time when the idle or incapable workman could be discharged without another thought, but now an employer thinks twice before he discharges such an one. Besides this, he may find the efficiency of his men arbitrarily limited

at a point below what they are easily capable of doing." The architectural designs at the Royal Academy reproduced in the "Architectural Review" (London) are reviewed, and the collection is denounced as "even more dull than usual," as "few drawings show any vitality or modernness of design. . . . The public and monumental architecture is niggled and ineffective."

The Home Counties Magazine for July contains an article on the Old Gate-House of Lincoln's Inn, Stow's "fair antient Gate-house," which forms with the chambers on the north of it the only buildings of any antiquity left in Chancery Lane. Mr. W. Paley Baildon has unearthed some curious information about the building of the gate-house, and his article is illustrated by two drawings by Mr. Hanslip Fletcher and a reproduction of an old print showing the building as it appeared in 1800. The author says that of London's once numerous gate-houses but four remain, viz. St. James' Palace, Lambeth Palace, Lincoln's Inn, and St. John's, Clerkenwell. Yet this very number of the "Home Counties Magazine" shows that there is a fifth, No. 17 Fleet Street, the Inner Temple gate-house, which forms the subject of an article by Mr. Philip Norman. Much has been written about this most interesting house, the destruction of which was threatened a little while ago, but has happily been averted. Few, however, can write with the authority and knowledge of Mr. Norman, and his article, embellished as it is with excellent photographs and measured drawings, is a valuable addition to the literature of the subject. Speaking of the beautiful coloured ceiling on the first floor, Mr. Norman remarks upon the extraordinary tenacity with which it holds together, though in parts it has sunk many inches. This, he says, is owing to the fine quality of the plaster, which is far superior to any now produced, perhaps also to an admixture of hair and of some glutinous substance which holds it to-

gether. The only other article of architectural interest in this number is one on Littlebury Church, a building which dates from the twelfth century.

The Reliquary this month has a seasonable holiday appearance, and anyone contemplating a holiday in Cornwall or in Monmouthshire is likely to be specially interested in this number. "Some Monmouthshire Sketches," by Mr. J. Russell Larkby, is a most interesting description, illustrated with a capital collection of sketches by the author of some of the ancient churches in Monmouthshire. The subject is treated architecturally, and is instructive as well as entertaining. The church of St. Woolos, Newport, with its fine Norman doorway containing strange-looking diminishing shafts—which some declare to be not Norman at all but Roman—and wonderfully interesting capitals illustrating the story of the Flood, is dealt with at considerable length. Llanthony Abbey, which the author considers the most beautifully situated of all the English abbeys, is also examined and illustrated with great care. The "Reliquary" is so carefully produced that one is surprised to find that a glaring grammatical error in the last sentence of this article has been allowed to pass uncorrected. The other article of special interest to holiday makers is one by the Rev. S. Barber, entitled "Round about Padstow." This is of a less technical character than Mr. Larkby's, and is illustrated by some good photographic reproductions of Cornish churches.

The Journal of the R.I.B.A. for June 16 contains a short article—little more than a note—by Mr. R. Phené Spiers on "The Architecture of Central Syria." The subject is a deeply interesting one, which we hope to see dealt with more fully by Mr. Spiers on a future occasion. Some excellent photographs accompany the article. Mr. Arthur Cates gives some



interesting particulars on "Architectural Education in the United States." This is one of the matters in which our American cousins have been making great progress of late years. Not long ago the American architectural student would almost as a matter of course spend a year or two in Paris imbibing the artistic principles of the *École des Beaux Arts*; to-day he can get as good an education in his own country as anywhere, and the result of this must inevitably be seen in the American architecture of the future. In the following passage Mr. Cates lays his finger upon a very serious defect in our English system of training architects:—"In too many cases the education of a young architect in this country is limited to what he may 'pick up' in the office, of which the payment by his parents of a considerable premium has entitled him—a lad raw from school, who has not yet learnt how to learn—to have 'the run'; where, if capable and industrious, he will be taught so far as may be necessary to enable him to take part in the office work, and to waste that time which should have been occupied in the completion of his education to the still further advantage of his master by taking the place of a paid assistant; or he may, if so disposed, cultivate artistic and dilettante indolence, and render himself incapable of thereafter taking an active part in the work of life. In either case his future position would be very different from that which he might have attained had the time so spent in the office been appropriated to systematic education." In striking contrast to this state of affairs is the systematic way in which the American universities and such institutes as the Massachusetts Institute of Technology lay themselves out to meet the needs of architectural students. The *Journal* for June 30 contains nothing of special interest.

The *Genealogical Magazine* gives the place of honour to a review of Lyon's new book "Heraldry in Relation to Scottish History and Art." "Lyon" is not—as the uninitiated might suppose—a nickname either of affection or derision, but is the recognised appellation of Sir James Balfour Paul, Lyon King of Arms, a portrait of whom is given in connection with the article. The number is as full as usual of curious lore about names, pedigrees and coats of arms. The Marriotts will be pleased to know, on the authority of the learned author of "Names derived from Egypt," that theirs is probably the oldest of English names, being derived from Marcotis, the name of a district of ancient Egypt. But the presence of the name *Σαυβ* in a papyrus dated 227 B.C. is not held to justify the Smiths in claiming an equally ancient origin.

The *Antiquary* contains an article on "Curious Ancient Customs in Italy," and some rather amusing extracts from the diary of one Mr. George Bowles, who made a journey from the south of Ireland to London in 1761 and 1762. Mr. W. Hencage Legge does well to call attention to the beauty and interest of some of the village churches of Sussex, and his note and illustration on a "Trinita" in old painted glass in Rodmell Church deal with a subject of much interest to antiquarians.

The *Clayworker* (Indianapolis, U.S.A.) is full of sound practical information for those engaged in the brick and tile industries; the difficulty with such a periodical must be to avoid making it dull and heavy. This difficulty seems to have been quite overcome, and the number before us is very bright and interesting, as well as practically useful. A representative of the journal has been visiting France and England and recording his impressions. His remarks about London are very interesting:—"The brick architecture of London, as I saw it, is very ordinary. Plain red brick, laid in white mortar with stone trimmings, is the rule. I saw no terra-cotta or press brick-fronts at all. I did see an occasional structure faced with enamelled brick. These are usually in gaudy colours. Aside from this feature, London architecture is so similar that I am inclined to think many, many years ago there was an architect who planned these structures, and his designs and specifications have been in use ever since. It will not surprise me to learn that this architect was also a stonemason. So far

as I discovered there is no variety or originality displayed in the residential architecture of London."

The *Journal of Decorative Art* for July contains a number of sketches at the National Gallery by Mr. E. Fairhurst, presented as studies for designers and decorators. The idea is a good one, but the design should be used as suggestions rather than as actual copies. The sketches consist of panels from picture frame designs, from the backgrounds of pictures, and from dresses, &c. In the details of some of the old pictures of the Venetian and Tuscan schools there is an astonishing wealth of suggestion for the designer and decorator, and many, no doubt, will thank Mr. Fairhurst for the hint. Continuing his articles for students, Mr. John A. Sherlock deals in this number with the origin and history of diapers, illustrating his remarks with a good selection of sketches.

Feilden's Magazine is undoubtedly one of the most attractive of technical magazines. It is most ably edited, and produced with great care. The July number contains, amongst other interesting features, an account of the widening of the Great Northern Railway between Finsbury Park and Wood Green, an article by Mr. Ewart C. Amos on "Pneumatic Tools and Appliances," and a well illustrated description of a pneumatic tool factory recently opened at Chippenham. Professor Jacques Boyer gives a readable description of the buildings of the Paris Exhibition. His account of the method of construction adopted in the majority of the buildings is interesting: "The skeleton of the building is constructed of iron covered with wood, which, in its turn, is covered with staff. . . . Staff is nothing but a combination of packing canvas and plaster, and it serves advantageously as a substitute, as far as solidity is concerned, for the ordinary plaster casts. Its employment offers no difficulties. The first thing is to get a hollow mould of the object which is to be reproduced, and to grease or oil it, so as to render easy the removal of the cast. The next is to pour into the mould liquid plaster to form the outer surface of the casting. Then, before the plaster has become quite solid, pieces of canvas soaked in plaster are pressed into the mould, which, combining with the still moist outer layer, form a compact and intimately mixed crust about 1 c.m. in thickness. Finally, in order to give still greater solidity to the casting, it is supported by small wooden rods, forming the inner skeleton of the statue or architectural design reproduced; and, after having carefully attended to all these details, there remains nothing but to remove the cast from the mould. For the more important plane surfaces required in the structures of the Exposition, instead of the hemp or canvas, suitable for stiffening plastic work of minor dimensions, a more solid material has been employed to cover the woodwork, and, according to circumstances, either 'expanded metal'—a kind of metallic network recently invented by M. Golding—or cane trellis-work, or even nets of stiff and strong cords, have been selected." The article is illustrated with some excellent photographs.

The *Engineering Times* has an article by Dr. Winter Blyth on "Aerobic Processes of Sewage Disposal," which, with the aid of diagrams, explains the various processes very clearly. Mr. C. G. Brackenbury continues his articles on "Methods of Saving Labour in Gas-works," and Mr. W. Fletcher, in his comprehensive survey of the "History and Development of Motor Cars," deals this month with "Electrically Propelled Carriages." There may be differences of opinion as to the extent to which it is likely or desirable that mechanically propelled vehicles should take the place of those drawn by horses; but few will doubt that among the various mechanical motors the electric motor is destined to take the first place. Mr. Fletcher's description of the electric motor's "points" is rather striking:—"It can be made to any size and it will go at any power you require, according to its size. The electrical motor applies itself, with almost human intelligence, to the task it has to perform. It is self-regulating, and the energy expended upon it varies exactly with the work it has to do. In going up hill it voluntarily and automatically

applies its shoulder to the wheel. In going down hill, it not only acts as a brake, but it also tends to restore to the battery the energy taken out of it. So, acting as a brake, it saves the tyres, and, returning the energy, it supplies again the force which it has consumed from the battery." For next month a specially interesting number of this magazine is promised; it will be devoted to a full account of the engineering exhibits at the Paris Exhibition.

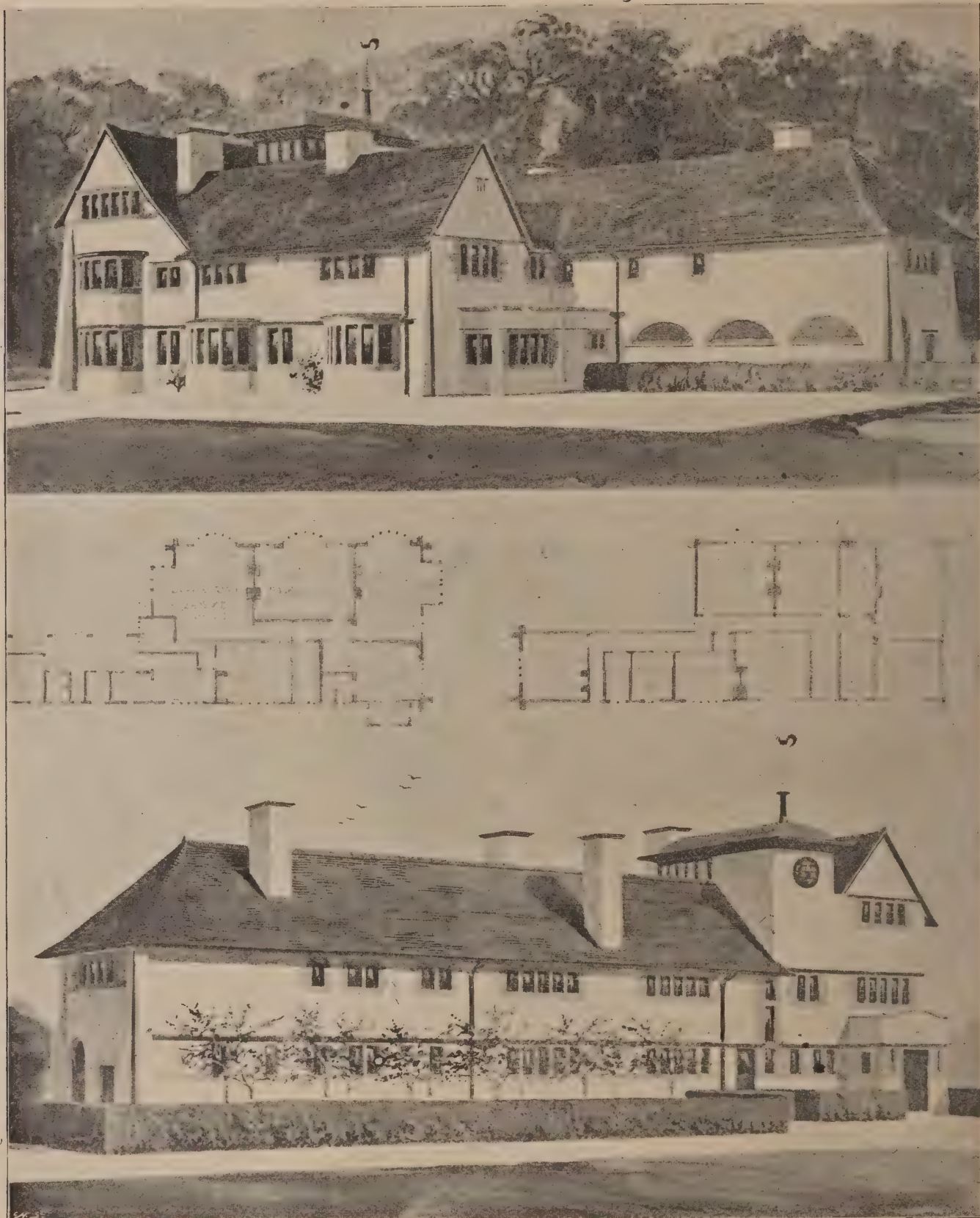
The *Artist* contains a very readable and well illustrated article on "Architecture and Exterior Decoration at the Paris Exhibition. We are so familiar by this time with the appearance of many of the buildings that it is a relief to find at last a magazine containing illustrations of decorative details. Some of these are very interesting and do something to redeem the architectural poverty of the exhibition buildings, taken as a whole. The author, who calls himself "W. Fred," points out very justly that the architects of the exhibition palaces seem to have considered nothing but decoration:—"They had no thought of turning to advantage the plane itself, or it may have appeared to them too poor, too inartistic. Every gate, every colonnade, every bridge, every wooden decoration was to show many 'ideas.' And in hunting for arabesques, for ornaments, for pictorial—in absence of architectural—ideas, the builders have lost every feeling for the limitations of formative art. Unbearable haste and nervous excitement mark all the buildings that have a decided exhibition character." Some of the small buildings are undoubtedly much more pleasing than the palaces, but we are surprised to see "W. Fred" bestowing approval on such a weird freak as the "pavillon bleu." Certainly it is modern and original, and we quite agree with the author's remark that the Exhibition contains far too little of the architecture of to-day, but modernity and originality are not the only qualities we should demand—even in an exhibition building.

The *Quarry* for July contains a long article on the mineral products of Yorkshire, and some useful notes on comparative tests of cement briquettes.

The *American Architect* may almost be described as a portfolio of architectural drawings, the letterpress occupying a very subordinate place. The plates are all produced in first-class style, whether they are lithographs, heliotypes, or half-tone illustrations; but it may be doubted whether the subject matter is in all cases worthy of the expense and care bestowed upon its reproduction. In the issue for June 9th several plates are devoted to the Providence Public Library, a dignified and no doubt costly building in the classic style, but one which shows very little originality of design. Some drawings of details in the church of St. Bertrand de Comminges, in France, afford a pleasant variant to the illustrations of modern American work. The issue for June 16th contains illustrations of the Bicentennial Memorial to be erected at Detroit. The memorial consists of a great Doric column, surrounded by groups of statuary, and a great basin, flanked by flights of steps supporting colonnades, in the centre of which would stand the statue of Cadillac. A plain and uninteresting high school building, and an over-decorated façade of a New York lodging house, are other features of this number. The issue for the 23rd contains some further examples in the series of "box-stoops" which this journal is publishing, a drawing of the Evangelical Lutheran Church of the Advent in New York (the church seems to sadly lack a tower, and the drawing is a very poor one), a good example of a country house by Mr. W. A. Bates, and several examples of modern American metal work.

Electric Railways and the Observatory.—Surprising as it may seem, the running of trains on the London electric railways affects the delicate instruments of Greenwich Observatory, zigzags being marked as soon as the trains are started. The removal of the Observatory farther afield would upset all the calendars, yet the influence noted above must necessarily increase rather than decrease with the progressive extensions of the city.

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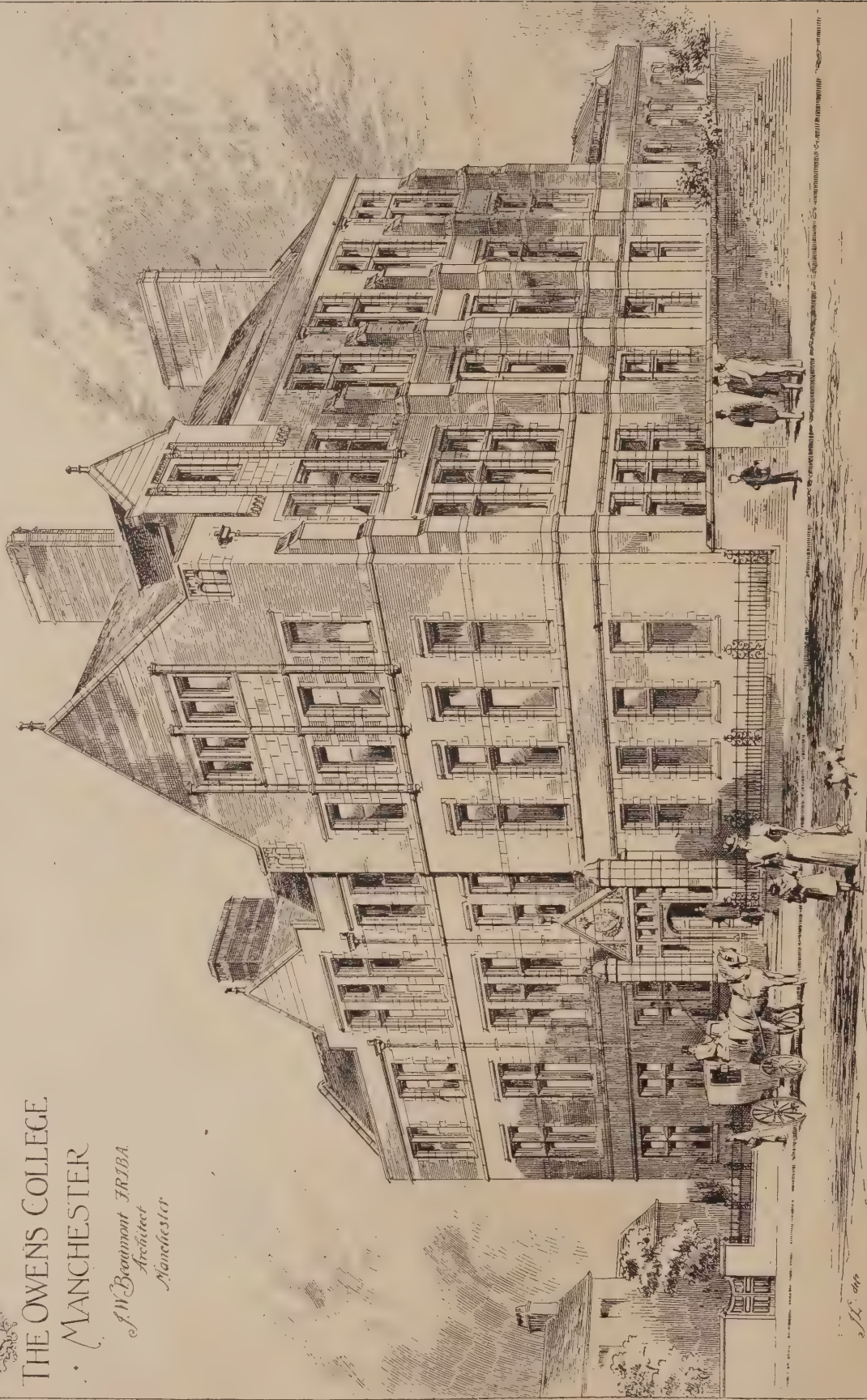
PROPOSED HOUSE AT WESTMESTON, SUSSEX. C. F. A. VOYSEY, Architect.

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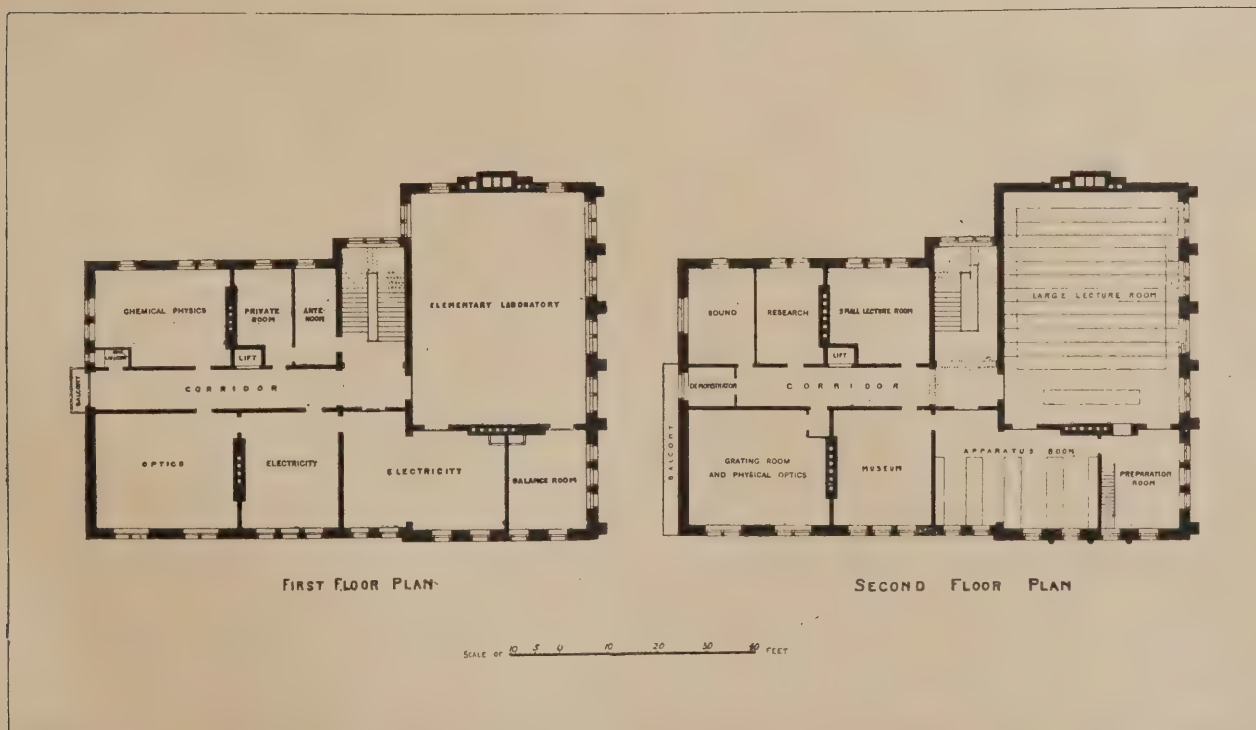
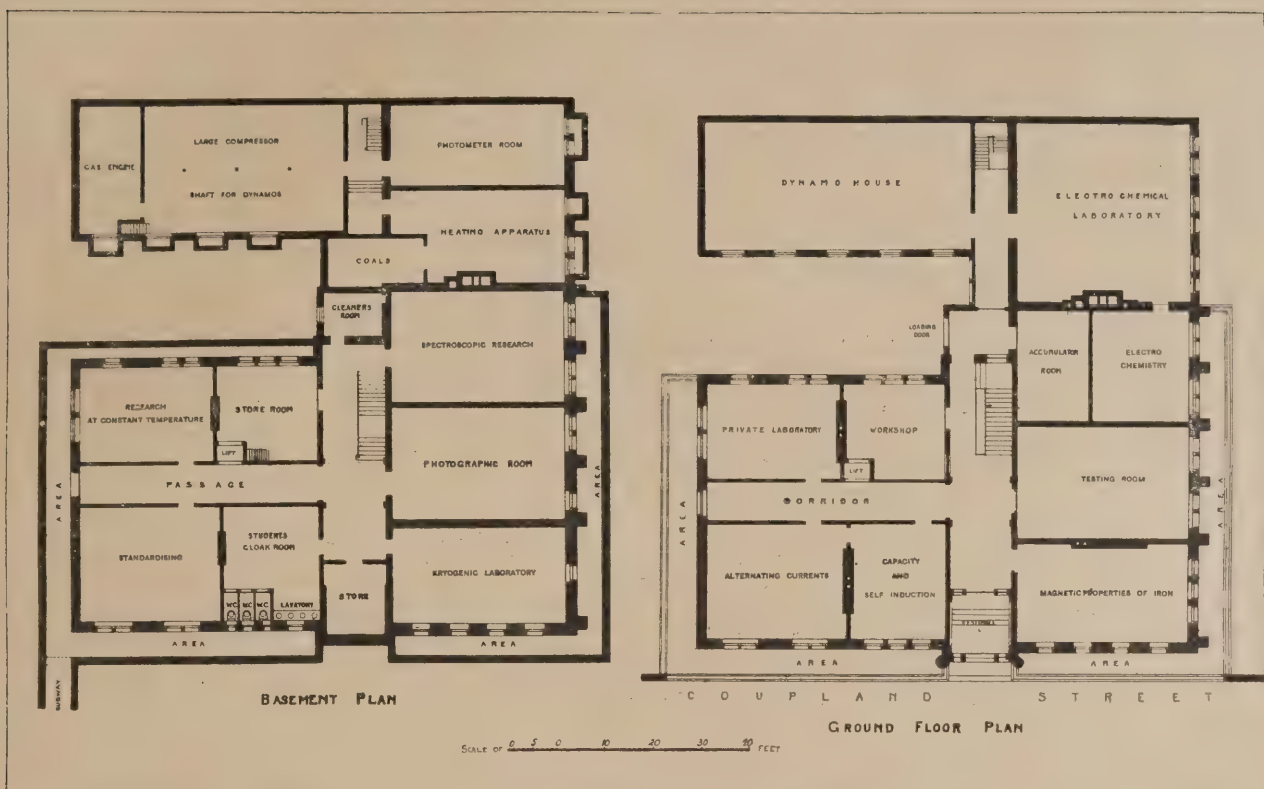


NEW PHYSICAL
LABORATORY
THE OWENS COLLEGE
MANCHESTER

J. W. Beaumont F.R.I.B.A.
Architect
Manchester



NEW PHYSICAL LABORATORY AT THE OWENS COLLEGE, MANCHESTER. J. W. BEAUMONT, F.R.I.B.A., Architect.



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PROPOSED HOUSE AT BEXHILL-ON-SEA, SUSSEX. C. F. A. VOYSEY, Architect.

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Bricks and Mortar.

APHORISM FOR THE WEEK.

"He who builds according to every man's advice will have a crooked house."—DANISH PROVERB.

Our Inset Sheets.

MR. J. W. BEAUMONT, F.R.I.B.A., of Manchester, is the architect of the new

Physical Laboratory at the Owens College in that city. The buildings have cost about £23,000, and another £10,000 will be spent on equipment, making the total £33,000. The laboratories occupy a prominent position in Coupland Street, and are connected with the college by an underground passage. Red brick and white stone have been used in the construction, on a site measuring about 100ft. by 60ft. There are about 40 rooms. Besides those intended in the first place for ordinary teaching, elementary and advanced, there are others for special research and for electro-chemical work. Glazed bricks have been used for the wall in nearly all the rooms. Appliances are provided for filtration of the air, so as to free it from dust. At the top of the building there is an observatory fitted with a 10in. telescope, the gift of Sir Thomas S. Bazley, Bart. The electric light will be used throughout the buildings. There is also an electric lift. Attached to the physical laboratory is an electro-technical laboratory, which will form a memorial of the late Dr. John Hopkinson.—The proposed house at Westmeston, in Sussex, was to have been built in brick cement, rough-cast, with a roof of red tiles, Bath stone window and door dressings, and iron casements. The proposed house at Bexhill, overlooking the sea, was to have been also of brick cement, rough-cast, with a roof of green slates, wooden window frames, and iron casements; all the outside woodwork to be painted a bright-green colour. The architect of both these houses is Mr. C. F. A. Voysey.

Work of the Old Egyptians.

THE annual exhibition of the Egypt Exploration Fund now open at University College is exceptionally interesting. During the last season all the energies of the fund have been concentrated upon work on the ancient site of the city of Abydos. Few places in Egypt were of greater importance than the sacred city of Abtu, the chief burial place of Osiris. The site had been partially explored by M. Amélineau on behalf of the Gizeh Museum, and the ground was declared to be exhausted, when permission was granted to Professor Petrie to commence work. By systematic labour and the employment of skilled workmen, whose honesty was known, and by a judicious system of payment for results, the explorer has succeeded in obtaining one of the best collections of early remains ever brought to this country, and it must be remembered that one-half of the objects remain at Gizeh. Some excellent specimens of carving exhibited show how skilful the Egyptians were in this branch of art. Metal working was confined to copper. Gold was used for decoration, and specimens of gold foil and wire are exhibited. The pottery from the early tombs is most interesting and artistic; it is all hand made, and some of it has a red hematite glaze. The decorations are derived from basket-work or rudely-painted birds and animals. An elegant door frame is placed in the first room. It is covered with beautifully-cut hieroglyphs painted blue, with the name and titles of a certain official named Amen-em-hat or Sneb, after the ruling king. On the whole the exhibition is a highly instructive one.

The Double Choir of Glasgow Cathedral.

THE lower church of Glasgow Cathedral has been called "the finest crypt in Europe," an appreciation on several grounds of questionable value. But the cathedral is not without other and notable claims to distinction. The peculiarity of the double choir, the continuous succession of periods of vaulting, and the change of design of the middle compartment are features which give it a unique place among the buildings of the middle ages. There are many of our

cathedrals that show as great variety and many that have a much wider range of style, but there is not one that presents the consecutive stages of vaulting in such intimate conjunction, and nowhere do we find so instructive an example of a later design grafted on the stumps of an earlier plan. Apart from its purity of style and beauty of design, the choir vaulting has thus a particular value as an illustration of the development of the art; it affords some insight into the methods of the mediæval builder, and shows at once his fertility of resource and impatience of restraint; finally, it offers an archaeological exercise of much interest in the recovery of a superseded plan. It is remarkable that such claims on the regard of those interested in the architecture of the middle ages should have received hitherto such slight recognition, and Mr. T. L. Watson's work (to be published shortly by Messrs. James Hedderwick and Sons, of Glasgow, with the title given at the head of this paragraph) is designed in some measure to remove this reproach.

A Few Extracts.

AS an indication of the genesis and scope of the essay, the following extracts are given from the introduction:—"Altogether, and including the upper and lower vaulting of the choir, no fewer than five distinct periods may be traced, each separated from the others by an appreciable interval of time. Each succeeding stage of the vault is marked by features characteristic of its own period, and is distinguished from the preceding stage by the introduction of a new and later type of moulding in the vaulting ribs. . . . The argument of the earlier portion of the present work—the sequence of the vaulting periods and the change of plan—will be patent to anyone who is at all conversant with the architecture of the period. Had the purpose of the writer been merely to establish these points the task would have been a short and easy one; the subject of the vaulting, however, is of wider interest and worthy of more extended consideration. As a double-vaulted church of the thirteenth century, with clerestory and aisles, the choir of Glasgow Cathedral is unique in this country—in many respects it has no parallel anywhere. Its design is such as to involve constructive difficulties in resolving which the builders were without direct precedent, and the story of the choir vaulting shows by what means these obstacles have been overcome."

The National Trust.

AT the annual meeting of the Council and Members of the National Trust for Places of Historic Interest or Natural Beauty, held last week in the Rubens Gallery at Grosvenor House, the Marquess of Dufferin and Ava remarked that there were two important objects mentioned in the report which the Society were most anxious to gain. One was the acquisition of the old Court House at Long Crendon, a pretty Buckinghamshire village, standing on the low ridge which formed the western boundary of the Vale of Aylesbury, and the other was the old post-office situated in the village street of Trevena, better known as Tintagel, in Cornwall. The Trust, through the kindness of Miss Catherine Johns, had had the opportunity of becoming the owner of the latter interesting specimen of fourteenth century architecture. Sir Robert Hunter said the Trust had acquired four properties during the year. One of them—Idle Hill, Kent—was from many points of view more valuable than any that had yet come into the hands of the Society. It comprised about 16 acres, and had been purchased for less than £1,600. He hoped this was but a mere instalment of places of interest in the south-east of England that would come into their possession. They had also acquired Duffield Castle, near Derby. To complete the purchase of Long Crendon, £350 more was wanted. Mr. A. Birrell, M.P., pointed out that the reason why places of interest were in danger of destruction was not so much in consequence of the prevailing brutality of the builder, but because of the shyness and slowness to act which was characteristic of our race.

Architecture as a Vital Art.

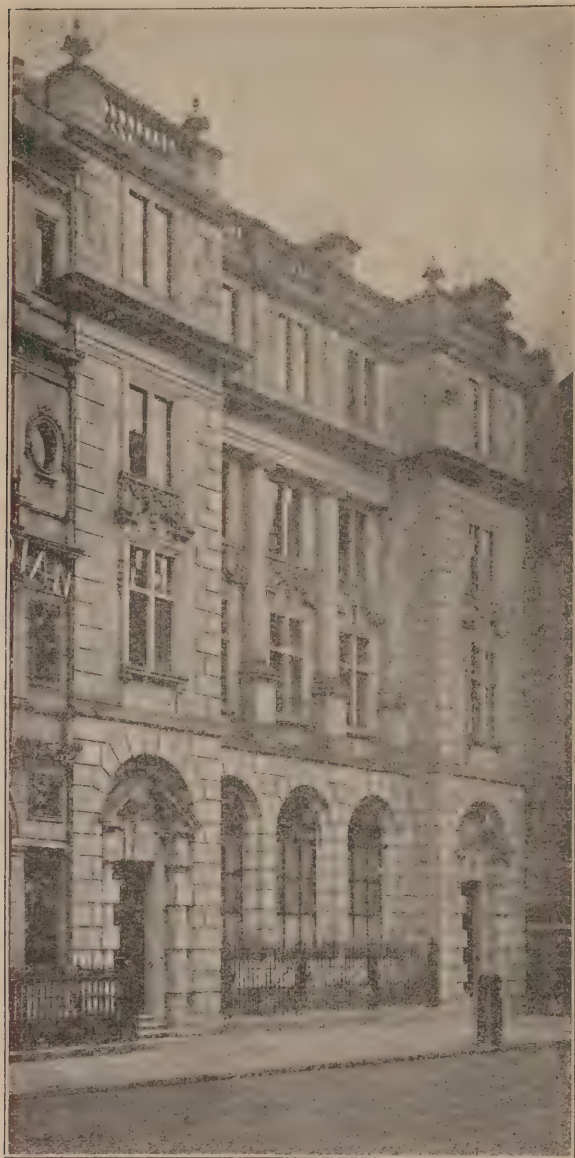
WITH this as his title, Mr. Percy G. Stone has been writing to the "Globe" with reference to Mr. Emerson's paper read before the Architectural Congress, a full report of which appeared in our issue for June 27th. After referring to the fact that it is the designer who must be influenced, Mr. Stone says of modern street buildings:—"One can but argue these piles of ugliness must be the work of the 'commercial' architect; the man who makes pounds, shillings, and pence the be-all-and-end-all of his profession; the man whose want of knowledge of art is only too apparent in his work; the man who draws down the anathema of a discriminating public upon the profession he unfortunately belongs to. His plan may be good, but the less said about his elevation the better. Want of proportion reigns supreme in this class of building. Wealth of detail there often is, but it is of the kind to be avoided. Certain, indeed, it is that its exponent is not 'subservient to past authorities'; better, indeed, if he were. Ignorance of beauty is the keynote of his design. . . . Objects of archaeological interest need as much protection as wild birds. Extinction threatens both alike. Buildings of intrinsic value and interest are allowed to be swept away by the all-devouring tide of 'present-day needs,' unmindful of the fact that there is a utility in the past, that there are lessons to be learned from it—lessons essential to our happiness and well-being."

National Sentiment.

"THIS, it may be urged, is an argument on purely sentimental grounds; but in a nation's peril sentiment has often proved of inestimable value in binding its people together against a common foe, and so prolonging its existence. A nation without a past is well nigh in as bad a condition as a nation without a future; its past life becomes the keynote of its present being. Take our Thames Embankment as a modern improvement, which it undeniably is; the most successful buildings along its front are Somerset House and the Houses of Parliament; the one an outcome of the Classic Renaissance, the other an example of the Gothic revival—both inspired by the past. A Committee of Control is no doubt sorely needed, but papers read before an audience of experts rarely get beyond that audience. The public seldom, if ever, hear them, and it is the public with whom we have to deal. Let the public, not the professional, papers take the matter up." The last sentence would seem to imply that the professional papers had either done nothing or had tried and failed. By all means let the public press use its great advantages for opening the eyes of the public to the fact that the bulk of our modern architecture is bad and that buildings have more claims on us than ornamented boxes. But till this is done in a little better fashion than was the case recently in a daily paper of immense circulation, the matter will be safer in the hands of the puny professional journals.

A Relic of Old Scotland.

THE Old Covenanters' House, South Queensferry, near the Forth Bridge, and a house of much historic interest, is about to be swept away, unless some antiquarian society bestirs itself for its preservation. For some years the building has been falling into a dilapidated condition, and it is now proposed to dispose of it by public roup. The house, which is also known as "Queen Margaret's Palace," is situated near the "Binks," or Rock, where Margaret, the Queen of Malcolm Canmore, was wont to land when crossing to Edinburgh from Dunfermline. It stands in the west end of the town of Queensferry, and behind the ancient Carmelite Priory, and also near the spot where Edgar Atheling, with his mother and sisters, the sainted Margaret of Scottish history, landed. The building was also the scene of another matter of historic importance, for it was here the celebrated "Queensferry Paper" was discovered. Much of the building still remains, particularly the spiral staircase up which the Covenanters went and the room in which they were attacked by the Dragoons.



MESSRS. BARCLAY'S NEW BANK PREMISES, FLEET STREET:
SIR ARTHUR BLOMFIELD AND SONS, ARCHITECTS.

NEW BANKING PREMISES IN FLEET STREET.

MESSRS. BARCLAY AND CO. are to be congratulated upon their new premises in Fleet Street, which have recently been completed and opened. It has often been said that for an architect to be able to give full scope to his abilities he should have an unlimited site and equally unlimited funds at his disposal. In this case funds seem to have been abundant, to judge from the lavish way in which the whole building has been carried out, while the restricted nature of the site has only led the architect to exercise a larger amount of skill in providing the requisite accommodation, not only in the banking department itself, but also in the two storeys set apart as the residence of the manager.

As may be seen from our illustration, the elevation has been designed in the Renaissance style. The centre portion of the façade is considerably recessed, in order to give light to the porter's room in the basement, and it also affords an opportunity for a very satisfactory treatment of attached Ionic columns running through the first and second storeys. The continuation of the bold cornice round the lateral projections has the twofold effect of knitting the building together into one whole and of reducing the apparent height of the attic above.

The two entrance doorways call for no comment; the railings across the front are better worthy of consideration, for they show how

easily a pleasing and highly satisfactory result may be obtained with the simplest of designs. What little ornament there is here is confined entirely to the standards; the railings are to all appearance as "ordinary" as they well can be, yet the whole of this little piece of detail is delightful, and should prove a useful object-lesson to other members of the profession when engaged in designing ironwork.

In order that these notes may be more easily understood, a rough sketch plan of the ground floor is given, which shows the general arrangement of the various offices sufficiently well for our purpose. There are two entrances from the street, one being placed in each of the end projections of the façade. One of these is the public entrance to the banking hall, while the other serves as an entrance to the suite of offices on the first floor, as the entrance to the manager's apartments upon the second and third floors, and also as an additional entrance to the banking premises, which are arranged conveniently and seem to give entire satisfaction. This extra entrance to the bank is safe-guarded by a sturdy mahogany door which is so arranged that it cannot be opened without notice being given to the porter or some other person who is already within the banking department proper. To the right, just inside the outer door, is a lift serving the offices on the first floor and the kitchen upon the third floor. Valuables and heavy cases for the strong-rooms in the basement can only be brought into the building through this entrance, and in order that these may be easily transferred to the lower storey a second lift has been contrived to work through a trap door in the floor of the passage. This trap door is designed to open in two halves, and, the head of the lift being semicircular, the rising of the lift automatically opens the trap and closes it again upon its descent. It is a "trap" in more senses than the one originally intended,

for we dread to think what would be the effect upon the bank official if ever the lift should rise up through the floor while he was passing over the spot.

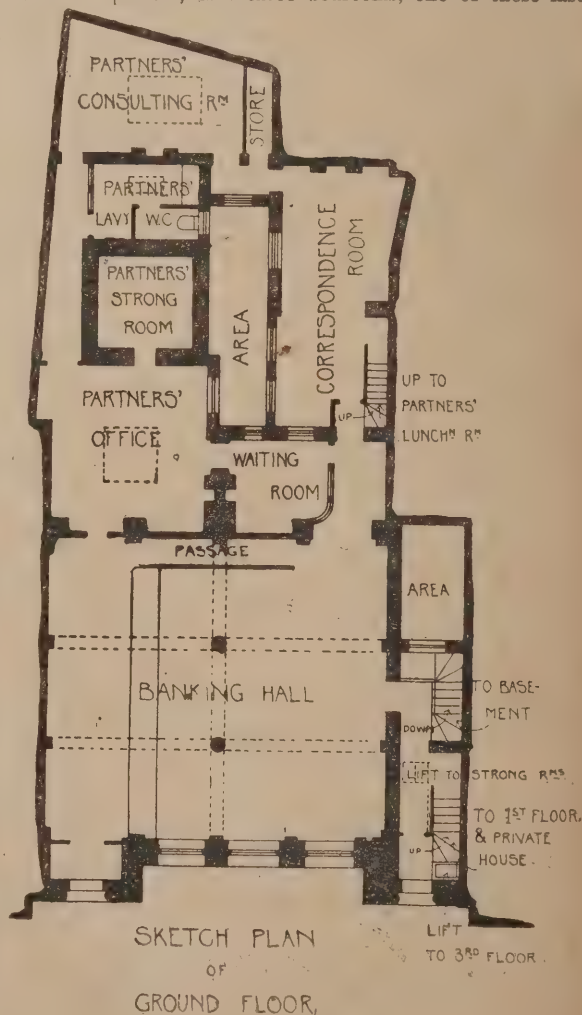
The banking hall is lofty and spacious and the walls are treated with refined arcading. A very good feature is made of the two Ionic columns standing in the centre of the hall and supporting the girders of the floor above. These columns are shown in our illustration. The counter and desk fittings throughout are of polished mahogany, and seem to be eminently well adapted to their various uses. "Steel-bronze" has been substituted for brass in the grille across the paying-desks—a change with which we most cordially agree, both for the sake of appearance and also on the score of saving in labour, for it is claimed for this metal that it never requires cleaning and does not lose its brightness. In appearance it somewhat resembles oxidised silver, and should quickly come largely into use if it fulfils all that is claimed for it. The remainder of this floor is devoted to a "partners' room," with a capacious strong-room adjoining, a consultation room, a correspondence room, a waiting-room, and lavatory accommodation. The dados round the partners' and consultation rooms, though panelled and painted to re-

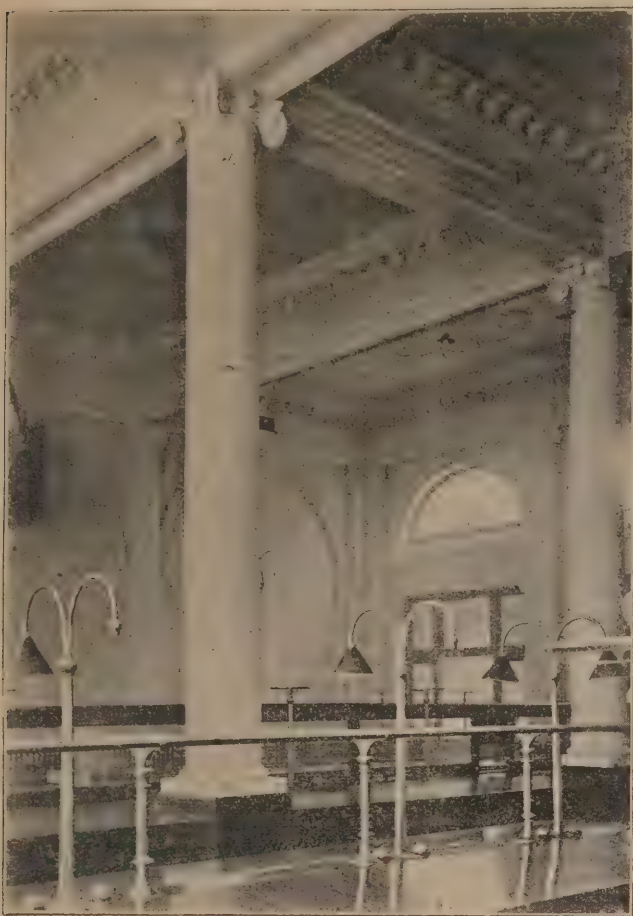
present mahogany, are only carried out in cement. Some very effective lead glazing is to be found in these rooms, the charm lying not only in the arrangement of the came but also in the judicious introduction of a small proportion of light green fragments among the principal masses of muffled white glass.

The basement is principally devoted to strong-rooms, of which there are eight. The six for the storage of valuables are arranged *en suite*, with one door common to the whole range and an emergency door which can only be approached through one of the ledger strong-rooms. The core of the walling of these impressive treasure-caves consists of blue Staffordshire bricks faced with white glazed bricks, and the whole suite is well ventilated into the open air. There is also a "box-examining room" situate at the entry to the strong-rooms, to which all parcels are taken for purposes of examination and verification before being locked up.

Ascending by the principal staircase from the ground floor to the first storey, we were struck by the poor detail of the iron balusters and could not refrain from comparing them with the well-designed railings only in the street. The first-floor storey extends only over the banking hall and the correspondence room, the rest of the building being covered with a flat roof. The whole of this floor, with the exception of the room above the correspondence room, is to be let as offices or chambers. The room above the correspondence room has been lavishly fitted up and set apart for the use of the partners as their private luncheon room. Their meals will be cooked upstairs upon the third floor by the manager's cook, and can be readily served by a special-service lift down to the landing outside the luncheon-room door. The room is absolutely cut off from the rest of the floor, and is approached by a private staircase rising from near the waiting-room and very conveniently close to the banking hall, as will be seen from the sketch plan.

Two staircases lead up to the second storey, upon which the reception rooms of the manager's apartments are placed. The accommodation here consists of dining-room, drawing-room, and three bedrooms, one of these last





INTERIOR OF BANKING HALL.

being specially reserved and known as the partners' bedroom, in case one of them should have occasion to pass the night upon the premises. The drawing-room contains a very excellent fireplace. Unfortunately the same cannot be said of the dining-room. Because a fireplace was designed, say, a hundred years ago, it does not necessarily follow that its hundred years of existence have transformed it into an object of special beauty; nor does the fact of its antiquity render it absolutely imperative that it should be reused in a prominent position, where, in every probability, it is in striking contrast to its surroundings. Yet here is a flagrant example of the sort: a venerated collection of inlaid white and yellow marbles shaped into a fireplace, with a bas-relief panel representing half a dozen Cupids placed over the opening. May the day be not far distant when the client will put himself as completely and confidently into the hands of his architect as the patient places himself under the care of his doctor!

The third floor contains bedrooms, kitchen, scullery, and the usual adjuncts. In the scullery the arrangement of sink wastes is rather complex, though very excellent. Kitchen, pantry, scullery, and larder are each of them well adapted for their various uses, but it is a distinct fault in the planning that the larder is so far away from all the other offices, there being no fewer than four doors between this room and the kitchen. In the larder, too, is placed the lift which runs up, as shown, from the ground floor.

When we come to consider the building as a whole, and weigh its merits against its demerits, we find there is an overwhelming preponderance on the side of excellence, for the bad points we have touched upon occur, after all, in connection with matters of no very great importance, and were probably to a certain extent beyond the architect's control; but in all else—in design, plan, and fittings—a high standard has been maintained. It can have been no slight task to provide such a large amount of accommodation in the limited space, and to light each apartment efficiently; yet this result has been achieved in every case, and there is not a dark room or passage from ground floor to attic.

THE PAVING OF STREETS.

Opinions of Metropolitan and Provincial Surveyors.

IN view of the issue of a report to the Corporation of the City of London on the "Comparative Durabilities of Wood and Asphalt Pavements," by Mr. D. J. Ross, C.E., the City of London Engineer, and its possible effects on the use of Western Australian timber, a summary of particulars and opinions furnished by the surveyors of a number of London vestries, metropolitan district boards of works, and provincial municipalities, has been issued from the Western Australian Agency, 15 Victoria Street, Westminster, under the instructions of Sir Edward H. Wittenoom, K.C.M.G., Agent-General for Western Australia.

In the course of his report, Mr. Ross stated that all the streets (15) in the City paved with Australian hardwood were in "good" or "fair" condition, with the exception of two only—Queen Street, laid in 1893 and 1899, and Upper Thames Street (Queen Street to Peter's Hill), laid in 1896. Mr. Ross further says: "The most notable instances which had come under my observation of hardwood pavements not having worn satisfactorily

experience and observations, therefore, in regard to the suitability of hardwood paving and to the best methods of laying the wood will be of interest. He lays his blocks with joints, in which he places small deal laths, the joints then being carefully grouted with pitch. By this means the expansion and contraction of the wood are provided against. In no case, the surveyor says, has the expansion of the blocks given him any trouble by the displacement of kerbs and footways, as so frequently occurs where cement grouting is used. Exceptional contraction is corrected by running in the joints affected with pitch. The durability of hardwood paving in this district is unquestionable, and, in view of the traffic in Euston Road and other great thoroughfares, its suitability for streets with heavy traffic, when well laid and carefully supervised after laying, is clearly demonstrated.

St. Paul's Road, Canonbury, was laid with Jarrah in 1894. The blocks were put on a 7in. concrete bed, without floating, as, in the opinion of the surveyor, Mr. J. Patten Barber, M.Inst.C.E., the concrete in this instance did not require it. The method of laying adopted by Mr. Barber differs from that of Mr. Blair of St. Pancras, and is more in accordance with the usual custom. He dips his blocks in pitch and close-joints them, grouting with pitch. He corrects the expansion and contraction of the wood by careful supervision after laying. The expansion joints adjoining the kerb are carefully watched, and when they are becoming nearly closed, but before the blocks begin to press on the kerb the expansion joint is widened. In this way, no kerb has been pushed out of place by the expansion of the wood in this district. As soon as the blocks show signs of contraction they are carefully watered, so as to prevent the joints opening and the blocks becoming loose. Occasionally the roads are drenched with water at night, which not only helps to prevent contraction but cleanses the roads.

In Regent Street (which was laid in 1897) and Piccadilly (laid in 1896) the wood has evidently shrunk and swelled, so that the

were in Tottenham Court Road and St. Paul's Road, Canonbury." He also mentions "other streets in the metropolis laid with hardwood which were in anything but a satisfactory condition—Regent Street, Pall Mall, Piccadilly, Shaftesbury Avenue, and Rosebery Avenue"—and says that he had been "informed by Mr. Weaver, the surveyor to the Kensington Vestry, that in his district the hardwood was being removed and deal blocks substituted for it."

The streets named by Mr. Ross have been inspected, and the surveyors of the districts in which they are situated have been interviewed.

With regard to Tottenham Court Road Mr. W. N. Blair, M.Inst.C.E., says that the material supplied was not quite satisfactory, as many of the blocks were not true to gauge. They were described in the contract as "cut from the deals as imported," and in thickness they varied as much as three-quarters of an inch; consequently it was impossible to lay an even pavement. The condition of the road, after eight years' wear, is certainly not good, as, through the crowning or buckling of the blocks, it has become very rough and "corduroy" in its character. Since 1892 Mr. Blair has laid many thousands of yards of Jarrah and Karri wood in his district, and the result of his



IRON RAILINGS AT MESSRS. BARCLAY'S NEW BANK PREMISES, FLEET STREET.

courses have become irregular, resulting in an uneven surface, and in the loosening of many of the blocks. In Shaftesbury Avenue (laid in 1897) the objection arises partly from the roughening of the wood, but in Pall Mall East (laid in 1896) it clearly arises from the unusual shrinkage of the blocks. In each of these cases there is certainly good ground for complaint. But it should be noted that while the wood used is Karri only, Jarrah—and, indeed, every wood—is subject in a measure to the same conditions.

The portion of hardwood paving in Rosebery Avenue to which Mr. Ross refers was laid in 1896. The wood used was Jarrah and it was laid with a cement grout. Mr. P. G. Killick, the surveyor, says: "In dry weather the blocks have got rather loose; the courses have also become rather irregular in places. I do not consider cement grouting suitable for hardwood paving. Spencer Street was paved with pitch grout in August, 1895, and I have not had to spend a penny in repairs. We have just paved the second portion of Rosebery Avenue with Jarrah wood, close joint, hand dipped, and pitch and tar grout, area about 4,000 yds., and are about to pave Lower Charles Street, 1,150 yds., and Percival Street, 2,150 yds., with similar wood and grouting."

Karri is the wood used in four of the seven streets to which Mr. Ross refers, and the chief objection to this wood in Regent Street, Piccadilly, and Pall Mall arises from its liability to expansion and contraction—a satisfactory, if not complete, remedy for which may be found in an efficient and proper system of laying, and in careful supervision after laying. So far as the durability of hardwood for paving purposes is concerned, the examples cited do not bear out Mr. Ross's contention that "this class of pavement is not of that durable nature anticipated."

Comparison between Wood and Asphalt.

The scope of this enquiry was limited to the question of the durability of Western Australian hardwoods. The matter, therefore, of asphalt paving has not been gone into in detail. At the same time, during the pursuit of the enquiry, a good many opinions have been expressed and some facts adduced on the subject. It was found, indeed, not only from the surveyors whose districts were mentioned by Mr. Ross, but from others, that there is a large body of opinion against the use of asphalt as compared with wood. "I would prefer soft wood to asphalt for the heaviest traffic," said one surveyor, speaking of one of the most important and thronged districts in London. "I would not lay asphalt in my heavy thoroughfares," said another surveyor, a man of light and leading in his profession, "if they were to give it to me for nothing."

Asphalt paving has two special advantages: firstly, it can be cleansed rapidly and easily; and, secondly, it can be repaired quickly and with fair uniformity.

But some contend that it is a cruel paving for horses, and that wood affords a far safer and quieter road, and if kept properly cleansed is little less sanitary than asphalt.

London Surveyors' Opinions.

The following particulars and opinions on the use of hardwood paving have been compiled from the surveyors connected with various London vestries, metropolitan boards of works, and provincial municipalities.

Battersea.—The surveyor, Mr. J. T. Pilditch, M.Inst.C.E., has used Jarrah and Karri extensively, and is pleased with both woods. He is very particular in laying the blocks, which he cuts himself. He has a considerable amount of hardwood paving in hand.

Bermondsey.—The surveyor, Mr. R. J. Angel, A.M.Inst.C.E., says that his vestry formerly used Blue Gum for paving, but were compelled to take the blocks up. They are now using Jarrah, and are so satisfied with the result that they are proposing to use still larger quantities.

Bethnal Green.—The surveyor, Mr. F. W. Barratt, F.S.I., is about to lay a considerable quantity of hardwood. He thinks that very much of the success of the paving depends upon the method of laying the blocks, and upon the blocks being true to gauge.

Camberwell.—The surveyor, Mr. W. Oxtoby, A.M.Inst.C.E., has given the question of hardwood paving considerable attention, and is strongly in favour of it. A large quantity is being laid by his vestry.

Clerkenwell.—Jarrah has been used by this vestry for five years with, in the main, very satisfactory results.

Hackney.—The surveyor, Mr. Norman Scorgie, A.M.Inst.C.E., has had some experience of hardwood paving in other districts, and is particularly favourable to Karri. He keeps his roads well sanded and has had no complaints as to slipperiness.

Hammersmith.—This vestry has been using Jarrah for the past nine years. At first the surveyor, Mr. H. Mair, M.Inst.C.E., laid the blocks with open joints and cement grout. Now he lays the blocks close and grouts with pitch. Hammersmith Road was laid in 1892 with open joints and is very rough. But the wear has been so little, comparatively, that it is probable the blocks will be turned and used again.

Hampstead.—This vestry laid some Jarrah paving seven or eight years ago. The surveyor, Mr. C. H. Lowe, M.Inst.C.E., had occasion to take up some blocks of Jarrah and of creosoted deal laid in the same street and subject to the same traffic. After seven years' wear the Jarrah had worn $\frac{1}{2}$ in. and the deal $2\frac{1}{2}$ in. The old Jarrah blocks were sold to a contractor for paving a stable yard. Mr. Lowe lays his blocks with $\frac{3}{4}$ in. joints, in which small strips of lath are placed, and grouts with pitch.

Kensington.—The surveyor, Mr. W. Weaver, C.E., has tried Jarrah, but is in favour of creosoted yellow deal. He lays the wood on a bed of 6 in. concrete, floated 1 in 4. The blocks are grouted with pitch.

Lambeth.—This vestry was the first to use Jarrah for paving purposes in London, and its experience has been uniformly satisfactory. The present surveyor, Mr. H. O. J. Edwards, M.Inst.C.E., is of opinion that Jarrah is the best paving wood, provided that it be properly prepared and well laid. He has not had much experience with Karri. He thinks that the timber companies might grade their woods. He cuts his own blocks, lays them close, dips them in pitch, and grouts with cement. Mr. Edwards says that objections are raised by butchers and fishmongers to the method of pouring pitch on the surface of the blocks, as the blue dust which rises from the pitch when dry injuriously affects their trade.

Limchouse.—This vestry has used hardwood paving for two to three years, and, according to the surveyor, Mr. Thomas H. Dunch, M.Inst.C.E., is quite satisfied with it. A large contract has been recently let for laying Jarrah in Commercial Road, E., and in East India and West India Docks Roads.

Marylebone.—This vestry prefers soft wood for paving, but the surveyor, Mr. J. Paget Waddington, C.E., thinks that hardwood, well laid, makes a better and certainly a more durable pavement.

Middlesex.—The surveyor, Mr. H. Heckford, C.E., says that his vestry began laying Jarrah blocks about eighteen months ago, and is, so far, extremely satisfied with the result.

St. George the Martyr, Borough Road.—Mr. A. Harrison, M.Inst.C.E., the surveyor, says that his vestry has laid a large number of Jarrah blocks during the past six years, and they have given every satisfaction. In the case of a soft wood contract in his district, made in 1885, the wood has had to be renewed every five years. As soon as the contemplated arrangements for the new London municipalities are completed, he anticipates there will be a considerable increase in the amount of hardwood paving used. At present his vestry, and doubtless others, are waiting for the readjustment of their boundaries.

St. Giles, Holborn.—Mr. G. Wallace, F.S.I., who is the doyen of London surveyors, has examined and tested all kinds of paving woods, and will, it is hoped, soon publish the result of his investigations. He is in favour of asphalt for level streets with heavy traffic, but for moderate gradients he prefers hardwood. He is of opinion that if hardwoods can be supplied at a price that will at all enable them to com-

pete with soft, they will certainly command the market.

Stoke Newington.—The surveyor, Mr. Reginald Brown, A.M.Inst.C.E., has used a considerable quantity of Jarrah in his district and is extremely particular in regard to the gauge and character of the blocks. He is, so far, thoroughly satisfied with the result. He thinks the woods might be graded for different classes of traffic.

Strand.—Mr. A. Ventris, C.E., the surveyor, favours soft wood. He has known it wear for twelve-and-a-half years. He is of opinion that suitable wood well laid will last as long as any granite that is soft enough for paving. He regards the question of foundation as a very important one. The concrete laid in the Strand is between 12 in. and 24 in. deep. He has had some Queensland hardwood in use at the top of Bow Street for the last four years, and it appears to be wearing well. Mr. Ventris thinks that the secret of successful wood paving is good material, efficient laying, and thorough scavenging.

Whitechapel.—Mr. M. W. Jameson, C.E., the surveyor, says that some hardwood was laid in 1894, and he is quite satisfied with the result—so much so, that there is a strong feeling in favour of more extensive use. The traffic in the Whitechapel streets is very heavy.

What Provincial Municipalities think.

Aberdeen.—There is clearly a need for wood pavement in the main streets of the Granite City, as the noise of the traffic is very great. The city engineer, Mr. Dyack, has laid a small section of Jarrah near the City Hall which has given every satisfaction. He is strongly in favour of adopting wood in the leading business thoroughfares.

Barrow-in-Furness.—The surveyor, Mr. Fox, showed a section of hardwood paving (beech) laid by him in 1885 on the bridge leading to the docks. The Railway Company laid some soft wood on another part of the same bridge in the same year, which has had to be renewed six times.

Belfast.—It was the intention of the Corporation to use hardwood some time ago, but the price, at the time, was prohibitive. The use of wood pavement in the main streets of this city is felt by many to be a growing necessity.

Blackburn.—The streets of this town are exceedingly well kept. The borough engineer, Mr. Stubbs, has laid a considerable quantity of Jarrah wood during the last two years and is well satisfied with the results.

Bolton.—Some creosoted beech blocks have been laid by the Corporation, but complaints have been made of their slipperiness. It is said that the horses of Lancashire towns are not suitably shod for wood pavements.

Brighton.—The Corporation has laid a number of streets with Jarrah during the past two-and-a-half years, and the surveyor, Mr. May, is very well satisfied with the result. He lays his blocks dry and grouts with pitch.

Bristol.—In 1895 the city engineer, Mr. Thomas Henry Yabbicom, A.M.Inst.C.E., submitted a report to the Corporation, strongly recommending the use of hardwood paving. Since that time a large quantity of Jarrah and Karri has been laid in the streets of that city, and has given general satisfaction.

Bury.—The surveyor, Mr. Cartwright, hopes that his Council will favourably entertain the proposal to introduce wood paving into Bury.

Canterbury.—About eighteen months ago some 4 in. Jarrah blocks were laid in this city. From the appearance of the street and according to the opinion of the assistant surveyor, Mr. Dore, the wood appears to be wearing well.

Cheltenham.—The surveyor, Mr. Hall, considers that Jarrah is too good to be used for paving. He, however, proposes to try a section at a favourable opportunity. The streets of this fashionable spa would certainly be the better for the introduction of wood in the place of macadam.

Derby.—The Corporation is about to try tar macadam, and is not, at present, in favour of wood.

Devonbury.—Hardwood paving has been in use in this town during the last eighteen months, and the surveyor, Mr. Dearden, is, so far, fully

satisfied with the result. It was laid with open joints, with strips of lath inserted, grouted with pitch.

Dover.—The Corporation has been using Jarrah for the past four years. There is a considerable quantity of 4in. blocks being laid in connection with the extension of the electric traction system. The borough engineer, Mr. Stillgo, is of opinion that blocks 7in. or 8in. in length would do as well as 9in. He is strongly in favour of wood paving.

Dundee.—The streets of this city, as in Aberdeen, urgently need to be paved with wood. Two of the main thoroughfares are about to be laid with hardwood in connection with the electric trams. The city engineer, Mr. Mackison, and Mr. Longayr, chairman of the Roads Committee, are very desirous of giving Western Australian hardwood a trial.

Eastbourne.—The borough engineer, Mr. Gloyne, is desirous of introducing the use of hardwood paving, as he thinks it will be a great improvement to the streets and roads of this thriving seaside resort.

Folkestone.—Some hardwood paving has been laid by the Corporation and has given satisfaction. But the gradients are too heavy for an extensive use of the system. The surveyor, Mr. Nichols, thinks highly of Jarrah.

Gloucester.—The Corporation is likely to use a large quantity of hardwood in connection with the extension of its electric tram system.

Goole.—It is intended, shortly, to lay one or more streets in this town with Jarrah.

Harrogate.—The surveyor, Mr. Stead, tried a section of Karri, but found that the expansion was very great. The main objection, however, to the use of hardwood paving by his Council arises from the expense. Tar macadam is thought to be sufficient for the comparatively light traffic, while it is considerably cheaper.

Hastings.—The Corporation has been using hardwood paving for the last four years. The surveyor, Mr. Palmer, lays with close joints and is well satisfied with the wood. He is laying 4in. blocks.

Lancaster.—The surveyor, Mr. Cook, tried to obtain Jarrah in 1898, but found he could not then rely upon a continuous supply. He has used Scotch beech blocks, but would prefer to use Western Australian hardwood. He will probably do so when further wood paving is required.

Leeds.—A considerable quantity of Jarrah blocks has recently been laid. Mr. Prince, the highway surveyor, is in favour of hardwood paving, so far as his experience goes. He thinks that 7in. or 8in. blocks would probably suit streets with heavy traffic as well as, if not better than, 9in.

Leicester.—The surveyor, Mr. Mawbie, has laid both Jarrah and Karri, with very satisfactory results. He has tried various systems of laying. Further and considerable extension in the use of Western Australian hardwood paving is anticipated.

Llanelli.—The streets of this growing and progressive town sadly need improvement. The surveyor, Mr. Watkins, and the chairman of the District Council, Mr. Trubshaw, will beglad to introduce wood paving.

Luton.—The same may be said of the streets of Luton. The surveyor, Mr. Evans, says that a little hardwood is used at a few of the crossings, but more is needed.

Manchester.—Various trials of hardwood have been made in this city, with, apparently, unsatisfactory results. It is said that the atmospheric conditions, the heavy traffic, and the local method of horse-shoeing are against the use of wood paving. It is found, however, that the streets which had been laid with wood do not appear to be well scavenged; and, in view of the necessity of this being done, the opinion is expressed that the test has not been so complete as it might have been.

Middlesbrough.—At present tar macadam, composed of local slag, is largely used in the streets of this town. But, owing to the heavy traffic, the result cannot be regarded as satisfactory. Enquiries have recently been made as to hardwoods, and the surveyor, Mr. Baker, will be glad to make a trial of Jarrah or Karri.

Penzance.—The surveyor, Mr. Latham (nephew of Mr. Baldwin Latham), who has recently come from Margate, speaks highly of

Jarrah. A section which has been laid in one of the streets of Penzance is giving every satisfaction.

Preston.—The surveyor, Mr. Cookson, is not in favour of wood paving. He has similar objections to those of Manchester. He has tried some special paving bricks, holed for and filled with wood, but the result is unsatisfactory.

Southampton.—Large quantities of Karri blocks are being laid in this town in connection with the electric tram system. The surveyor, Mr. Bennett, favours 5in. blocks, laid with $\frac{1}{2}$ in. joints.

Sunderland.—Jarrah is used at a few crossings. The surveyor, Mr. Moncur, says that he has had complaints about the slipperiness of the wood, but he thinks if it were more generally used the objection would disappear.

Swansea.—The streets of this town, like those of Llanelli, would be greatly improved by the introduction of wood paving. The surveyor, Mr. Bell, would be glad were his Council to take the matter into their favourable consideration.

Wakefield.—A considerable amount of hardwood paving has been laid in this city, and with very satisfactory results.

Worcester.—About two-and-a-half years ago a section was laid with Jarrah, and some Scotch beech blocks were also tried. The latter are wearing badly but the former are giving satisfaction, and the surveyor, Mr. Caink, hopes that when the electric tram system is adopted in the city the use of Western Australian hardwood will be considerably extended.

There are many provincial towns, other than the above, which have used, and are using, Western Australian hardwood, and from which the testimony is equally favourable to hardwood paving. Among these are the following:—Accrington, Barnsley, Bath, Birmingham, Blackpool, Bradford, Brentford, Brixton, Chester, Glasgow, Hartlepool (W.), Harwich, Hereford, Huddersfield, Hull, Ipswich, Liverpool, Londonderry, Loughborough, Newcastle-upon-Tyne, Norwich, Nottingham, Oldham, Peterborough, Plymouth, Ramsgate, Romford, Sheffield, Southend, Taunton, Wokingham, Worthing, Yarmouth, and York.

Summary.

Methods of Laying.—In a large number of instances the blocks are laid close, dipped in pitch, and grouted with pitch. By pitch is usually meant a composition of pitch and tar. In some cases one side and one end of each block are dipped, and in others the bottom half of the block is dipped. Some excellent results have been secured by laying the blocks dry and carefully grouting with pitch, and by dipping in pitch and grouting with cement and sand. The borough surveyor of Leicester, Mr. Mawbie, tried four methods of laying—(1) with $\frac{1}{2}$ in. joint, (2) with $\frac{3}{4}$ in. joint, (3) with close joint—all grouted with cement and sand—and (4) with close joint grouted with pitch. He states that he finds the last to be much the best method.

Size of Blocks.—Some surveyors believe that a better pavement would be made with blocks 7in. or 8in. in length than with the customary 9in., as the camber of the road would be better preserved and the blocks be kept more even. Opinions vary considerably as to the depth of the blocks. Many surveyors who formerly used 5in. or even 6in. are now using $4\frac{1}{2}$ in. and some 4in. It is thought by some, however, that a depth of 4in. does not afford a sufficient "key."

Buckling of the Blocks.—It is considered that the crowning or buckling of the blocks is largely due to the difficulty of making and keeping an even pavement, the remedy for which lies, mainly, in efficient laying and in careful supervision.

Slipperiness of the Blocks.—It is found that when the blocks are kept clean and, in bad weather, are carefully sanded, there is very little cause of complaint as to their slipperiness.

Soft Wood versus Hard.—It is stated that, for paving purposes, soft wood has an advantage over hard, because it affords a better foothold for horses, and makes, on account of its "burr," a more even pavement. But it is universally acknowledged that among the advantages which hardwood possesses compared with soft are the following:—(1) It is more durable,

(2) it absorbs less moisture and dries more quickly, (3) it is, therefore, less slippery, especially when the soft wood becomes greasy, (4) it gives off less dust in dry weather, (5) its sanitary character (a matter of great importance) is, in consequence, far superior, and (6) it is less costly to keep clean.

General Conclusions.—The particulars given in this report and the general evidence on the subject prove that, in the judgment of a very large number of experienced surveyors, Western Australian hardwood blocks, well cut, true to gauge, laid on an efficient system, and carefully supervised, both during and after laying, constitute for city and suburban thoroughfares a very excellent paving.

THE HELLENIC SOCIETY.

THE annual meeting of the Hellenic Society was held on Thursday last, in the rooms of the Society of Antiquaries.

The President, Sir Richard Jebb, M.P., said the year had been marked by several events of interest in relation to Hellenic studies. At Phylakopi the British School had been completing its excavations, and the results would shortly be published in a special supplement to the "Journal of Hellenic Studies." The British Museum had published the volume describing the excavations at various sites in Cyprus, of which the most important was Enkomi. The Germans had been digging at Miletus, and the Austrians had been conducting excavations at Ephesus. But the most interesting and important result of the year in the field of early Hellenic archaeology was represented by the discoveries made by Mr. Arthur Evans in Crete.

Sir William Richmond said that the other day at a dinner a gentleman had given him £250 for the work in Crete, and if the Society would pay for his journeys there and back he would gladly go himself to Crete to take copies of the wall paintings and to do his best to preserve what remained.

Mr. Arthur Evans said that last year a fund for exploration in Crete was started; but only a small amount was raised. Mr. Hogarth, who was with him, had done good work. Mr. Evans then described in detail the excavations of a large palace—including the propylea. Digging down seven metres he had come to traces of neolithic deposits, and it seemed that there was a great superimposition of the works of a much later civilisation. In a succession of large magazines great jars resting on pavements were discovered. Underneath were two stone cists lined with lead at two depths. He was thus led to the conclusion that treasures would be discovered at a still greater depth. There were traces of a great catastrophe at an early age, and the whole site—though at the time of the destruction the buildings were plundered—had from that time been left undisturbed. The most interesting part was at the north-east, where frescoes were discovered as fresh as those of Pompeii, from which, however, they were separated by about fourteen centuries. Here there was what might have been a council chamber or throne room of perhaps unparalleled antiquity. On other walls were frescoes of flowers, water plants, running water and fishes. There was also a part of a Mycenaean shrine—with fresh colouring—like one discovered by Schliemann. Beyond these rooms were the northern propylea with the remains of a great bull, of which the head and a large part of the body were brought out—suggesting the Minotaur. Other artistic remains disclosed a picturesque style not hitherto associated with that remote period. Funds were needed, and he was glad to hear Sir William Richmond's announcement; he had had to bear the brunt himself, and would be thankful for help.

Competition for Proposed Bridge across Sydney Harbour.—The time for receiving designs and tenders for this bridge has been extended from August 1st to noon on September 1st next both for London and Sydney. Particulars of the competition will be found on p. 56 of our issue for February 28th last.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Buildings around Bradford.

BRADFORD.—STUDENT writes: "I should be very glad if you could give me the names of a few domesticated (*sic*) buildings within an easy radius of Bradford that are worth measuring."

We are always willing to help our correspondents as much as we possibly can, but we hardly think it devolves on us to tell persons living in Bradford the names of "domesticated" buildings in and around that city. We must therefore ask our querist to apply to someone a little nearer home.

A Question about Varnished Wallpapers.

LONDON, S.W.—A.R.I.B.A. writes: "I specified in a house-repairing job that the walls should be stripped and repapered at so much the piece. The builder has stripped all the walls excepting those covered with a varnished paper, which he says will require potash for its removal, and even then will bring off the setting coat from the plaster. Is this a reasonable excuse, or should I insist on the specification being carried out? What is the custom in the trade?"

We have never heard of the plaster trouble before, though the paper will undoubtedly be more difficult to remove than an ordinary unvarnished one. If you wish the paper to be removed you can insist on its being stripped. Hot soda-water will be required and care must be taken to protect the skirtings and frames.

Power of District Council to Refuse to Pass Plans.

NORWICH.—A. J. writes: "Plans of new houses on a small estate have been submitted to a district council for approval. All roads are drawn, and are admitted by the council's surveyor to be of the required width. The council, however, refuse to pass the plans until the roads are actually made. Can they legally do this? The construction of the new roads will necessitate the pulling down of paying buildings, and as the estate may develop slowly it is desired to leave these up as long as possible."

Section 158 of the Public Health Act, 1875, provides that where notices and plans of intended works are required by any by-law of an urban authority to be laid before that authority, the authority shall, within one month after such notices and plans have been delivered or sent to their surveyor or clerk, signify in writing their approval or disapproval of the intended work to the person proposing to execute it. The above-named section applies in all urban districts, and in rural districts where Part III. of the Public Health Act Amendment Act, 1890, has been adopted or has been put in force by order of the Local Government Board. "A. J." should ascertain if the said section applies in his case. If so, the authority cannot prevent his proceeding with the work after the period for approving or disapproving the plans has elapsed.

G.H.B.

Devonshire Building Stones.

LABORE ET PERSEVERANTIA writes: "Which would be the best and cheapest stone to use for a church building in Devonshire? Which would look the better—bricks with stone dressings or granite with stone dressings?"

Devonshire being a large county any remarks which would perhaps apply at, say, Plymouth would be rather misleading perhaps at, say, Barnstaple. Taking the county generally, I

should say you cannot do better than use the local ragstone as facings to your walls. This may be used rock-faced or axed and laid in random or drop courses; it would probably cost less than brickwork in Devonshire. The cheapest kinds of stone for external dressings would be Monk's Park Bath stone or Ham Hill stone. Monk's Park would be the cheaper and can be obtained ready worked to detail from the Bath Stone Firms, Bath. Ham Hill stone can be obtained from Messrs. Trask, of Norton, Somerset, also ready worked. The objection to Ham Hill stone is the delay invariably experienced in getting delivery. In point of colour it is to be preferred to the Monk's Park. I should recommend the use of granite for copings and plinths. The granite is a grey colour, somewhat similar to Perth, but usually of a larger grain. In some parts granite might be obtained for less than Ham Hill stone if the details are plain. There is a local stone known as Polyphant, which might be used internally in conjunction with Corsham Bath stone. Polyphant can be obtained ready worked from Mr. Nicholls, Polyphant, Launceston. I should not recommend the use of brick for your work. Get samples of ragstone and granite dressed in various ways, and prices, from some Plymouth and Exeter masons or builders.

G. H. J.

The Projection of Shadows.

LOUGHBOROUGH.—STUDENT writes: "What are the names and prices of the best books on the subject of casting shadows on perspective drawings?"

The best books are: "Sciagraphy, or Parallel and Radial Projection of Shadows," by R. Pratt, price 6s. post free from Mr. B. T. Batsford, 94 High Holborn, W.C., and "Gwilt on Shadows" (1833), price 4s. 6d., post free.

Public Electric Lighting.

ELGIN, N.E.—ARCHITECT writes: "What publication would most readily give an amateur a general knowledge of the technical terms contained in an expert's report on electric lighting, or what text-book would you recommend for reading up this subject in connection with a public scheme?"

Read "Electric Light: its Production and Use," by J. W. Urquhart, price 6s., and "Electrical Installations," by F. J. Warden Stevens, A.M.I.C.E., price 2s. 6d. Both these books are obtainable from Mr. B. T. Batsford, 94 High Holborn, W.C. The second-named book is particularly intended for the use of architects, borough surveyors, &c.

Books on Architectural Ornament.

RICHMOND.—T. H. S. writes: "Please name two or three good works on the ornament of the various architectural styles."

"A Handbook of Ornament," by F. S. Meyer, revised by Hugh Stannus F.R.I.B.A., price 10s.; "A Manual of Historic Ornament," by Richard Glazier, A.R.I.B.A., price 5s. net. These two books, which are the best on the subject for students' use, can be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

Borough Surveyorships.

HAWICK.—STUDENT writes: "I am an architectural draughtsman, and have been called to fill a temporary situation in a borough and county surveyor's office in a provincial town. I shall be glad if you can advise me how I can best further my knowledge of the duties connected with the carrying out, or superintending of, the various classes of work in connection with such a position. I refer more to what I can learn by study rather than by observation or experience. If you know of any books on drainage schemes, or such other works as you think may come under my curriculum, kindly mention them."

The best book our correspondent can have is the "Municipal and Sanitary Engineers' Handbook," by H. Percy Boulnois, third edition, price 12s. It comprises the whole duties of a borough surveyor. Mr. B. T. Batsford, 94 High Holborn, W.C., will supply it.

The "Berliner Architekturwelt."

HEATON.—J. L. writes: "Where can I obtain a specimen copy of the 'Berliner Architekturwelt,' recently reviewed in your columns?"

The architectural paper in question is published by Ernst Wasmuth, Markgrafenstrasse 35, Berlin, W., 8. The yearly subscription for foreign subscribers is 24 marks (24 shillings); the issue is monthly. We do not know whether single copies are obtainable, but this could be ascertained by writing to the publisher.

London Clubs.

LIVERPOOL, J. W. F. writes: "Please say what club-houses—social and political—have been built in London within, say, the last ten years. Which clubs of the old established ones are considered the most perfect from an architectural point of view?"

We do not think that any club of importance has been erected in London within the last ten years: the Junior Constitutional Club in Piccadilly is probably the latest. The Athenæum Club in Pall Mall is a fine building, though it has not been improved by the storey recently added. It was designed by Decimus Burton, and was completed in 1829 at a cost of £351,000. It has on the front a frieze reproduced from the fragments of the frieze of the Parthenon now in the British Museum, and over the doorway there is a large figure of Minerva, by Bailey. The Reform Club, also in Pall Mall, is a successful copy (by Sir Charles Barry, 1795-1860) of the Farnese Palace at Rome. A little farther on is the Carlton Club, originally built in the Grecian style from designs by Sir R. Smirke, but almost entirely reconstructed in 1847 by his brother Sydney, who took the library of St. Mark's, Venice, as a model. The façade is 130ft. long and has a double row of pillars of Peterhead granite. The Travellers' Club, adjoining the Athenæum, is Italian in style, and was built in 1832 from designs by Sir Charles Barry. At a corner of Waterloo Place stands the United Service Club, built in 1823 from Nash's designs. It has a Roman Doric portico with Corinthian columns supporting a massive pediment. The Palazzo Cornaro and St. Mark's library furnished models for the Army and Navy Club at the corner of George Street. The Conservative Club in St. James's Street is in the Palladian style and was erected in 1849 on the site of the "Old Thatched House Tavern." Sydney Smirke and George Basavi were the architects. A description of the Constitutional Club in Northumberland Avenue (the National Liberal is also *clo e by*), by R. W. Edis, will be found on pp. 72 and 74 of our issue for September 6th, 1899, and a small illustration of it in the issue for September 20th.

Remuneration and Old Materials.

HALIFAX.—FAIRATION (as far as we can make out) writes:—"When the terms are arranged on the basis of a percentage on the outlay, is not the architect entitled to reckon his commission upon the total cost of the works (valued as if erected by a builder) and of new materials, according to the Institute schedule? The legal adviser to my client says that the value of old materials must not be reckoned."

This postcard is practically illegible. I understand, however, that the question is whether, when the terms arranged between architect and client are that the architect is to be remunerated by a commission on the outlay, the commission is to be calculated on the total cost of the works valued as if executed by a builder and of new materials. I do not think so. I think if old materials are used their value must be taken into account as old materials and not as new materials. If these happen to belong to the building owner, their use in the building costs him as much as he could get for them; if they do not belong to him, they cost him as much as he has to pay for them.

H. P. B.

[We shall feel obliged if "Fairation" will in future write less in the manner of the Lord's Prayer crowded on a threepenny piece. Querists should always try to make their statements as concise as possible, and should not include (as they often do) a lot of extraneous matter.—ED.]

THE BANISTER FLETCHER BURSARY.

THIS Bursary, of the value of twenty-five guineas, is founded for the promotion of the study of London architecture of the last two centuries since the Fire, and for the preservation of records of buildings likely to be destroyed.

It will be awarded to any member of the profession (including non-members of the Architectural Association), without limit of age, who shall submit the best selection of measured drawings, not necessarily prepared for the purpose of this Bursary, together with a short descriptive report of the buildings to which they refer, and accompanied by three testimonials. The drawings, report, and testimonials must be delivered addressed to the hon. secretaries of the Architectural Association, 56 Great Marlborough Street, W., before 1 P.M. on Saturday, July 28th, 1900. No award will be made if the drawings are not of sufficient merit.

The successful candidate will be required to prepare a set of accurate measured drawings of one of the buildings of the prescribed period to be selected for study. He will be at liberty to suggest his own subject, under the sanction of the prizes sub-committee, with whom the decision as to the building to be studied in each year will rest. All the drawings must be executed in black ink and be delivered flat, and are to consist of plans, sections, and elevations to $\frac{1}{2}$ in. scale with $\frac{1}{4}$ in. and full-size details, and a perspective sketch. The rough sketches and measurements made upon the spot are to be also submitted. A descriptive report upon the building must accompany the drawings, dealing with historical facts and special features of its construction, materials, planning, &c.

The committee is to have the right to publish all or any of the drawings and the report.

Very accurate drawings will be required, the object being to obtain as complete a monograph of the selected building as possible, and in a form as far as possible that of a series of such records. Ten pounds will be paid on the award being made, and the balance upon the successful candidate's work being approved by the Prizes Committee.

As a guide to candidates a few of the many interesting works of the last two centuries may be mentioned as follows:—*Wren*: Westminster Dormitory; Christ's Hospital, old portion; a City Church; Morden College, Blackheath; Kensington Palace. *Hawksmoor*: St. George's in the East. *Vanbrugh*: Greenwich Church. *Varley*: Spenser House. *Earl of Burlington*: Alpine Club; General Wade's House. *Dance*: Newgate Prison. *Samuel Ware*: Burlington Arcade. *Ripley*: Admiralty Board Room. *Adam*: Sion House; Adelphi, interior work; Stratford Place. *Sir Robert Taylor*: Pelican Offices; Ely House. *Sir W. Chambers*: Somerset House; Kew. *Holland*: Dover House; Brooks Club. *Wyatt*: Stafford House. *Burton*: Hyde Park Screen; Villas, Regent's Park. *Sir John Soane*: Museum; Bank; Dulwich Galleries. *Hardwicke*: Great Hall, Euston Station. *Sir Charles Barry*: Clubs; Keyham Dockyard; Entrances, Pentonville Prison. *Cockerell*: Work at Bank of England. *Pennythorne*: London University. *Unknown Architects of the period*: Old houses of city merchants in neighbourhood of London.

The lesser-known subjects not hitherto published may also be recommended to the attention of candidates. Interesting street façades and houses will be found still remaining, as in Soho Square, Great Portland Place, &c. Any candidate aware of such examples, or the existence of special facilities in respect of any particular work of the period is invited to give particulars of the same, accompanied, if possible, by photographs, in sending in his application.

A Marble Memorial in St. Patrick's Church, Wapping, has been erected by Mr. Henry Price, of Chelsea, to the memory of the late Charles Willcock Dawes and his wife, founders and benefactors of the church.

KING'S COLLEGE, LONDON.

PRIZE LIST.

ON July 3rd Professor Dicey, LL D., distributed the prizes and certificates gained by students at King's College.

In the division of Engineering, Architecture, and Applied Science of the Faculty of Science the following have been recommended for the Associateship:—L. C. Benton, W. A. P. Brookes, D. R. H. Browne, G. H. Lovegrove, W. Marden, L. G. Nunes, J. D. Plumpton.

Scholarships and Exhibitions.—Sambrooke: W. J. Marlow; Engineering Entrance: W. J. Marlow, A. H. Imber, and W. A. Sadgrove; given by the Clothworkers' Company, Science Exhibition (Senior): P. C. Kingsbury.

Carpenters' Company Prizes.—Architectural History (3rd year)—Gold medal and prize of £3 in books, Harry Prince. Silver medal and prize of £2 in books, G. H. Lovegrove. Architecture and Building Construction—Silver medal and prize of £2 in books (2nd year), J. R. P. Rowley. Bronze medal and prize of £1 in books (2nd year), R. W. Edwards. Silver medal and prize of £2 in books (1st year), W. J. Marlow. Bronze medal and prize of £1 in books (1st year), O. C. Thompson. Building Construction—Professor's prizes for best note books, first, second, and third years, not yet awarded. Architectural History (3rd year)—Professor's prize not yet awarded.

Mr. C. S. Campbell won one of the Engineering Society's prizes for a paper on sewerage and sewage disposal works at Hampton.

Certificates:—Building Construction (3rd year), N. A. Leech (Occ.), G. H. Lovegrove and H. Prince (sq.), certificates of distinction; W. A. Sadgrove (Occ.) and J. Parlett (Occ.), certificates of merit; (2nd year) G. W. Rogers (Occ.), certificate of distinction; F. M. B. Rosenthal, C. W. Wartze, H. A. Skelton, H. P. S. Wise, R. Johnson, J. E. Doyle, R. Mac-Gill Wartze, and J. R. Thuraingham, certificates of merit.

Architectural Specification: G. H. Lovegrove, certificate of distinction; W. A. Sadgrove (Occ.), H. Prince, and G. W. Rogers (Occ.), certificates of merit.

Architectural Professional Practice: H. Prince, W. A. Sadgrove (Occ.), and G. H. Lovegrove (sq.), certificates of distinction.

EVENING CLASSES.

The following awards have been made to students attending the evening classes:—

Given by the Clothworkers' Company (metal-work), G. T. Jolland.

Given by the Clothworkers' Company (wood-work), C. A. Colyer.

Given by the Carpenters' Company: Building Construction: silver medal and prize of £3 in books, F. Hartnoll; bronze medal and prize of £2 in books, F. J. Jones; certificate of distinction and prize of £1 in books, C. A. Colyer. Sanitary Science: Alderman Sir Faudel Phillips' medal, G. H. Spears. Constructional Drawing: certificate of distinction and prize of £3 in books, F. J. Jones; certificate of distinction and prize of £2 in books, C. H. Wheeler; certificate of distinction and prize of £1 in books, A. Bradburn. Quantities: certificate of distinction and prize of £3 in books, A. Bradburn; certificate of distinction and prize of £2 in books, J. D. Robertson; certificate of distinction and prize of £1 in books, A. Miles. Architectural History: silver medal and prize of £2 in books and prize of 10s. in books for architectural sketching, H. Prince; bronze medal and prize of £1 in books and prize of £1 in books for architectural sketching, R. C. Wiles; certificate of distinction and prize of £1 in books and prize of 10s. in books for architectural sketching, G. H. Lovegrove. Architectural History: T. H. B. Scott, certificate of merit. Building Construction: T. G. Pallantine, H. G. C. Brewer, and A. Bradburn, certificates of distinction; C. H. Wheeler and P. B. Sands, certificates of merit. Constructional Drawing: H. Spicer, certificate of distinction; F. J. Cox, E. J. Gee, and R. G. Ballantine, certificates of merit. Quantities: F. C. Moon and W. S. Wilson, certificates of distinction; F. Davies, W. Fenn, and H. Byron, certificates of merit.

Professional Practice.

Lowestoft.—Messrs. Isaacs and Florence were the architects of the new Empire Hotel which has been built for Messrs. Spiers and Pond, and Messrs. William Johnson and Co., L'd., of Wandsworth Common, were the builders. It is situated on the high Kirkley Cliff at the southern end of the town, and has a sea frontage of more than 500ft. The gardens are three acres in extent, and include lawns and greens for tennis, croquet, bowling, and other forms of recreation. The hotel itself is built of red bricks with Ancaster stone dressings, and comprises four floors and a basement. From the lofty tower surmounting the building a view extending almost to Norwich may be obtained. Inside, the hotel has been tastefully furnished and decorated by Messrs. Smee and Cobay. On entering the building one notices first the large grand hall, opening from which are the *salle à manger*, restaurant, drawing, smoking and billiard rooms, and the library. The grand hall is panelled in wainscot. Above the panelling the walls are painted a soft cream colour. The *salle à manger* is similarly upholstered, with the exception that it is richly papered above the panelling, and the other rooms have been carried out after the same style. The billiard room is panelled in mahogany, and the drawing room is decorated in Louis Quinze style. From the grand hall a staircase of solid oak leads to the upper floors. The hotel is lighted throughout by electricity, and, in consequence of the growing popularity of Lowestoft as a winter resort, radiators have been provided for heating the public rooms and corridors. The electric light and engineering plant is contained in a detached building. On all the floors are shaded verandahs.

Great Missenden, Bucks.—After eighteen months the work of restoring the parish church of Great Missenden has been completed. It has been the continuous desire and effort of the committee, acting under the direction of the Diocesan Architect, Mr. Oldrid Scott, to retain all old features characteristic of the late Decorated and Perpendicular periods, during which the present church was built. The arcade work in the chancel, which was found in a ruined state, has been elaborately restored and carved under the direction of Messrs. Tuttle, of Lincoln, and is now believed to be an exact reproduction of the old work. Beneath this arcading is a beautiful little door, with particularly finely-moulded jambs, which, with the abbot's door opposite to it in the south wall, has been uncovered after having been blocked up and plastered over for centuries. At each side of the chancel is a cleverly-carved string course, under which, on the north side, has been opened out the leper window, glazed with all the pieces of old stained glass that were found in various parts of the church. The holy table is of oak, carved by Mr. Robinson, of London. So also are the clergy and choir stalls, carved by Messrs. Bridgeman, of Lichfield. The floor of the chancel is paved with encaustic tiles, specially reproduced for this restoration by Messrs. Godwin, of Withington, Hereford, being copies of the old tiles found in the Abbey grounds. Opening out of the chancel on the north side is the new organ chamber. Proceeding westwards, the aisles are paved with unglazed red tiles, broken here and there by the black marble slabs of the vaults of those buried in the church in early times, and bordered with black glazed tiles. The floor under the seats is of wood blocks. The seats are of the best Dantzog oak. The fine old pillars, which had been sadly mutilated and defaced, have been thoroughly repaired and cleaned from numberless coats of paint and whitewash. The stonework of the arches now stands clearly out in contrast with the duresco of the walls. The rough blocks at the heads of the capitals have been grotesquely carved as originally intended. The font, having been carefully repaired and placed on a stone base surrounded by encaustic tiles, stands in the centre aisle at the west end. Considerable changes have been made in the north transept. In the east wall two archways have been found and opened out



UNIVERSITY OF LONDON: NEW PASSMORE EDWARDS HALL IN CLARE MARKET.
MAURICE B. ADAMS, F.R.I.B.A., ARCHITECT.

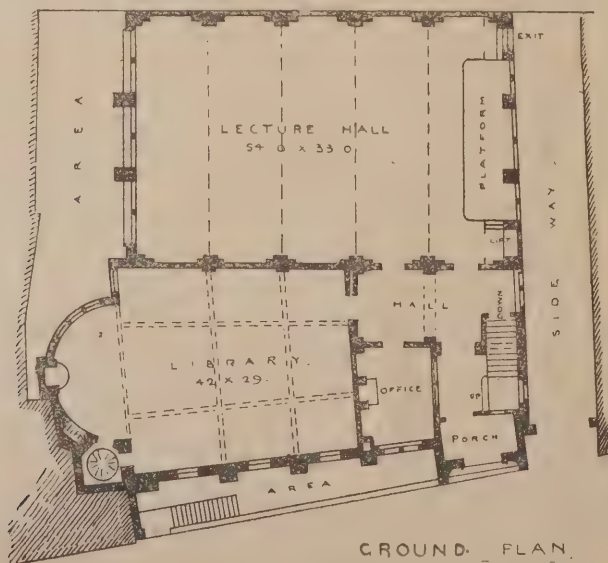
one above the other, leading by a spiral staircase to the rood loft. The west wall of this transept has been removed, and an arch and a new pillar with a carved capital substituted with most striking effect. Practically the north aisle may be regarded as new, the walls having been found to be in such a decayed condition that complete rebuilding was necessary. The contractors who have carried out the work of restoration are Messrs. Matthews Brothers, of Winslow, the stonework having been specially in charge of Messrs. Wise, of Winslow, and the ironwork in charge of Messrs. Barford and Norcutt, of Maidenhead. It is intended to light the church with acetylene gas. About £3,800 has been expended.

London.—We illustrate on this page the new home of the Faculty of Economics and Political Economy in the University of London, now being erected on a site in Clare Market. On the ground floor there will be a lecture-hall, 54ft. by 33ft. and 21ft. high, and a library.

reading-room running up through two floors. The stack rooms are in the basement, and will furnish shelvings for 100,000 volumes. Cycle shelters, cloak-room, and pantry accommodation are also provided in the basement. The irregular shape of the site has been utilised in such a way as to ensure symmetrical apartments; the odd outline of the land extending behind the adjoining premises in Clare Market is occupied by the apsidal end of the library, where a circular staircase and a lift will connect it with the lower and top floors of the building. No light could be obtained from the south and east sides of the site; consequently a large area had to be formed for this purpose, and in this way sunshine will be obtained for the rooms in the front of the building, which faces north. An iron gallery extends round the reading room at the mezzanine level, and in this floor the clerk's general office is placed, with an enquiry office below next the entrance. The principal's room is on the first floor. Here the larger classrooms for the school will be located, with others on

the second floor. There, too, are placed the students' common room, teachers' common room, lecturers' rooms, lavatories and closets for both sexes. On the third floor the apartment for the housekeeper, librarian's work and filing rooms occupy the space. There is also a large airing yard in connection with this floor, an iron bridge spanning the space between the two rear wings of the building. On the west side of the hall a 10ft. way will give light and means of egress from the hall by way of the emergency exit. Adjoining will be the Institute, of which Mr. Justice Grantham is the chairman, and which is to be erected in memory of the late Right Hon. Mr. W. H. Smith, M.P. The lecture theatre of the Passmore Edwards Hall, in addition to the large windows at either end, will have a top light in the central bay of the arched ceiling, so that the illumination will be well diffused; side windows were impossible, owing to the adjoining properties. The trustees of the institution are Dr. Creighton, Mr. Haldane, Q.C., M.P., and Mr. Sidney Webb, L.C.C. The main cost of the fabric has been provided by Mr. J. Passmore Edwards. The design of the building was chosen in a limited competition, the plans submitted being reported on by Dr. William Garnett, the secretary of the Technical Education Board of the London County Council. The referee in his report pointed out that more than 80 per cent. of the total cubical contents had been utilised for useful purposes. The whole of the main staircases and the flooring throughout is in concrete, by Messrs. B. Ward and Co., of Westminster. The exterior fronts will be faced with Messrs. Lawrence and Sons' orange-red bricks, the porch entrance will be in Norwegian granite and Portland stone and Hopton Wood steps, and tympanum for the dedication inscription. The masonry will be in massive scale, and sculptured figures of "Knowledge" and "Power," by Mr. Nathaniel Hitch, will flank the entrance. Broseley tiles, by the Coalbrookdale Company, will cover the roof. Messrs. Burt and Potts' metal casements will be used for the mullioned windows. Mr. Howell J. Williams, of Bermondsey Street, S.E., is the builder, and the architect is Mr. Maurice B. Adams, F.R.I.B.A. The cost of the building, including the value of the site and providing fittings, will be about £30,000.

Merthyr.—The new workhouse infirmary which has been erected from the designs of Mr. E. A. Johnson, of Abergavenny and Merthyr, fronts the south-west, and has a width of 240ft. It is built of the best Ebbw Vale yellow brick, with stone dressings from Darbydale, in Derbyshire. On the left stand the women's wards, which have two floors, and in which provision is made for forty-six beds, there being an allowance of ground for future extension. The administrative block—a three-storied building—occupies the central position. On the ground floor of this block are two rooms for the nursing staff, a room for the medical officer, a dispensary, and an operating room. At the rear is the kitchen block, the



GROUND PLAN



FIRST FLOOR PLAN

kitchen being fitted up with steam cooking apparatus fixed by Messrs. Williams and Son, of Cardiff. On the first floor are lying-in and labour wards, containing ten beds, and on the second floor are the nurses' bedrooms. The men's wards—which, like those for the women, have only two floors—are situated on the right, and provide accommodation for seventy beds. The administrative block is connected on either side with the other two by a roofed open corridor. Each particular ward has its separate bath and lavatory facilities. Messrs. Thomas Watkins and Co., of Swansea, were the builders. The original contract price for the building, apart from the kitchen block—which was the subject of a separate letting at £1,598—was £11,097, but this amount has been exceeded. The furnishing has been carried out by Messrs. Ben Evans and Co., of Swansea, at a cost of nearly £1,300.

Bristol.—A new wing has just been added to the Nurses' Home in Turell Street in connection with the Bristol Royal Infirmary. The entire structure contains bedroom accommodation for 93 nurses, and to a great extent the nurses have separate rooms. There are also recreation and reading rooms, superintendent's sitting-room, cloak room, box room, and numerous bathrooms, in addition to kitchen and domestic offices. The bedrooms of the new part are arranged four storeys high on each side of an L-shaped corridor, and they are approached by fireproof staircases. An external fire escape is also provided, and the roof and corridor are of fireproof construction. The heating of the building is by hot-water pipes, and the ventilation of each room is effected by flues communicating with a central extracting shaft. The whole of the building is lighted by electricity. By the acquisition of an adjoining piece of land it has been found possible to form a spacious garden, sufficiently large to provide a tennis court and other means of outdoor recreation. The new building has been erected by Messrs. G. Downs and Son under the supervision of the architect, Mr. W. V. Gough, of Bristol. The cost, including an extension of the site and furnishing, together with repairs, alterations, and partial refurnishing of the older house, has been about £8,600.

Salamanca Cathedral.—A fire broke out in this Cathedral last week, doing considerable damage to the tower and nave.

Model Plans for Bradford Workmen's Dwellings.—The Building Committee of the Bradford Corporation had before them on Wednesday last two sets of plans for workmen's dwellings, prepared respectively by the chairman, Alderman Hardaker, and by Mr. O'Flynn. The houses will provide a living-room 15ft. long by 14ft. 6in. wide, with a scullery, containing a bath on the ground floor, with two bedrooms above, and a good-sized attic. The cost of building such a house is estimated at about £225, including the land. The Committee approved the plans, and decided to have them lithographed, with the intention of placing them on view in the City Surveyors' Office, for the inspection of local builders.

L.C.C. Central School of Arts and Crafts.—The annual exhibition of students work at the above institution was opened to the public on Monday last, and remains open daily throughout this week, between the hours of 12 noon and 8.30 p.m. The school, established by the Technical Education Board of the London County Council four years ago, is situated at 316 Regent Street, opposite the Polytechnic, and has been very successful in attracting students engaged in artistic crafts, nearly 600 having been in attendance during the session just closed. The work done by students includes bookbinding, silversmiths', goldsmiths', and jewellers' work, chasing and engraving, enamelling, stained glass, ornamental lead work, stone work (by architects), woodcuts in colour (by a method based on Japanese practice), embroidery, wood carving and gilding (applied mainly to picture frames), lithography, writing and illumination, and modelling and designs for various processes. 51

INDIGENOUS AND INVENTIVE ARCHITECTURE FOR AMERICA.*

By ELMER GREY.

ONE of the purposes of this organisation, as expressed in your constitution, is "to encourage an indigenous and inventive architecture, and to lead architectural thoughts to modern sources of inspiration." In commenting upon the manner in which such purpose shall be attained, in the hope that my point-of-view may not be without some value, I shall assume that the indigenous and inventive qualities in our architecture will, when obtained, appear in its style. Next, I purpose to indicate, as clearly as I am able to, the nature of this quality called style; and then I shall take up the words "indigenous" and "inventive" in their order, and attempt to show how, in my opinion, we can best go about to attain to an "indigenous and inventive architecture" in America.

The nature of an architectural style is closely akin to the nature of the personal style of an individual. In the case of the individual it is, of course, the result of his continued endeavours to improve his character. In doing so he does not ape someone else, neither does he discard the example of heroic types that have lived before him, or who are living in his own time. He attempts to discover the laws which ruled or rule such lives, and endeavours to follow similar laws in arranging his own conduct.

In much the same way is style in architecture evolved. We are not to copy past styles, neither are we to consider them useless as modern sources of inspiration. We are to try to discover the laws which governed their success, to discern how those laws should be modified to suit existing conditions, and then to apply them in the solution of our own problems. The result will be beauty, the exact nature of which we may not be able to define, but, like the quality in a man of which he is unconscious, but which others feel to be his personal atmosphere or style, it will be all the more vital and all the more precious because defying analysis.

The Laws of the Styles.

In attempting to discern the modifications to be made to the laws which governed the success of past styles we are to consider, first, our increased complexity of material requirements over those of past ages, brought about by an advanced social condition, and the means of satisfying such increased demands afforded us in improved methods of construction and in new forms of building material. We are also to consider that in all ages artists have drawn upon the work of their predecessors in seeking for inspiration, and that we are particularly fortunate in having more of such precedent to draw from and in being provided, through the art of photography and through facilitated travel, with much readier means of access to it.

These are some of the considerations that should be incorporated as modifications of the laws which governed the success of past styles and of the laws which we are to apply as aids in evolving a style of our own. Now, how can we best go about to attain an "indigenous" architectural style in America? What should be our sources of inspiration in aspiring to it? Are we, in seeking for them, to expect that they will appear only in things which refer to a building's external adornment? And even so, would we, in an appreciation of the beauty of all the architectural ornament of other times and of our many facilities for enjoying it, be likely to express such appreciation in our art, did we reject as sources of inspiration all things not American? Surely not. The sources of inspiration for an indigenous style of American architecture are not thus limited. Style is not the external adornment of a building; it is the vital quality of it which has resulted from conditions inherent in its making, and which include situation, cost, material requirements, the constructional means

available for meeting those requirements, and the ornament with which it was thought fitting to clothe it. As the modern

Sources of Inspiration

for an indigenous style of architecture in America lie in a perception of the possibilities of the sites of our structures, in a knowledge of the most advantageous method of disposing the money available for their erection, in the insight which shall discern the vital offices buildings should fulfil and the manner in which they should fulfil them, in the familiarity with the building methods and building materials best adapted to accomplish such fulfilment; and, finally, in all things which suggest the forms of ornament most fitting for the purpose of adorning our structures.

And now how can we have an "inventive" architecture for America? That is, a new architecture, one that did not before exist; an architecture that shall be not only distinctively American in its style, but that shall also be new in its style.

In an address before the Boston Architectural Club in October, 1893, Mr. Robert D. Andrews said: "I think it is the custom nowadays to put our conscious effort in the wrong place in the treatment of art. We put it at the end, when it ought to be at the beginning. We elaborate our superstructure, but treat the foundation as of little account." I believe that custom still prevails.

The poets never tire of calling our attention toward the Unity of Life, toward the intimate relation all living things bear to one another; and toward the fact that this relation is a far more intimate one than we generally feel it to be. Scientific research in all its ablest conclusions emphasises the same point, insists upon the

Oneness of all Nature and all Life;

upon the fact that each plant in nature is not a self-dependent organism, but that its health and its life is governed by a force which controls and sustains all living objects; upon the fact that a man is not an independent organism, but that, whether he is conscious of it or not, his fortunes are governed by a higher ambition than his own; though he is given free will to choose between the good and the bad, his final destiny will rest upon obedience or disobedience to physical, moral and spiritual laws over which he has no control.

Now, art—that is, living art, true art, art that is not merely a thing of dead forms and formulæ—is one of the most potent expressions of human life. It is the conservation culminated in material form of all the artist has had of knowledge, of skill, of experience, of character; and it is subject to the same laws which govern life, and is a part of the same great unity; so that by ascertaining how those laws operate in the production of new things, of inventive things in nature, or in life, we shall also see how they operate in the creation of new things in art.

In nature we find that a plant produces in leaves, flowers and fruit only that which it has been able to draw in another form from the earth, the sun and the air; and that its perfection and distinction of type are directly dependent upon the success with which it obtains such nourishment in qualities and quantities suited to its particular needs. And in life we know that a man can give out only that which in another form he has previously taken in; and that the distinctness of his individuality, and the value and amount of his productiveness, will directly depend upon his knowledge of the sources of power which best sustain him and upon his obedience to the laws which govern his nature.

And so it is in art. For the artist is not an independent worker having supreme control over the quality and number of his creations. He is a part of a divine order of life, from which all his efficiency springs, and the originality and sustained excellence of his work depend upon the degree to which he becomes conscious of his relation to that order, and upon his recognition of and obedience to its laws in their application to his life. Now, the

* A paper read at the Second Annual Convention of the Architectural League of America, held at Chicago in June last.

Application of Universal Law

which governs the life of an individual artist each artist must discover for himself through the process of living, but some of the laws themselves, in their wider bearing upon all artists' lives, may here be briefly enumerated. The artist, then, is, first, a man, and is to know himself and the world; that is, he is to recognise the natural equipment for work with which he has been endowed, the degree and nature of its power and also its limitation, and he is to try to discover the place it should occupy in the world's entire economy. As a man, he is also to recognise the importance of the physical side of his being, and he is to see that it is kept in the highest condition of efficiency for sustaining the work of his brain.

Then the artist is a member of a social body; and if his work is to meet the highest demands of that body, and to satisfy its best taste and judgment, he must obey the moral laws which require that he place himself in sympathy with that body. And herein enters the subject of compensation. For as a member of a social body the artist will increase in every possible way his own power for usefulness and good—and the power which rests in the wise use of money is one not to be ignored. On the other hand, if his work is to satisfy his own conscience and to secure him the largest degree of self-development, as well as to bestow the greatest benefit upon his client and to accord with the highest public welfare, he will not place pecuniary gain higher in the scale of values than he will excellence in the quality of the work he puts forth.

And now we come to the spiritual laws governing the life of an artist. We readily recognise the operation of physical and moral laws in our work, but we have yet to realise more fully that the artist is also a part of a universal spiritual order from which beauty of the highest kind has always come, and that if he is to produce a new beauty, an inventive beauty, which shall have a real and enduring charm, he must first absorb in other forms that which he creates.

What Constitutes Beauty in Architecture.

For beautiful things of lasting quality in architecture and in all the arts are not tricks of clever fancy which some fortunate ones may discover; they are the result of an assimilation of many kinds of order, and of beauty and of truth into the soul of the artist, where they undergo an unconscious process of transmutation into the creations which his imagination brings forth, and which his knowledge, his skill and his character shape into new material form. He may obtain this nourishment from all sources which he finds will enrich him—from Nature, from human experience, from religion, from literature, from painting, from the architecture of the past. But whatever sources he selects should be capable of refreshing him continuously. For the artist is constantly spending his vitality in creative work, and so must continually renew it. Both operations are equally important parts of a creative process, and should be equally instinctive habits of the artist's life. They are analogous to the workings of Nature in her method of giving birth to all living things, and such instinctive habits have always been those of the man of creative genius, through whom all true art has been evolved.

Now, the architectural style of a country is the result of prolonged endeavour on the part of architects to erect buildings which shall accord with the best taste and with the soundest judgment of a people, and though the endeavours of those architects may often be thwarted and the accomplishment of their purpose seem at times a long way off, a higher power than their own will guide the course of events and a mightier destiny than any private or public ambition will finally determine the quality and the permanence of the country's architectural style.

Important movements in architecture, such as the so-called Romanesque of Richardson, occasioned by the influence of creative men of exceptional individuality may prevail

for awhile. The demands of unhealthful social conditions, such as inordinate accumulation of wealth by classes of people who lack corresponding degrees of culture, may result in the vulgar and ostentatious over-adornment of their buildings. But the architecture of a country which will be truly representative in style, and which will endure with a lasting beauty, will voice the highest ideals of its people, and will spring from the hearts of conscientious men who have accomplished the architectural expression of its noblest national life.

The attainment of such an architecture involves a process of growth which cannot be hastened. It requires a condition of wide and deep culture in the people of a country and a corresponding degree of culture in its architects; and though we have such culture in this country, either the reconciliation between the people who possess it or the form through which it is trying to find architectural expression is not complete enough to point definitely toward the qualities which distinguish an architectural style, or the intangible nature of style prevents our recognition of as much of one as we may have.

Perhaps, unknown to us, it is taking form in the many noble architectural monuments that have been and are being built by contemporaries. For all architectural beauty which is natural and vital to the best American life will contribute to the growth of an indigenous and inventive American architecture.

To further the growth of such an architecture in every possible manner should be our ambition; our methods should correspond with the noblest methods of men who are working for the benefit of mankind in other walks of life, and our hope of success should lie in a consciousness of our relation to the divine Source of all life, of all growth and of all accomplishment.

A Case about Residential Flats.

THE case of *Rogers v. Hosegood* heard last Thursday in the Court of Appeal was brought by the trustees of the will of the late Sir John Millais, as owners of property in Palace Gate, and by W. R. Rogers, the owner of adjoining property, for the purpose of enforcing restrictive covenants against the defendant, who is now the owner of the property known as Thorney House, at the corner of Palace Gate and Kensington Gore, and proposes to build a large block of residential flats upon it. The Court dismissed the Appeal. Lord Justice Collins said:—The covenant by the vendor to build a wall, if required by Sir John Millais to do so, in order to prevent Sir John Millais's windows overlooking the adjoining plot, does not seem to us to have any bearing on the point, and we are of opinion, therefore, that Sir John Millais's assigns are entitled to enforce the restrictive covenant against the defendant, and that his appeal must be dismissed. We are of opinion that such a block of flats as it is proposed to erect would involve a breach of covenant. Though we agree that such a building does involve a breach of the covenant that no more than one message or dwelling-house should be erected or standing on such plot, and that such message should be adapted for and used as and for a private residence, we think it is also a breach of the covenant in question. Though it is certainly not one message or dwelling-house only adapted for and used as a private residence, neither does it seem to us to constitute several separate dwelling-houses adapted for and used as private residences only, within the meaning of the covenant. We think residential flats, involving the use of a public entrance and staircase, do not answer the description of private residences contemplated by the words quoted. The covenant must, we think, be construed in an ordinary or popular, and not in a legal and technical, sense; and we do not think that residential flats, though for many purposes separate dwelling-houses, come within the popular description of the class of buildings which it was intended to permit. The cross appeal, therefore, of Mr. Rogers must be allowed.

New Patents.

The following specifications were published on Saturday last, and are open to opposition until August 20th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—5,338, BLAKEMAN, ratchet braces. 7,520, McLARTY, machinery for dividing, shaping, working, or dressing stone. 12,081, GEE, means and method for jointing and fixing rainwater piping in position. 12,339, ROSENTHAL, incandescent gas light burners. 12,400, FISHER, apparatus for mixing, transporting, and dumping concrete, &c. 12,413, BHISE, flushing device and water-waste preventer. 12,453, HODGKINSON, apparatus for making ridge-tiles and attachments to clotrolls for use in making such tiles. 12,461, HICKEN, fixing door and other handles to their spindles. 12,985, SELLARS, packages of cement. 14,024, MONAHAN and BARSDORF, excess load alarm or safety appliance for use chiefly with derrick or jib cranes. 14,573, SMITH, watering-carts. 14,725, MOUNTFORD, apparatus for use in decorating ceramic ware. 15,640, GERNAET and LIBERT, process for the manufacture of artificial stone. 15,964, COADY and COADY, ceilings and ventilators for apartments and buildings. 16,332, SIDEBOTHAM and SIBBALD, apparatus for hoisting and lowering purposes. 16,604, MASON and MASON, drainers for use with domestic sinks. 17,377, EADES and ALLDAY, hoists or lifts. 17,575, BOULT (*J. Miesse and Co.*), machinery for bevelling glass. 18,257, THOMPSON (*Simmons and Bocks*), manufacture of fire-resisting and water-resisting slabs and bricks. 19,165, KERTLAND, hanging of doors.

1900.—5,758, SCHLEGELMILCH and MANN, circular saws. 7,100, HOLLUB and MIGNAL, device for fixing incandescent electric lamps. 7,131, WHEDON, apparatus for burning garbage and other refuse material. 8,158, MONAUNI and KUBALA, stoves. 8,679, SPELKENS, closets. 8,814, HENNEBIQUE, construction of walls for quays, wharves, platforms, &c. 8,928, ALLISON (*Selg, Gumtrum and Selg*), filters.

Correspondence.

Liverpool School of Architecture.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—Surely you inserted the block on p. 395 of last week's issue as a joke! The expression on the woman's face suggests the woman who lived in the shoe, while the scantiness of the children's clothing suggests a preparation for her subsequent action. Is such work really approved by the City of Liverpool?—Yours truly, ANXIOUS READER.

[It grieves us to learn that even one of the myriad readers of THE BUILDERS' JOURNAL should have been made "anxious" by the face of the lady in question. Perhaps she cannot help it. But we have no official information on the subject.—ED.]

Cast-Iron Stanchions.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—If your correspondent Mr. D. Forbes Smith, A.R.I.B.A. (see p. 412 of last week's issue), will look at a side elevation of his twin stanchion he will see that in that direction it is only equivalent to two single stanchions, and that the intermediate bracing is of no value in providing stiffness against deflection. The strength of any structure must be measured by its weakest part.—Yours faithfully, HENRY ADAMS.

The Death of Mr. A. Anderson, of Carden Road, Nunhead, at the age of 62 is announced. Mr. Anderson had of recent years, with his son, been developing building estates in the neighbourhood of Blackheath and Lewisham.

WATER FROM BELOW LONDON.

At a recent public meeting of the inhabitants of South London, Mr. Walker Moseley said the only true solution of the water question in London lay in the direction of making use of the great lake of pure water which was known to be underlying the Metropolis. He urged that the London County Council should induce every London vestry to follow the lead of Croydon, Newington, and Islington in this respect, as he said if the idea of sinking artesian wells were adopted by local authorities in one year there might be twenty wells yielding 1,000,000 gals. a day each. As compared with the great aqueduct scheme, the advantages to be gained were real purity and a saving of £20,000,000. A committee was afterwards formed for the purpose of drawing up a suitable scheme.

Mr. Moseley has since stated to a member of the press:

"It is a geological fact beyond question that there is an inclined plane of water, or a veritable lake, constantly passing away, and also constantly held in solution, in the chalk strata under London. This chalk strata is at varying depths, but always fairly accessible, below the ordinary London clay, and above the gault clay, which is impervious. Moreover, the chalk strata is to be found below any part of London and suburbs, and indeed right away to Dunstable and the Hertfordshire hills. From these hills a large and constant supply of water flows into the chalk strata, which going towards London is on an inclined plane of 13ft. to the mile. The water, as has been shown, permeates the chalk to the extent of half its bulk. So that we have practically an inclined plane of water constantly passing down the 20-mile course from, say, Dunstable to London. This water thus goes through a perfect filtration in the chalk, and a given volume of water, starting from Dunstable, takes thirteen months to reach the London chalk strata, so slow is the process of filtration.

"The quantity of perfectly filtered water always in reserve in the chalk strata under London amounts to 50 million million gallons, or at the rate of a thousand million gallons a day (fifteen years' consumption). The East London Waterworks Company have now sunk several wells, and are getting some 20,000,000 gals. a day. If the London County Council decided to have wells in all parts of London, or even say twenty wells yielding a million gallons a day, they would be well on the way to effecting a saving of £20,000,000, not to speak of obtaining a really pure supply of water."

An Architect's Action for Slander.

THE case of *Ramsey v. Ford* came before Mr. Justice Darling and a common jury in the High Court of Justice on July 2nd.

Mr. Tindal Atkinson, in opening the plaintiff's case, said his client was an architect at Sutton. At the election of the District Council in March last the plaintiff was a candidate. In the course of the election a Mr. O'Grady interested himself in the election on the part of the plaintiff. Mr. O'Grady met the defendant, who was chairman of the committee of another candidate, in the streets of Sutton, when the defendant said: "Your man is a disgrace to the town. He was the architect for those cottages in Beulah Road, which were condemned by the Council." A statement of that kind was likely to do the plaintiff injury in his election. Those statements were absolutely untrue, and the defendant did not allege that they were true. His defences were that he never uttered the words; that the words did not attack the plaintiff in his profession as an architect; and, thirdly, that it was on a privileged occasion.

After formal evidence of publication had been given, Mr. Herbert Ramsey, the plaintiff, was called and said he was not the architect of the cottages and had never seen them. In 1895 he had prepared plans for three cottages to be erected on the site in question. Those plans were sent in to the District Council and approved, but nothing further was done. In

May 1899 Messrs. Harris and Jolly, the builders, came to him with the plans. He told them that the plans could not be used. They asked him to prepare fresh plans, which were submitted to the District Council, and were passed in November 1899. Up to that he had nothing to do with the building of cottages on that site. Some cottages were pulled down on that site in July 1899, because plans had not been approved, and they were not in accordance with the by-laws. Cottages were put up under his superintendence on the spot where they had been pulled down.

For the defence the defendant was called, and said that he referred to the cottages as being a disgrace to the town, and did not use that term about the plaintiff.

Mr. Blake Odgers, for the defendant, submitted that the occasion was privileged on the ground that both O'Grady and the defendant had an interest in the subject matter; and also he relied upon the question put by O'Grady, "How was the plaintiff mixed up in the Beulah cottages?" The answer by the defendant would be privileged—*Harrison v. Bush* (5 E. and B., 348); *Wisdom v. Brown* (T.L.R., 412).

Mr. Justice Darling did not think that the occasion was privileged, and he also ruled that there was no evidence of express malice. In summing up to the jury, he said that they would need to decide whether the words were spoken of the plaintiff as an architect or as a candidate. If they were spoken of him as an architect, then they would be actionable; but if of him as a candidate, then they would not.

The jury found a verdict for the defendant.

Builders' Notes.

London County Council.—At last week's meeting of the Council the Improvements Committee reported that the greater portion of Middlesex Street was widened to 40ft. by the Metropolitan Board in 1883 in connection with the clearance of an insanitary area known as the Goulston Street, White-chapel, area, and that the Council, under its General Powers Act of 1892, extended the improvement by widening Sandy's Row, which formed a continuation of Middlesex Street. The Council also contributed half the cost of the continuation of the thoroughfare from Sandy's Row through Widegate Street to Bishopsgate Street, that work having been undertaken by the City authorities. It would be apparent, therefore, that the widening to 50ft. of a small portion of Mansell Street was alone needed to complete the line of good and direct communication from Bishopsgate Street to the Tower Bridge, and indeed to the Old Kent Road by way of the new thoroughfare now being constructed by the Council. The total net cost of the improvement proposed was estimated, after deducting recoupment, at £91,100. The report was passed without discussion.—The Building Act Committee recommended that the Council should not consent to the erection of an iron and glass shelter at the entrance to the Holborn Viaduct Hotel, as proposed. This was agreed to.—The same committee recommended that the Council should not consent to the erection of a projecting stone and granite portico or of an iron and glass pent at the main entrance of De Keyser's Royal Hotel on the Victoria Embankment, as shown upon the alternative plans submitted by Mr. E. A. Gruning. This the Council agreed to also.—The Improvements Committee reported that for some time past the necessity for the widening of Central Street, St. Luke's, had been urged upon the Council. They recommended: "That the estimate of £81,250 submitted by the Finance Committee be approved, and that subject to the Vestry of St. Luke's contributing £12,500 towards the cost of the complete improvement, the Improvements Committee be authorised to acquire from the Ironmongers' Company, at the price of cleared land, so much of their freehold as is needed for widening Central Street to 50ft. . . . between Old Street and Clarence Place." This was agreed to.

Surveying and Sanitary Notes.

Street Nomenclature.—Strange indeed is street nomenclature in the City. Ducks-foot Lane, in Billingsgate, is a corruption of the Duke's-foot Lane, signifying the time when his Grace of Buckingham had a mansion in the vicinity; and Moorfields perpetuates the fact that at one time the district was a marsh and moor, around which were fields in which the citizens of former days were wont to disport themselves.

Opening of Public Gardens at Islington.—The gardens and recreation grounds which have been acquired at a cost of £16,000 by the Islington Vestry in Market Road, Caledonian Road, adjacent to the Metropolitan Meat Market, were recently thrown open to the public by Mr. Thomas Lough, the member for the division. Originally the site of the grounds was a plot of waste ground on which rubbish used to be dumped, but the Vestry have now transformed it into a most acceptable open space, which will prove a great boon to the crowded district surrounding it.

Value of Government Property in London.—A parliamentary return has been issued giving particulars of property in London occupied by the Government. The Houses of Parliament and the Government offices in Westminster are valued at £133,963; the General Post Office, the site of which covers portions of several City parishes, is put down at £32,000; in Chelsea the barracks and other buildings are assessed at £3,500 on a total value of £12,000; the British Museum and other buildings are valued at £13,675, and the Record Office at £18,600; the Arsenal and other offices at Woolwich contribute £27,000 on an estimated total of £89,000.

The Property Market.—The freehold building site now occupied by the business premises, Nos. 18, 19, and 20 Noble Street, City, possessing a frontage of 46ft. 3in., and covering an area of 3,270 superficial ft., was sold at the London Auction Mart, Tokenhouse Yard, E.C., on Wednesday for £12,900. The freehold block of buildings, Nos. 14 and 15 Silver Street, City, otherwise Falcon Hall, which has a total frontage of more than 90ft., and covers a superficial area of 4,100ft. was withdrawn at £32,000. Much interest was manifested in the offer of the Hadham Hall estate, near Bishops Stortford, a freehold sporting and residential estate of 1,628 acres. The fine old Elizabethan manor-house and about 1,301 acres were submitted in one lot and withdrawn at £20,000, but several portions of the estate were subsequently disposed of, Wickham Hall and 501 acres realising £8,250. An important feature of last Thursday's proceedings was the offer of the Garthyngghared estate, Dolgelly, North Wales, a freehold residential property comprising a substantial mansion of Tudor design and 7.0 acres. It was withdrawn when the bidding had reached £23,500.

Masters and Men.

Cheshire Wage Dispute Settled.—The wage dispute between the builders and bricksetters of Wilmslow, Alderley Edge, and other Cheshire districts has just been settled, the masters having decided to grant an increase of a half-penny per hour; the bricksetters struck work some weeks ago for an advance of a penny. The men will now receive 9d. an hour; the increased rate of pay will affect a large number of men. Much building is now going on.

Newcastle Building Trade: Reduction of Wages.—Last week the Tyneside District Master Builders' Association and the Gateshead Master Builders' Association decided "that the time has now arrived, considering the state of trade and the fact that they are facing a falling market, before work can be resumed a reduction of 1d. per hour from 10d. to 9d. shall be made in the wages of operative bricklayers, and a new code of working rules be adopted."

Keystones.

In Wickmere Church, Norfolk, a stained-glass window is about to be erected by Messrs. Weyer and Co., of Norwich.

Birkbeck Building Society.—Last year the receipts from members' subscriptions totalled £278,000; £1,037,378 were invested.

A New Chancel to Wandsworth Parish Church is being erected from designs by Mr. Edward W. Mountford, F.R.I.B.A. It will cost £3,600.

Mr. Edgar M. Leest, architect and surveyor, of Devonport, has been elected a Town Councillor for the town in the place of the late Mr. Councillor Philp.

The Ancient Monuments Protection Bill, which was referred to on page 240 of our issue for May 9th last, has been read a third time in the House of Lords and passed.

Dangers of Sewer Gases.—On Friday last three men were killed and four injured by sewer gas in the ejector chamber of the sludge press-house at the Corporation Wharf, Southampton.

New Paris Statue.—On July 4 h. M. Loubet presided at the unveiling of a statue of La Fayette, in the Place du Carrousel, presented to France by school children of the United States.

James E. Beard and Co., Ltd.—On page 413 of last week's issue we stated that the capital of this new company was £5,000. The secretary informs us that this is not so; the capital is £11,000.

A New Wesleyan School at Illingworth is being built from designs by Mr. Arthur G. Dalzell, architect, of Halifax, at an estimated cost of £1,100. The largest room will be 40ft. by 28ft.

Cardiff Town Hall.—A protest is being made against the proposal to erect the new Town Hall buildings at Cardiff, on the ground that the present time is inopportune, the prices of building materials of all kinds being exceptionally high.

An Old Church Bell.—In the parish church at Wingrave is a fine old bell, which the Buckinghamshire Archaeological Society is seeking to have preserved. It was cast in the middle of the fifteenth century by John Danyell, of London. To preserve the bell and substitute a new one will cost £79.

Eversley Rectory.—A laudable effort is being made to preserve Eversley Rectory, the historic building closely associated with the life and work of Charles Kingsley. It is thought that the building might very appropriately be dealt with after the manner of Milton's Cottage at Chalfont St. Giles, and by degrees converted into a Kingsley Museum.

Improvements in Crewkerne Church.—New oak choir stalls, polished Devonshire marble steps in the chancel and sacrum, marble squares over the sacrum, the paving of the chancel with tiles, and other works have just been completed in this church by Messrs. Harry Hems and Sons, of Exeter, under the superintendence of Mr. Howard Gaye, architect.

Laying Out of the Grounds of the Grove Hospital.—The Metropolitan Asylums Board has accepted the tender of the Practical Landscape Gardening and Estate Development Company, of 49 Victoria Street, E.C., at the sum of £3,000, for laying out the grounds of the Grove Hospital in accordance with the plans and specification prepared by Messrs. H. E. Milner and Son, landscape architects.

Westminster Abbey becoming Darkened Inside.—This is the result, says Mr. Thackeray Turner, the secretary of the Society for the Protection of Ancient Buildings, of accepting the offers of new stained-glass windows for the old Abbey. "Even on a bright summer's day there is not sufficient light to see the beauties of its interior." He urges those interested to go and see for themselves.

Terrace Houses for Roundhay, Leeds.—We understand that the Leeds Builders, Limited, have purchased a choice plot of building land at Lidgett Park, Roundhay, on which they intend shortly to erect twenty-three terrace houses of a class for which there has been a demand in this district.

Devon and Exeter Architectural Society.—We have received a copy of the Journal of Proceedings of this society for the 1899-1900 session, and we note that there is a balance of about £19 in hand. The Journal has a good illustration of Clewe Abbey as a frontispiece. The members of this society made an excursion to Ottery St. Mary recently, visiting Cadhay House and Ottery Church.

The Old Grey Coat Hospital at Westminster, which has just been presented by the Queen with a portrait of herself, is a quaintly-built red brick house, with an old-world garden ablaze with flowers, standing in what is still known as Totbill Fields. The old board room contains many portraits of past governors; indeed, this curious old building, with its broad oaken staircase and wainscotted hall, is very much as it was in 1702.

Gray's Inn Road Workhouse.—With regard to the proposed building of casual wards on the site of the old workhouse in Gray's Inn Road, the Local Government Board suggest that the Guardians should send an architect to confer with one appointed by the Local Government Board; or, in the alternative, invite plans and submit them to the higher authority. The suggestion was to invite four architects to compete. The matter has been referred to the Building Committee.

The death is announced of Sir Thomas Farrell, president of the Royal Hibernian Academy, at his residence, Stillorgan, county Dublin. He was the son of Mr. Terence Farrell, R.H.A., and was born in 1829 and created a Knight in 1894. Sir Thomas Farrell was an eminent sculptor, and executed many statues of Irish public men. The bas-relief on the Wellington memorial, Phoenix Park, Dublin, representing the last charge at the battle of Waterloo, is an example of his work.

The Alexander Memorial.—The Czar will visit Moscow in August to lay the foundation stone of the monument to the Emperor Alexander III. There has been much difficulty in choosing a site for this memorial; but it has been finally decided to place it outside the Kremlin, at the north-east corner of the square on which the Cathedral of the Saviour stands—the corner, that is, nearest to the Kremlin, and overlooking the Moscow River. The memorial is estimated to cost about £300,000, which has been largely raised by public subscription.

Copyright in Sculpture.—At last Thursday's sitting of the Copyright Committee in the House of Lords, Mr. T. Brock, R.A., was called as a witness to speak for sculptors. He contended that in the case of a statue of an historical person, such as Cromwell, the sculptor should be allowed to make replicas, because the object of the monument was to do honour to Cromwell, and the greater the number of statues the greater the honour. There would, moreover, he thought, be no injustice to the person who commissioned and paid for the statue.

London's Gate-houses.—In the days when every man's house was his castle, not only in theory but also not infrequently in practice, a gate-house was an absolute necessity to every dwelling built on the courtyard plan. Many gate-houses still remain scattered about England; not a few still form the entrances to country mansions and colleges, while others, mostly those belonging to monastic houses, bear pathetic witness to the departed glories of the buildings they once guarded. London's gates have all disappeared, and of her once numerous gate-houses only five remain. These are St. James's Palace, Lambeth Palace, Lincoln's Inn, St. John's, Clerkenwell, and No. 17 Fleet Street—the Temple Gate-house.

Architects for Kirkcaldy Police Buildings.—The Kirkcaldy Town Council have appointed Messrs. Williamson and Inglis, Kirkcaldy, architects of the new police buildings. Dr. Rowand Anderson, Edinburgh, who was appointed adjudicator of the sixteen plans submitted, placed the plan of Messrs. Scott and Campbell, Edinburgh, first; that of Mr. Alexander Cullen, Hamilton, second; and Messrs. Williamson and Inglis's plan third. Colonel M'Hardy, of the Prison Commission, who was asked to make suggestions on the three plans, stated that the plan of Messrs. Williamson and Inglis was the one which, in his opinion, most nearly met his views in regard to internal arrangements and working.

Building in Leeds.—The annual report of Mr. William Towers, Building Inspector to the Leeds Corporation, for the year ended March 24th shows that during the twelve months 3,059 houses were built, including 16 villas, 59 semi-detached villas, 841 through houses, and 2,143 of the back-to-back description. There were also put up 1,423 buildings of a miscellaneous character. Among these were one church (Chapel-Allerton), an addition to a church, one chapel, one mission-room, six schools, nine additions to schools, one hotel, three hotels rebuilt, one hotel, additions to the workhouse, one Corporation bath, and two additions to the Yorkshire College. The total plans submitted numbered 2,784, of which 2,169 were approved, showing 9,439 buildings, of which 3,549 were houses.

Trade and Craft.

Hot-water Baths.

A warm bath is as agreeable and necessary during warm as during cold weather—but the kitchen fire which, in most houses, makes this pleasure possible has the drawback of heating the building when it is especially desirable to keep it as cool as possible. A kitchen fire is a friend when snow is on the ground and the north wind blows, but it is scarcely endurable when the thermometer stands at 90 deg. in the shade. Hence the utility of the "Lightning" geyser made by Messrs. Ewart & Son, of 346-350, Euston Road, London. This firm have, in the design of their apparatus, always kept in view the necessity of ensuring safety in use, and hold several important patents for avoiding burning, explosion, or other risks appurtenant to the "geyser" when it was first placed on the market. They have received numerous awards for their apparatus, which supplies a very safe and very convenient means of obtaining hot water. A novelty which Messrs. Ewart & Son have introduced is a bath seat; it is made in two qualities, one (called the "Necessary") costing 5s., and the other (called the "Desirable") costing 10s. 6d. This seat will fit any bath, and consists simply of a hard wood centre portion supported by arms extending over the sides of the bath.

COMING EVENTS.

Wednesday, July 11.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of the General Purposes and Finance Committee, 3.30 p.m., and of the Election Committee, 5 p.m.

Friday, July 13.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Annual Excursion to Kilkenny (first day).

Saturday, July 14.

ARCHITECTURAL ASSOCIATION.—Third Summer Visit to Mr. O. Eames Rempe's House, Hayward's Heath, and to Cuckfield Place.

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Royal Naval College, Greenwich. Boat at Old Swan Pier, London Bridge, 3.30 p.m.

ARCHITECTURAL ASSOCIATION OF IRELAND.—Annual Excursion (second day). Visit to Jupoint Abbey.

Saturday, July 21.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-UPON-TYNE.—Council Meeting. 1.30 p.m.

Saturday, July 28.

ARCHITECTURAL ASSOCIATION.—Fourth Summer Visit to Stowe House, Buckingham, and Buckingham Church.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDINGS.			
July 13	Newmarket—Station..	Great Eastern Railway Co.	Engineer, Great Eastern Railway Station, Liverpool Street, E.C.
" 13	Croydon—Sheds ..	Corporation ..	Deputy Borough Engineer, Town Hall, Croydon.
" 13	Glasgow—Bridge ..	Upper District Committee ..	G. B. Walker, 65 Bath Street, Glasgow.
" 13	Barrow—Villa ..	Corporation ..	W. M. Settle, Architect, Walney, Barrow-in-Furness.
" 13	Huddersfield—Shops ..	Stag and Robson ..	Borough Surveyor, 1 Peel Street, Huddersfield.
" 13	Pontardawe, Wales—Chapel ..	Stag and Robson ..	W. W. Williams, 63 Wind Street, Swansea.
" 13	York—Works ..	Stag and Robson ..	Penty and Penty, Architects, Lendal Chambers, York.
" 14	Donaghadee, Ireland—Villa..	Urban District Council ..	W. J. Fennell, Scottish Provident Buildings, Belfast.
" 14	Farnborough—Cottages ..	Rev. H. Lonsdale ..	W. T. Taylor, County Surveyor, The Castle, Winchester.
" 14	Londonderry—Front ..	Rural District Council ..	W. E. Pinkerton, Architect, Dermond, Londonderry.
" 14	Pontypool—Water-Closets ..	Urban District Council ..	J. Powell, Town Hall, Pontypool.
" 14	Barnard Castle—Farm Buildings ..	Rev. H. Lonsdale ..	F. H. Livesay, 167 Newgate Street, Bishop Auckland.
" 14	Bedford—Hospital ..	Rural District Council ..	M. Sharman, 1 Harpur Street, Bedford.
" 14	Consett—Cottages ..	Consett Iron Co., Ltd. ..	C. E. Oliver, Consett Iron Co., Ltd., Blackhill.
" 14	Keighley—House ..	Rev. H. J. Palmer ..	J. B. Bailey and Son, 3 Scott Street, Keighley.
" 14	Moira—Cottages ..	Rural District Council ..	W. J. Corner, Council Offices, Lurgan Union, Moira.
" 15	Lymington—Shop Front ..	Urban District Council ..	I. Pym-Jones, 14 High Street, Lymington.
" 16	Hellingly, Sussex—Asylum ..	Urban District Council ..	R. Blaker, 211 High Street, Lewes.
" 16	Wimbledon—Alterations ..	North Shields Industrial Society, Ltd. ..	Hellington Surveyor, The Broadway, Wimbledon.
" 16	Chirton—Premises ..	Industrial Co-operative Society ..	Hope and Maxwell, Architects, Trinity Buildings, Newcastle.
" 16	Exmouth—Church ..	Industrial Co-operative Society ..	P. Kerley, Architect, Exmouth.
" 16	High Harrington—Converting ..	Industrial Co-operative Society ..	G. W. Scott & Co., Victoria Buildings, Workington.
" 16	Leyland—Premises ..	Industrial Co-operative Society ..	H. Howarth, Architect, Morecambe.
" 16	Middleton—Church ..	Industrial Co-operative Society ..	Austin & Paley, Architects, Castle Park, Lancaster.
" 16	Wallasey—School ..	Industrial Co-operative Society ..	W. H. Travers, Public Offices, Egreymont, Cheshire.
" 17	Cymmer, South Wales—Schools ..	Industrial Co-operative Society ..	G. F. Lambert, Architect, Bridgend.
" 17	Lower Sydenham—Cottage ..	Industrial Co-operative Society ..	Surveyor, Town Hall, Catford, S.E.
" 17	Patcham, Sussex—Premises ..	Industrial Co-operative Society ..	Clayton and Black, Architects, Patcham.
" 17	Ashperton, Worcester—Station Buildings ..	Industrial Co-operative Society ..	Engineer, Great Western Railway Station, Gloucester.
" 17	Glyncorrwg, Wales—Works ..	Industrial Co-operative Society ..	G. F. Lambert, Architect, Bridgend.
" 17	Watford—Boiler House and Chimney Shaft ..	Industrial Co-operative Society ..	O. P. Ayres, 14A High Street, Watford.
" 17	Sheffield—Depot ..	Industrial Co-operative Society ..	C. F. Wike, Town Hall, Sheffield.
" 17	Enniskillen—Alterations ..	Industrial Co-operative Society ..	A. Scott & Son, Architects, Drogheda.
" 18	Stowmarket—Bridge ..	Industrial Co-operative Society ..	G. Harrison, Council Offices, Market Place, Stowmarket.
" 18	London, S.W.—Underground Conveniences ..	Industrial Co-operative Society ..	Surveyor, Town Hall, Caxton Street, Westminster.
" 19	Kensington—Additions ..	Industrial Co-operative Society ..	E. Flint, 80 Coleman Street, E.C.
" 21	Bodmin—Farm Buildings ..	Industrial Co-operative Society ..	R. P. Edyevean, Clerk, Bodmin.
" 21	Wrexham—Alterations ..	Industrial Co-operative Society ..	Borough Surveyor, Guildhall, Wrexham.
" 24	Birkenhead—Car Shed ..	Industrial Co-operative Society ..	C. Brownridge, Town Hall, Birkenhead.
" 26	Southend-on-Sea—Engine House ..	Industrial Co-operative Society ..	A. Fidler, Borough Engineer, Southend-on-Sea.
" 26	Bury—Market ..	Industrial Co-operative Society ..	A. Neill, 18 Cookridge Street, Leeds.
" 27	London, S.E.—Generating Station ..	Industrial Co-operative Society ..	The Clerk, Town Hall, Spa Road, Bermondsey.
" 27	Lichfield—Casual Wards ..	Industrial Co-operative Society ..	W. H. Woodroffe, 24 Great Dover Street, London, S.E.
" 27	Leicester—Chimney Shaft ..	Industrial Co-operative Society ..	E. G. Mawbey, Town Hall, Leicester.
" 28	Rugby—Bandstand ..	Industrial Co-operative Society ..	D. G. Macdonald, Council Surveyor, Rugby.
" 28	Wrenbury—Wall ..	Industrial Co-operative Society ..	T. H. Whiteley, 54 Welsh Row, Nantwich.
" 30	Cardiff—Town Hall and Law Courts ..	Industrial Co-operative Society ..	Town Clerk, Town Hall, Cardiff.
Aug. 2	London, E.—Underground Conveniences ..	Industrial Co-operative Society ..	Engineer, Board of Works Offices, 15 Great Alie Street, Whitechapel, E.
" 30	Canterbury—Asylum Buildings ..	Industrial Co-operative Society ..	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
" 4	Market Hill, Ireland—Renovation ..	Industrial Co-operative Society ..	J. Brown, 41 Kilmorey Street, Newry.
" 15	Irvinestown, Ireland—Shooting Lodge ..	Industrial Co-operative Society ..	T. Elliott, 37 Darling Street, Enniskillen.
ENGINEERING.			
July 13	Hull—Bridge ..	Corporation ..	A. E. White, Town Hall, Hull.
" 13	London, N.W.—Artesian Wells ..	St. Pancras Vestry ..	T. W. Aldwinckle, 1 Victoria Street, S.W.
" 14	Dublin—Refrigerating Machinery ..	Corporation ..	G. T. Harrap, 5 Budge Row, London, E.C.
" 14	Middlesbrough—Reservoir ..	Tees Valley Water Board ..	J. Mansergh, 5 Victoria Street, Westminster.
" 14	South Shields—Electric Lighting ..	Guardians ..	J. W. Coulson, Union Offices, South Shields.
" 14	Rochdale—Wiring ..	Municipal Technical School ..	J. W. Jones, Technical School, Rochdale.
" 14	Ruabon—Driving Drift ..	Hafod Colliery ..	E. Jones, Hafod Colliery, Ruabon.
" 16	Salford—Overhead Equipment ..	Corporation ..	Lacey, Clirehugh and Sillar, 78 King Street, Manchester.
" 16	Beckenham—Wiring ..	Urban District Council ..	R. P. Wilson, 66 Victoria Street, Westminster.
" 17	Trimdon, Durham—Lighting ..	Parish Council ..	T. W. Wilkinson, Parish Council Offices, Trimdon Hall, Trimdon.
" 17	Enniskillen, Ireland—Alterations and Water Supply ..	Guardians ..	R. Wilson, Clerk, Workhouse, Enniskillen.
" 18	Bury, Lancs.—Filters ..	Waterworks Committee ..	J. Cartwright, Peel Chambers, Market Place, Bury.
" 18	Bury, Lancs.—Valves ..	Waterworks Committee ..	J. Cartwright, Peel Chambers, Market Place, Bury.
" 19	Manchester—Widening Line ..	Yorkshire and Great Northern Joint Stations Committee ..	Engineer, Lancashire and Yorkshire Railway, Manchester.
" 20	East Grinstead—Septic Tanks ..	Godstone Rural District Council ..	Fairbank and Son, 13 Lendal, York.
" 23	Blackpool—Tramways Extension ..	Corporation ..	R. O. Quin, Borough Engineer, Blackpool.
" 23	Callao—Reconstruction of Railway ..	Peruvian Government ..	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways ..	Corporation ..	Webster, Steel and Co., 5 East India Avenue, E.C.
" 23	Kolbergermunde, Germany—Dredger ..	Harbour Superintendent ..	Der Hafenbauinspektor, Harbour Works, Kolbergermunde, Germany.
" 24	Rothwell—Engines ..	Urban District Council ..	W. T. Pearson, Market House, Rothwell, Northants.
" 24	Manchester—Widening Line ..	Lancashire and Yorkshire Railways ..	Engineer, Hunt's Bank, Manchester.
" 25	Southend-on-Sea—Light Railways ..	District Light Railways ..	A. Fidler, Borough Engineer, Southend-on-Sea.
" 25	Southend-on-Sea—Electrical Plant ..	Corporation ..	A. Fidler, Borough Engineer, Southend-on-Sea.
Aug. 9	Grays, Essex—Electric Lighting Work ..	Urban District Council ..	Prece and Cardew, 13 Queen Anne's Gate, Westminster, S.W.
Sept. 8	Madrid—Electric Tramway Lines ..	Spanish Government ..	Commercial Department, Foreign Office, S.W.
" 18	Bradford—Refuse Destructors ..	Corporation ..	Mr. McTaggart, Corporation Depot, Hammerton Street, Bradford.
IRON AND STEEL.			
July 16	Salford—Gates ..	Corporation ..	Medical Superintendent, Sanatorium, Salford.
" 17	Salford—Points and Crossings ..	Tramways Committee ..	E. Hatton, Town Hall, Salford.
" 18	Bury, Lancs.—Valves ..	Waterworks Committee ..	J. Cartwright, Peel Chambers, Market Place, Bury.
" 18	Bury, Lancs.—Pipes ..	Waterworks Committee ..	J. Cartwright, Peel Chambers, Market Place, Bury.
" 23	Hanwell—Fencing and Gates ..	Urban District Council ..	Surveyor, Council Offices, Hanwell.
" 25	Southend-on Sea—Rails ..	Southend and District Light Railways ..	A. Fidler, Borough Engineer, Southend-on-Sea.
PAINTING AND PLUMBING.			
July 14	Bacup—Painting ..	Trustees of Mount Pleasant Wesleyan Chapel ..	Chapelkeeper, Mount Pleasant Wesleyan Chapel, Bacup.
" 14	Basingstoke—Painting ..	School Board ..	J. Gibson, Architect, New Street, Basingstoke.
" 14	Bristol—Painting ..	School Board ..	Clerk, School Board Offices, Bristol.
" 14	Treorkey—Painting ..	School Board ..	J. Rees, Architect, Pentre.
" 15	Mapplewell—Colourwashing ..	Darton School Board ..	Clerk, School Board Offices, Mapplewell.
" 16	Darlington—Painting ..	School Board ..	Clerk, School Board Offices, Darlington.
" 16	Kingston-on-Thames—Painting ..	Union ..	W. H. Hope, Union Offices, Kingston-on-Thames.
" 16	Stoke—Painting ..	School Board ..	T. Olibbon, 42 High Street, Rochester.
" 17	Hove—Painting ..	Town Council ..	H. H. Scott, Town Hall, Hove.
" 17	Ipswich—Painting ..	School Board ..	Clerk, School Board, Tower House, Tower Street, Ipswich.
" 24	Mountain Ash—Painting ..	Wraig Isaf Building Club ..	P. James, Tanyrallt, Mountain Ash.
" 27	Devonport—Painting ..	School Board ..	Clerk, School Board Office, Ker Street, Devonport.
ROADS.			
July 16	Wimbledon—Yard ..	Urban District Council ..	Council Surveyor, Broadway, Wimbledon.
" 16	Erith—Road Works ..	Urban District Council ..	Council Surveyor, High Street, Erith.
" 16	London, S.E.—Wood Paving ..	Camberwell Vestry ..	Surveyor, Vestry Hall, Camberwell.
" 16	Wolverhampton—Street Works ..	Streets Committee ..	J. W. Bradley, Town Hall, Wolverhampton.
" 17	Epsom—Making-up ..	Rural District Council ..	T. E. Ware, Waterloo Road, Epsom.
" 17	London, S.W.—Making Up ..	County Council ..	Engineer, County Hall, Spring Gardens, S.W.
" 17	Lewisham—Kerbing and Tar Paving ..	Board of Works ..	Surveyor, Town Hall, Catford.
" 18	Frinton-on Sea, Essex—Works ..	R. P. Cooper, Esq., J.P. ..	Homer and Co., Estate Offices, Frinton-on-Sea.
" 18	Rochester—Granite ..	Corporation ..	W. Banks, City Surveyor, Rochester.
" 18	Teddington—Kerbing ..	Urban District Council ..	M. Hainsworth, Council Offices, Teddington.
" 21	Lewes—Granite ..	Town Council ..	M. S. Blaker, Town Hall, Lewes.
" 21	Middlewich—Materials ..	Urban District Council ..	W. W. Morris, Council's Surveyor, Middlewich.
" 23	Stevenage—Granite ..	Urban District Council ..	Clerk, Council Offices, Stevenage.
" 25	Wembley—Gravel and Hoggins ..	Urban District Council ..	C. R. W. Chapman, Public Offices, Wembley.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
SANITARY.			
July 14	Great Ouseburn, Yorks—Sewers	Rural District Council	Fairbank and Son, 13 Lendal, York.
" 14	Waterford—Drainage Works	Corporation	M. J. Fleming, Town Hall, Waterford.
" 16	Rowley Regis—Sewers	Urban District Council	Clerk, Council Offices, Old Hill.
" 17	Guiseley—Sewers	Urban District Council	H. A. Johnson, 15 The Exchange, Bradford.
" 18	Luddenfoot, Yorks—Sewers	Joint Sewage Board	J. Waugh, Sunbridge Chambers, Bradford.
" 18	Hampton, Middlesex—Drainage Works	English Schools Drainage Committee	Caretaker, English Schools, Church Street, Hampton, Middlesex.
" 18	Frinton-on-Sea—Sewerage Works	R. P. Cooper	Homer & Co., Architects, Estate Office, Frinton-on-Sea.
" 21	Tadcaster—Emptying Ashpits	Rural District Council	W. Denham, Inspector of Nuisances, Aberford, near Leeds.
" 23	Newmarket—Sewerage Works	Urban District Council	Clerk, Town Hall, Newmarket.
" 30	Whittingham, near Preston—Drainage, &c.	Lancashire Asylums Board	North-Eastern Sanitary Inspection Association, 2 Neville Street, Newcastle-on-Tyne.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
July 14	Molra, Ireland—Cottages	—	W. J. Corner, Council Office, Lurgan.
" 16	Falmouth—Sewerage Scheme	£100, £50, £25.. .. .	J. H. Genn, Town Clerk, Falmouth.
" 31	Oneadale—Cemetery	—	J. H. Duckworth, Public Offices, Cheshire.
Aug. 1	Sunderland—Church	—	William Wilson, 7 Azalea Terrace, South Sunderland.
" 25	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
Sept. 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	" Architectural Review."

New Companies.

J. W. Clough, Limited.

This company was registered on June 21st with a capital of £3,000 in £1 shares to carry on the business of tanners, braziers, sheet metal workers, plumbers, ventilating, heating, electrical and general engineers, &c. The first directors (to number not less than three nor more than five) are J. Stell, W. Stell, J. Clough and J. W. Clough. Registered office: Perseverance Works, East Parade, Keighley, Yorks.

Carnarvonshire Granite Quarries, Limited.

This company was registered on June 16th with a capital of £25,000 in £1 shares to acquire the Moel-y-gegy Quarry, Ynysyhaiarn, near Portmadoc, Carnarvon, and to carry on the business of quarry and mine owners, stone merchants, &c. Registered office: 4 Tokenhouse Buildings, E.C.

Lloyd and Son, Limited.

This company was registered on June 19th with a capital of £20,000 in £1 shares to take over the business of furnishing and general ironmongers, founders, builders, merchants, &c., carried on at 105 Wellington Street, at Rectory Grove, and at Love Lane, Thomas Street, all in Woolwich, as Lloyd and Son. The first directors (to number not less than two nor more than five) are W. B. Lloyd (chairman), W. G. Lloyd and E. A. Lloyd.

Younger, Saunders and Co., Limited.

This company was registered on June 22nd with a capital of £5,000 in £10 shares to adopt a certain agreement and to carry on the business of brick, tile and slab manufacturers, &c. The first directors are W. Younger, W. Colwell and D. D. James, the last representing the debenture-holders. Registered office: 69 Santos Road, Wandsworth, S.W.

Thames Steam Sawmills, Limited.

This company was registered June 16th with a capital of £60,000 in £1 shares to adopt an agreement for the acquisition of the business of the Thames Steam Sawmills, Erith, Kent, and to develop and extend the said business. The first directors (of whom there shall be not less than three nor more than seven) are F. J. Beadle, J. C. Beadle, C. Clayton and F. Beadle. Registered office: Thames Steam Sawmills, Erith, Kent.

Free Wall Paper Company, Limited.

This company was registered June 13th with a capital of £50,000 in £1 shares (of which 20,000 are Preference) to carry on the businesses of manufacturers of and dealers in every description of paper hangings, &c. The first directors (of whom there shall be not less than three nor more than seven) are W. B. Armstrong, H. Butters, C. Cole, C. T. Ennals, C. Jeffs and S. Snelson.

Borneo Hardwood Company, Limited.

This company was registered on June 30th with a capital of £30,000 in £1 shares, to adopt an agreement with F. E. de Mattos and A. Nieuveland, and to carry on in North Borneo or elsewhere the business of timber growers and merchants, sawmill proprietors, &c. The first directors (to number not less than three nor more than seven) are G. Pauling, C. C. Bowlby, and another to be nominated by F. E. de Mattos and A. Nieuveland.

Quarry Hill Brick and Tile Company, Limited.

This company was registered on June 29th with a capital of £18,000 in £10 shares to acquire the business carried on at Tonbridge by C. B. Powell, C. R. Catchpool, and T. Potter, and to carry on the business of brick, tile, and pipe manufacturers, timber merchants, &c. The first directors (to number not less than two nor more than five) are C. B. Powell, C. R. Catchpool and T. Potter.

Totteridge Hill Estate Company, Limited.

This company was registered on June 28th with a capital of £10,000 in £5 shares to acquire certain land at Totteridge, Hertfordshire, and to carry on the business of builders, contractors, brick, timber, and hardware merchants, &c. The first directors (to number not less than two nor more than five) are T. Norton, A. E. Gilbert and D. Methven (all permanent).

William Irwin and Co., Limited.

This company was registered on June 28th with a capital of £30,000 in £1 shares to acquire the business carried on at 4 Burley Road, Leeds, as William Irwin and Co., and to carry on the business of builders, contractors, drainers, paviors, asphaltes, carpenters, &c. William Irwin is governor-director, and may retain office so long as he holds one-third of the issued capital. Registered Office: 4 Burley Road, Leeds.

CURRENT PRICES.

FORAGE.			
		£ s. d.	£ s. d.
Hay, best	per load	3 10 0	4 0 0
Sainfoin mixture	do.	3 15 0	4 7 6
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 3	1 7 6
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 8 0	1 11 6
Colza Oil, English	do.	1 10 6	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	do.	1 2 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 15 0	—
Petroleum, American	per gal.	0 0 6½	—
Do. Russian	do.	0 0 6½	—
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	3 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 5 0	1 7 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 12 9	—

METALS.

Copper, sheet, strong	per ton	83 0 0	—
Iron, Staffs, bar	do.	9 10 0	11 10 0
Do Galvanised Corrugated sheet	do.	13 10 0	—
Lead, pig, Spanish	do.	17 10 0	17 12 6
Do, do, English common brands	do.	17 17 6	—
Do, sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do, pipe	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do, floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	8 15 0	9 5 0
Do, Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	139 10 0	140 0 0
Do, English ingots	do.	143 0 0	144 0 0
Zinc, sheets, Silesian	do.	23 10 0	—
Do, do, Vieille Montaigne	do.	24 6 0	—
Do, Spelter	do.	19 15 0	20 12 6

TIMBER.

SOFT WOODS.

Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do, Pitch	do.	3 16 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do, Petersburg	per bundle	0 1 2	0 1 3
Deals, Archangel 2nd & 1st per P. Std.	do.	12 15 0	18 0 0
Do, do, 4th & 3rd	do.	13 5 0	—
Do, do, unsorted	do.	12 5 0	12 10 0
Do, Riga	do.	6 15 0	8 10 0
Do, Petersburg 1st Yellow	do.	14 0 0	18 15 0
Do, do, 2nd	do.	10 10 0	14 10 0
Do, do, Unsorted	do.	8 15 0	9 10 0
Do, do, White	do.	11 5 0	—
Do, Swedish	do.	13 10 0	18 0 0
Do, White Sea	do.	15 10 0	20 10 0
Do, Quebec Pine, 1st	do.	13 15 0	23 15 0
Do, do, 2nd	do.	18 15 0	—
Do, do, 3rd &c.	do.	9 0 0	9 15 0
Do, Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do, do, 3rd & 2nd	do.	8 10 0	10 10 0
Do, New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	8 5 0	10 15 0
Flooring Boards, lin. prepared, 1st	per square	0 12 0	—
Do, 2nd	do.	0 11 6	—
Do, 3rd &c.	do.	0 11 3	—

CURRENT PRICES—continued.

HARD WOODS.				
Ash, Quebec ..	per load	3 17 6	4 10 0	
Birch, Quebec ..	do.	3 12 6	3 17 6	
Box, Turkey ..	per ton	7 0 0	15 0 0	
Cedar, lin., Cuba ..	per ft. sup.	0 0 4½	—	
Do. Honduras ..	do.	0 0 3½	—	
Do. Tobasco ..	do.	0 0 4½	—	
Elm, Quebec ..	per load	0 12 6	5 10 0	
Mahogany, Average Price				
for Cargo, Honduras ..	per ft. sup.	0 0 4½	—	
Do. African ..	do.	0 0 3½	—	
Do. St. Domingo ..	do.	0 0 6½	—	
Do. Tobasco ..	do.	0 0 4½	—	
Do. Cuba ..	do.	0 0 6½	—	
Oak, Dantzic and Memel ..	per load	3 15 0	5 7 6	
Do. Quebec ..	do.	4 12 6	5 0 0	
Teak, Rangoon, planks ..	do.	8 10 0	14 10 0	
Wainscot, Riga (Baulk) ..	do.	3 15 0	5 15 0	
Do. Odessa Crown ..	do.	3 15 0	5 15 0	
Walnut, American ..	per cub. ft.	0 1 6	0 3 5	

TENDERS.

Information from accredited sources should be sent to 'The Editor.' No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

KIRKCALDY.—Accepted for the erection of class and cookery room for the Dysart Burgh School Board. David Forbes Smith, A.R.I.B.A., architect:—
David Wilkie, mason ... £584 7 8
T. Scott & Co., joiner ... 403 0 0
A. Kirk, plumber ... 303 16 0
£1,390 13 8

KIRKCALDY.—Accepted for the erection of workmen's houses, Boreland, for the Earl of Rosslyn's Collieries, Limited. David Forbes Smith, A.R.I.B.A., architect:—
Henry Masterton, mason ... £820 0 0
George Hay & Sons, joiner ... 822 0 0
Currie & Cant, slater ... 95 0 0
£2,062 8 8

KIRKCALDY.—Accepted for the erection of house in Market Place, Gallatoun, for Mr. Thomas Davidson. David Forbes Smith, A.R.I.B.A., architect:—
David Wilkie, mason ... £208 10 10
Harrow & Turnbull, joiners ... 120 0 0
Harry Masterton, plasterer ... 31 0 0
£355 11 5

CARDIFF.—For alteration and additions to premises, No. 105 Bute Road, Edgar G. C. Down, A.R.I.B.A., architect and surveyor, 31 High Street, Cardiff:—
James Allan ... £1,225 0 0
Joseph Thomas ... 1,100 0 0
Melhuish Bros. ... 1,085 10 0
E. Turner & Sons ... 1,075 0 0
S. Shepton & Sons ... 1,070 0 0
Harry Gibbon ... 1,060 0 0
W. T. Morgan* ... £1,000 0 0
Knox & Wells ... 1,030 0 0
Price Bros. ... 1,030 0 0
E. R. Evans Bros. ... 1,030 0 0
Fred Couzens ... 994 10 6
F. Small ... 940 0 0
* Accepted.

LONDON.—For alteration and repairs to "The Green Man," Ball's Pond, N. Messrs. Foulsham & Herbert Riches, architects, 3 Crooked Lane, King William Street, E.C., and Bromley-by-Bow, E.:—
J. T. Robey ... £725 0 0
J. & W. Inkpen ... 643 0 0
Sheffield Bros.* ... £2635 0 0
* Accepted.

LONDON.—For the erection of a coach-house at Wanstead, N.E. Mr. Herbert Riches, architect, 3 Crooked Lane, King William Street, E.C.:—
F. L. Willmott ... £233 0 0
W. Mundy* ... £234 12 0
* Accepted.

ABERDARE.—For the erection of a bakery, stables, &c., Gadlys, Aberdare, for the Aberdare Workmen's Co-operative Society, Limited. Mr. J. L. Smith, architect, Aberdare. Quantities by architect:—
J. Jones ... £1,150 0 0
W. E. Willis ... 2,938 19 0
Morgan & Son, Aberdare ... £2,698 0 0
Evan Jones ... 2,587 0 0
* Accepted.

BROADSTONE (Dorset).—For the erection of a villa residence, for Dr. C. W. Curtis. Mr. Walter Andrew, architect and surveyor, Parkstone:—
Chinchen & Co. ... £1,600 0 0
J. W. Cross ... 1,292 0 0
E. S. Griffin ... 1,265 0 0
E. H. Crabb ... 1,182 0 0
Baker & Pearcey ... £1,180 0 0
A. & F. Wilson, Parkstone ... 1,085 0 0
* Accepted.

BURLEY-IN-WHARFEDALE.—For the construction of a reservoir, Carr Bottom, Burley Moor, for the Urban District Council. Mr. Malcolm Patterson, C.E., 35 Manor Row, Bradford:—
Egan & Sons ... £8,374 8 6
W. & J. Foster ... 7,636 19 10
William Briggs ... 7,298 0 0
Thomas Smith, Bingley* ... £7,181 2 10
* Accepted.

CARDIFF.—For alterations and additions to premises, No. 105 Bute Road. Mr. Edgar G. C. Down, architect and surveyor, 31 High Street, Cardiff:—
James Allan ... £1,225 0 0
Jos. Thomas ... 1,100 0 0
Melhuish Bros. ... 1,085 10 0
Turner & Sons ... 1,075 0 0
Shepton & Sons ... 1,070 0 0
Harry Gibbon ... 1,060 0 0
W. T. Morgan* ... £1,000 0 0
Knox & Wells ... 1,030 0 0
Price Bros. ... 1,030 0 0
Evans Bros. ... 1,030 0 0
F. Couzens ... 994 10 6
F. Small ... 940 0 0
* Accepted.

CHESTERFIELD.—For making a new road, &c., Bolsover, for the Urban District Council. Mr. W. H. Wagstaff, A.M.Inst., C.E., 57 Saltergate, Chesterfield:—
Lane & Son ... £4,080 0 0
Holmes & Sons ... 3,840 0 0
Kerry & Co. ... 3,590 0 0
H. H. Barry ... 3,283 0 0
Bateman Bros. ... £2,887 0 0
T. Meakin, Hill Top, Bolsover, nr. Chesterfield* ... 2,400 0 0
* Accepted.

CHESTERFIELD.—For the laying of sewers, the construction of tanks and beds, and the laying-out of land at the Outfall Works, for the Bolsover Urban District Council. Mr. W. H. Wagstaff, A.M.Inst.C.E., 57 Saltergate, Chesterfield:—
Lane & Son ... £7,186 0 0
Kerry & Co. ... 6,463 4 0
Holmes & Sons ... 5,250 0 0
H. H. Barry ... ,087 0 0
T. Meakin, Hill Top, Bolsover, nr. Chesterfield* ... £4,912 0 0
* Accepted.

DRAYCOTT (near Derby).—For the erection of infants' school buildings, for the Draycott School Board. Mr. F. S. Ansell, architect, Draycott, Derby. Quantities by the architect:—
G. Peach ... £2,815 18 8
Parker & Son ... 2,785 0 0
A. Brown ... 2,705 0 0
A. Burnham ... 2,690 0 0
Radford & Greaves ... 2,617 0 0
Browd & Son ... £2,594 0 0
G. Wagg ... 2,554 13 0
Perks & Son, Long Eaton* ... 2,493 0 0
* Provisionally accepted.

EAST HAM.—For the erection of municipal buildings, public baths, public library, &c., fire station, &c., for the Town Council:—
Gregar & Sons ... £87,992
J. T. Jerram ... 87,100
Shillitoe & Sons ... 84,600
Mr. Cormick & Sons ... £78,000
D. W. Barker ... 72,000
(Architect's estimate ... 69,000)

LONDON.—For a new police station at Rochester Row, for the Receiver for the Metropolitan Police District. Mr. J. Dixon Butler, architect. Quantities by Mr. W. H. Thurgood:—
Ashby & Horner ... £14,110
T. Parker ... 14,150
H. Lovatt ... 14,125
Mowlem & Co. ... 13,950
Lascelles & Co. ... 13,905
Palman & Fothering-ham ... 13,775
Higgs & Hill ... 13,000
Holloway Bros. ... £19,406
Lawrence & Sons ... 13,462
Grover & Sons ... 13,182
S. Hart ... 13,127
F. & H. F. Higgs ... 12,640
Scrivenner & Co. ...
Pattinson ...

FLOORING BLOCKS.



Per 100 Blocks out of sizes.	YELLOW.		PITCH PINE.	
	At Wharf.	ex Ship within one month.	At Wharf.	
17½×3×3	13 8	12 9	20 0	
17½×3×2	8 11	8 2	14 6	
17½×3×1½	6 10	6 3	10 9	



PRIME DRY OAK & PITCH PINE FLOORING.

With Special Joint to conceal Nails—
1½×4½ Oak, 56/9 Pitch Pine, 29/- per square
1×4½ " 45/6 " 25/6 "
These prices include desiccation.

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Estimates and full particulars on application to THOS. GREGORY & CO., WOOD PAVING AND STEAM JOINERY WORKS, Clapham Junction, S.W.

Binding Cases may be had on application to the Manager. Price 1s. 9d. each.

ROOFING SLATES:

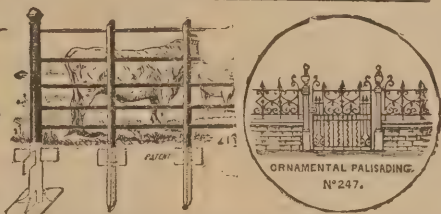
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WOLVERHAMPTON.
LONDON SHOW ROOMS—
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CATALOGUES FREE.
IRON HURDLES, FENCING, GATES & TREE GUARDS,
Of Every Description.
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MEDAL FOR ISOLATED LATRINES. CATALOGUE FREE
MEDAL FOR THE "RAPID" SLOP-WATER CLOSET.
J. DUCKETT & SON LTD. SANITARY WARE WORKS. BURNLEY, LANC.

TENDERS—(Continued.)

LONDON.—For the erection of U.M.T. church and schools at Pentland Road, South Lambeth. George Baines, F.R.I.B.A., and Reginald P. Baines, architects, 5 Clement's Inn, Strand:—			
Chessam & Sons...	£8,190 0 0	Turtle & Apple...	
B. J. Scott ...	8,114 0 0	ton ...	7,084 0 0
T. Rider ...	7,862 0 0	F. & T. Higgs ...	7,061 0 0
W. Luscelles & Co. ...	7,892 0 0	T. G. Minter ...	6,992 0 0
Holloway Bros. ...	7,680 0 0	Prestige & Co. ...	6,977 0 0
Simson & Son ...	7,403 10 0	G. Parker ...	6,978 0 0
Palman & Forster ...		Battley, Son & ...	
Ingham ...	7,373 0 0	Hall ...	6,790 0 0
J. Carmichael ...	7,143 0 0	J. B. Richardson ...	6,488 0 0
L. Holloway ...	7,109 0 0		

* Accepted. [Architect's estimate, £6,650.]

NEW BROMPTON (Kent).—For alteration and extension to Sunday schools; renovation of interior and exterior of church; installation of electric light; and erection of retail shop on site adjoining for the trustees of the Congregational chapel. Mr. E. J. Hammond, architect, 111 High Street, New Brompton:—

H. Wells ...	£3,303	T. Cornelius, New Brompton* ...	£2,445
H. E. Phillips ...	2,653		

* Accepted.

RAINHAM (Kent).—For the erection of two villas and shop, for Mrs. E. Knight. Mr. E. J. Hammond, C.E., High Street, New Brompton:—

H. Wells ...	£1,521	G. Gilbert, Rainham* ...	£1,050
H. E. Phillips ...	1,475		

* Accepted.

TEIGNMOUTH (Devon).—For additions, &c., to West Holt, for Mrs. S. A. Croydon. Messrs. Watson & Watson, architects, 1 Lower Terrace, Torquay. Quantities by Messrs. Stoner & Sons, Boston House, New Broad Street, London:—

Yeo & Sons ...	£1,600 0 0	Vanstone & ...	
E. Andrews ...	1,474 8 10	Mumford ...	£1,375 0 0
G. Lee ...	1,450 0 0	R. Truman ...	1,201 14 8
J. Smerdon ...	1,407 0 0		

CONTRACTS OPEN.**EPSOM URBAN DISTRICT COUNCIL.**

The Council are prepared to receive APPLICATIONS from Builders willing to Tender for the ERECTION of an ELECTRIC SUPPLY STATION at the rear of their Offices in Church Street, Epsom.

Builders must send in their names to the Architect, Mr. A. E. PRIDMORE, 2 Broad Street Buildings, E.C., together with £2 2s. for the bills of quantities, which will be returned on receipt of a bona-fide Tender.

The forms of Tender and bills of quantities will be sent to builders on JULY 13th, and the drawings and specifications may be seen from this date at the Offices of the Architect and of the Town Surveyor, Epsom.

The builder shall under a penalty of £50 observe the rates of wages obtained in the several trades employed.

Tenders are to be delivered at the Clerk's Offices, Epsom, on or before FOUR o'clock, on JULY 25th inst., on the printed forms supplied.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
E. G. WILSON,
Clerk of the Council.
Epsom,
July 1900.

VESTRY of ST. MARY MAGDALEN, BERMONDSEY. DUST DESTRUCTOR AND ELECTRICITY SUPPLY. CONTRACT NO. 3.

The Vestry of St. Mary Magdalen, Bermondsey, invite TENDERS for the ERECTION of a GENERATING STATION in "Heckinger," Spa Road.

Specification, bills of quantities, and form of Tender can be obtained, and plans inspected, on and after the 14th inst. at the Town Hall, Spa Road, Bermondsey, on payment of a fee of Three Guineas, which will be returned on receipt of a bona-fide Tender. Plans and specifications may also be inspected (but not obtained) at the Offices of the Engineers, Messrs. KINCAID, WALLER & MANVILLE, 29 Great George Street, Westminster, S.W.

The contractor will be required to pay not less than the minimum standard rate of wages for the time being in each trade during the continuance of the contract, and to pay all labourers a minimum rate of wages of not less than six-pence per hour.

The Vestry do not bind themselves to accept the lowest or any Tender, and the contractor whose Tender is accepted shall enter into a formal agreement, under seal, with sufficient sureties for the due performance of his contract.

Sealed Tenders, endorsed "Generating Station, Contract No. 3," must be forwarded to me at or before NOON on the 26th day of JULY, 1900.

Town Hall,
Bermondsey,
July 1900. FREDK. RYALL,
Vestry Clerk.

LICHFIELD UNION.

TO BUILDERS AND CONTRACTORS.

The Guardians of the Poor of the Lichfield Union invite TENDERS for the ERECTION of NEW CASUAL WARDS on a site at the rear of the Union Workhouse, Trent Valley Road, Lichfield.

Persons desirous of Tendering may inspect plans, specification, and conditions of contract between the hours of TEN and FOUR o'clock, at the Office of the Architect, Mr. W. H. WOODROFFE, A.R.I.B.A., 214 Great Dover Street, London, S.E., from whom a copy of the bills of quantities and form of Tender may be obtained upon depositing the sum of £2 2s., which will be refunded upon the receipt of a bona-fide Tender.

Copies of the plans will also be deposited with the Clerk to the Guardians, Union Offices, St. Mary's Square, Lichfield, for the inspection of persons proposing to Tender.

Sealed Tenders, endorsed "Tender for New Casual Wards," upon the forms supplied by the Architect, must be delivered at the Union Offices aforesaid on or before

FRIDAY, the 27th day of July, 1900, at TEN o'clock A.M. and no Tender will be received later than the time named. The Guardians do not bind themselves to accept the lowest or any Tender.

By order of the Board,
JOHN DERRY,
Clerk to the Guardians.
Union Offices, Lichfield,
June 1900.

COUNTY BOROUGH of CARDIFF.

The Corporation of Cardiff is prepared to receive TENDERS for the ERECTION of NEW LAW COURTS and NEW TOWN HALL at Cardiff.

Forms of Tender and bills of quantities can be obtained from the Town Clerk, at the Town Hall, Cardiff, on payment of Ten Pounds for each copy, for which a receipt will be given, and the drawings can then be inspected at the Town Clerk's Office, or at the Offices of the Architects, Messrs. LANCHESTER, STEWART, & BICKARDS, No. 1 Vernon Place, Bloomsbury Square, London.

The contractor will be bound by the contract to cause all hand-dressed stone (except granite and marble) to be executed on the site of the contract.

He will also be bound to pay the rates of wages, and to observe the hours of labour and the rules imposed by the respective trade unions and employers in the Town and District of Cardiff.

The deposit of Ten Pounds will, after the Corporation has come to a decision upon the Tenders received (but not before), be returned to the Tenderer, provided he shall have sent in a bona-fide Tender and shall not have withdrawn the same.

The Tenderer must also deliver with his Tender (but in a separate sealed envelope) his copy of the bills of quantities fully priced out and moneyed out in detail, and signed on the summaries thereof. The bills so delivered will be returned unopened to unsuccessful Tenderers. The bills delivered by the Tenderer or Tenderers whose Tenders may be accepted will have to be approved by the Architects, and copies of same will then be prepared, and be deposited to form schedules of prices for the valuation of any variations.

The Tenders must be delivered in the envelopes provided for the same (duly sealed), accompanied by the bills of quantities before referred to, and delivered to the Town Clerk not later than TWELVE o'clock noon on the 30th day of JULY 1900, after which time no Tender will be received.

Any Tender not made in the form supplied will be rejected.

The Corporation does not bind itself to accept the lowest or any Tender, and reserves the right to consider the Tenders submitted for the two buildings independently.

The contractor will have to execute a formal contract, and to enter into a bond with sureties for the due performance of the works. Draft contract and bond can be inspected at the Town Clerk's Office, or at the offices of the Architects.

J. L. WHEATLEY,
Town Hall, Cardiff,
June 1900. Town Clerk.

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JULY 18, 1900.
No. CCLXXXIV.

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

The Wrong System.

PERHAPS the more skilled and competent the artist, the less he is inclined to

be satisfied with his work. It has been aptly said that "it requires no small degree of ability to know when to conceal it." Like other professions, there are a number of perfunctory men who practise architecture, and they are generally the most satisfied with results. They have the tact to lay any blame that may attach to their work on the shoulders of others—perhaps on the "cheese-paring" closeness of their clients, on the scamping builder, or on any other cause than the true one. They are clever, too, in minimising defects—even trying to persuade themselves and others these are merits rather than faults—and we know of one individual who had this trait so largely developed that he would shrug his shoulders and say: "Well, really, the builder's way is better than mine." The fact is, his knowledge of a rational or reasonable way of framing a joint, or his selection of a material, was somewhat doubtful or "misty," and what he specified or drew was more from custom or habit than from knowledge. But the man who has learned his profession and the motive for doing things—who has a definite knowledge of his business, not a hazy or nebulous one—immediately and quickly discovers little errors in design or execution, or finds out how much he could have improved this or that detail if he had his opportunity over again. Owing to the hurry of modern building operations, it is impossible for the most omniscient mind to take cognizance of every detail. Were it not for the modern contract system the architect might leave many of his details to be designed or arranged for during the progress of the work; he could design his stone or brick features on the building; his mouldings would be all decided on when they were wanted, and the numberless internal fittings could be arranged to meet the requirements of the client, whose opinions would be more likely to be matured when the building was nearly completed. These developments of detail from the building during its progress are almost impossible under the present system, and the architect must see precisely and accurately the end from the beginning.

X.

Disappearing City Churches.

THE coming generations will have a grievance against us, there is no doubt, for we have for the last thirty years been active in destroying the churches for which the City of London was long famous; and if there have been those among us who have secured the preservation of some of the

more remarkable of the threatened buildings, they do not serve to purge this generation of its sins in this direction. A period of great activity in the destruction of Wren's City churches set in with the opening of the '70's. In 1872 the beautiful little church of St. Mildred-in-the-Poultry was destroyed and its site sold to the Gresham Assurance Company, whose huge building now stands there. St. Mildred's was at once the smallest and the most sumptuously appointed of all Wren's churches, and was of special architectural interest. There was at one time some prospect of its being re-erected in the country, for a gentleman who chanced to hear of the

architecture. Allhallows, Bread Street, in which Milton was baptised, was pulled down ruthlessly in 1878. St. Matthew, Friday Street, shared the common fate in 1886, and in the last days of the same year the adjacent church of St. Mary Magdalene, Old Fish Street Hill, was burned down, its ruins being afterwards cleared away and the inevitable warehouses erected on the site.

Since then many minor churches have gone—St. Michael's, Wood Street, St. Michael Bassishaw, St. Olave, Jewry, and whose other names do not for the moment occur to one. Hawksmoor's noble church of St. Mary Woolnoth, Lombard Street, had



ST. BARTHOLOMEW'S, MOOR LANE. DRAWN BY C. G. HARPER.

stones being sold by auction purchased them, and caused them to be conveyed to his park near Louth, in Lincolnshire, with the intention of rebuilding them to serve as a private chapel. This intention was never carried out, and the stones are still decaying in a neglected heap. In 1874 the wreckers were again at work, for in that year the little church of St. Martin Outwich was pulled down and its site thrown into the roadway of misnamed "Broad" Street. In the same year St. Antholin's, Walbrook, a particularly interesting example of Wren's designing, was sold by auction and carted away as rubbish. The year 1876 was notable for the destruction of the churches of St. Dionis Backchurch and St. Michael Queenhithe, this last a particularly pleasing bit of

a narrow escape from destruction when the City and South London Railway scheduled it for their station, and only the most determined opposition saved the building. St. Mildred, Bread Street, was scheduled in the City and West End Railway Bill of 1897, and had not the Bill itself failed would probably have been demolished. News now comes that two more churches are to go, those of St. Bartholomew, Moor Lane, and St. George, Botolph Lane. Neither, perhaps, is to be regretted from the purely architectural standpoint, but one of them has a curious history. St. Bartholomew, Moor Lane, was originally St. Bartholomew-by-the-Exchange, and stood at the corner of Threadneedle Street and Bartholomew Lane. It was injured in the Great Fire of London and

repaired by Wren, remaining on the same site until 1845, when road-widening caused its removal. The Sun Fire Insurance building stands on a portion of the site. Cockerell rebuilt it almost stone for stone on its present site in Finsbury; but now that the newly-formed parish of 1845 has changed its character from that of small house property to warehouses a place of worship is no longer required, and the parish has been amalgamated with St. Giles's, Cripplegate. St. George's, Botolph Lane, has long been neglected and insanitary, and will be destroyed and the parish united with that of St. Mary-at-Hill.

In this connection it is curious to observe that although one very loudly expressed reason for these unions of benefices is that their incomes may be used for providing urgently-needed places of worship in the suburbs, yet the old stones of the destroyed churches are never, or rarely, used for rebuilding in Suburbia, but are allowed to be sold to the first contractor who bids a reasonable price. A curious result of these unions of the City parishes and the removal of the monuments from the destroyed churches to those which represent them is that some of the surviving buildings represent six or eight vanished edifices and are crowded with alien memorials. How the future historian is to succeed in unravelling this confusion is a nice question! The fine old church of St. Helen's, Bishopsgate—the "Citizens' Cathedral," as it has been aptly named—represents many such forgotten churches, and is rich in memorials from them—memorials of City worthies whose names are for ever bound up with London's roll of honour. C. G. H.

Central School of Arts and Crafts.

WHOEVER visits the school while the exhibition is open may be profitably employed either in forming appreciations of particular works or in thinking on his own account about the gross value of such exhibitions. There appears to be no age limit here as in the other schools, and the fact may account for some examples of craft appearing to be so good, and others by comparison poor. A class to be considered apart is that of designers in general, for if they were engaged as designers elsewhere they would hardly be here as students. The standard in this department has been raised by the proficiency of the workers, and since their designs as a rule are so good it seems to be rather a pity that they are not applied at once to the purposes for which they are intended by students in other classes, so that one might judge the work by the effect of the whole and apportion the praise accordingly. It may be that stone-masons and plumbers are learning in Regent Street what loveliness may be elicited from the materials wood and stone, but there is no clay-craft that I know of, and the students of modelling here constitute a class by themselves like the designers already mentioned. They are mostly employed during the day in houses producing works which would be better for being artistic, but while engaged in this way have little or no opportunity of expressing what feeling for beauty they have. Is it likely if they had nothing of this that they would be so eager to attend these classes at the end of a long day's work? The teachers agree that a talent for design is probably latent in all who have learned to understand and respect the material, and of the truth of the observation there would seem to be no doubt whatever. As it is with sham jewellery (gold that is not gold, &c.), so is it with a great many other things. They have no actual value and there is simply no limit whatever, excepting what Nature has set, to the amount that may be displayed in the shops, and these baubles are Mammon's playthings. E. R.

On Reflection.

Vulgarising the Acropolis.

READERS of Sir Walter Besant's romance, "The Golden Butterfly," will remember the sad case of Mr. Gilead P. Beck, millionaire, who endured much perplexity and embarrassment in his efforts to dispose of his vast fortune in such a way as to benefit humanity and gratify his own benevolent impulses. We learn from the "Methodist Times" that the fictitious Mr. Gilead P. Beck has his counterpart in real life. Mr. Hugh Price Hughes knows a millionaire who is in the same parlous case; he has £40,000,000 which he wishes to spend wisely before he dies, but, in spite of his most strenuous efforts, he cannot spend his money fast enough—the millions grow in spite of him, and, as Mr. Hughes says, "the case is both serious and urgent." It is not, however, quite hopeless, for Mr. Hughes has a scheme which, if carried out, will enable his millionaire to shed at least one of his superabundant millions. Let him invest it in the restoration of the Acropolis at Athens, and by so doing he will—in the opinion of Mr. Price Hughes—"render an unparalleled service to classical education and the noblest act," and at the same time build for himself "a monument which will endear his memory to all civilised men as long as the world lasts."

Not a Joke.

As we begin to read about Mr. Hughes and his millionaire, we are inclined to regard the matter as a joke; but we soon find that the writer is in deadly earnest. He invites criticism, and threatens on a future occasion to enter into details with regard to his scheme. Now, with every desire to make allowances for a reverend gentleman making an excursus in unfamiliar paths, we cannot but feel some surprise that, after all the failures that have been made by the radical school of restorers, after all that has been said and written on the subject by the greatest of art teachers, any educated man should be found to suggest an enterprise so futile and so essentially vulgar as the wholesale reconstruction of the Acropolis. The glory of these ancient stones is not only in their beauty, but in the story they have to tell of a great people—the supreme artists of the world—and of an heroic age long passed away. Restore, rebuild, copy, side by side with stones that have stood for more than 2,000 years, place others fresh quarried, cut by machinery, and erected by inartistic and unsympathetic hands, and you eliminate all the dignity, the picturesqueness, the poetry, the romance that have made Athens the Mecca of the artistic world. Mr. Price Hughes thinks the restored Acropolis will attract a greater number of visitors. Possibly; the new Athene Promachos might—if well advertised—prove as great a draw as the Eiffel Tower or the Big Wheel at Earl's Court; and in the new Parthenon crowds of "personally conducted" Philistines might manifest a languid interest in the exact cost in English pounds or American dollars of the gold ornaments (or

would they be gilt?) on a chryselephantine statue of the Virgin goddess, which would have about as much right as the figures in a penny waxwork show to claim kinship with the works of Phidias.

No Help to Education or Art.

How the cause of Education or of Art would be advanced by such an outrage on good taste we are at a loss to see. The student who wishes to know what the Acropolis was really like can study models of it in museums. But something, surely, may safely be left to the imagination. How grotesque are the incongruities which Mr. Hughes's scheme conjures up. Standing in the midst of the Acropolis the visitor will be told that what he sees owes its existence to the public spirit of Pericles and Mr. Andrew Carnegie; he will be asked to admire the Propylæa as the joint effort of Mnesicles and some highly respectable Fellow of the R.I.B.A., and in the Parthenon the work of a posse of modern decorators will claim attention along with the masterpieces of Phidias. Many years ago the temple of Nike Apteros, which the Turks had converted into a battery, was re-erected from the original materials; but that is a very different matter from the restoration which Mr. Hughes contemplates. We would recommend Mr. Carnegie to reserve his millions for some worthier object, and Mr. Hugh Price Hughes to devote his energies and his eloquence to those more useful causes with which his name has been associated, leaving the care of the Acropolis to those who love and reverence its splendid ruins, and realise more clearly their value to mankind. Both he and others may well take to heart the words of John Ruskin—almost the last he wrote on any public question—"Do not let us talk then of restoration; the thing is a lie from beginning to end."

The L.C.C. Works Department.

THE London County Council Works Department has again to face the public with a heavy loss. Since the inception of the Department the works carried out by it have cost the ratepayers £64,539 more than the estimates, and this is a heavy price to pay for the principle of direct employment. The various excuses put forward, not by the Department but by its supporters, are on the face of them absurd. If, as one member explains, the increased cost is due mainly to extra works, the manager would certainly have put down the sum as for extra work, and not admitted it as a loss on the original scheme. To blame the estimating is equally beside the mark, for we have evidence that contracts refused by the Department have been executed by private firms considerably under the estimated cost. The real reason is much more likely to be that complained of in one of our American contemporaries—namely, that while wages are greatly increased the amount of work done is very much smaller. No blame we think attaches to the manager, who appears to be a capable and cautious man, and whose explanation of the Crossness Sewer loss everyone will accept. The loss on the Housing Scheme is a very serious matter, for either the rents will be beyond the intended tenantry or the work must be paid for out of the rates. With their present burdens, and their own difficulty in finding houses, the middle-class absolutely cannot afford to house their poorer neighbours.

BARLEY VILLAGE.

THE village of Barley lies on the fringe of Hertfordshire, with Essex for its eastern border and Cambridge for its northern. The parish (2,725 acres in area) is roughly divided into two portions, each consisting of high ground rising from 300ft. to nearly 500ft. above the sea level. The village itself consists (as it has done since its earliest days) of a group of "ends" clustered round the Cross Hill and the parish church.

The long life of the ancient village, or "town," as it was always called, closed the last of its eventful chapters with the Private Enclosure Act, which passed into law in the year 1819, followed, as it shortly was, by the New Poor Law. The village of to-day dates from the time when these two legislative measures came into working; what of old parochial life the former had left (and it was but a weak and stunted plant) the abolition of self-government, consequent on the formation of Union Districts, completed.

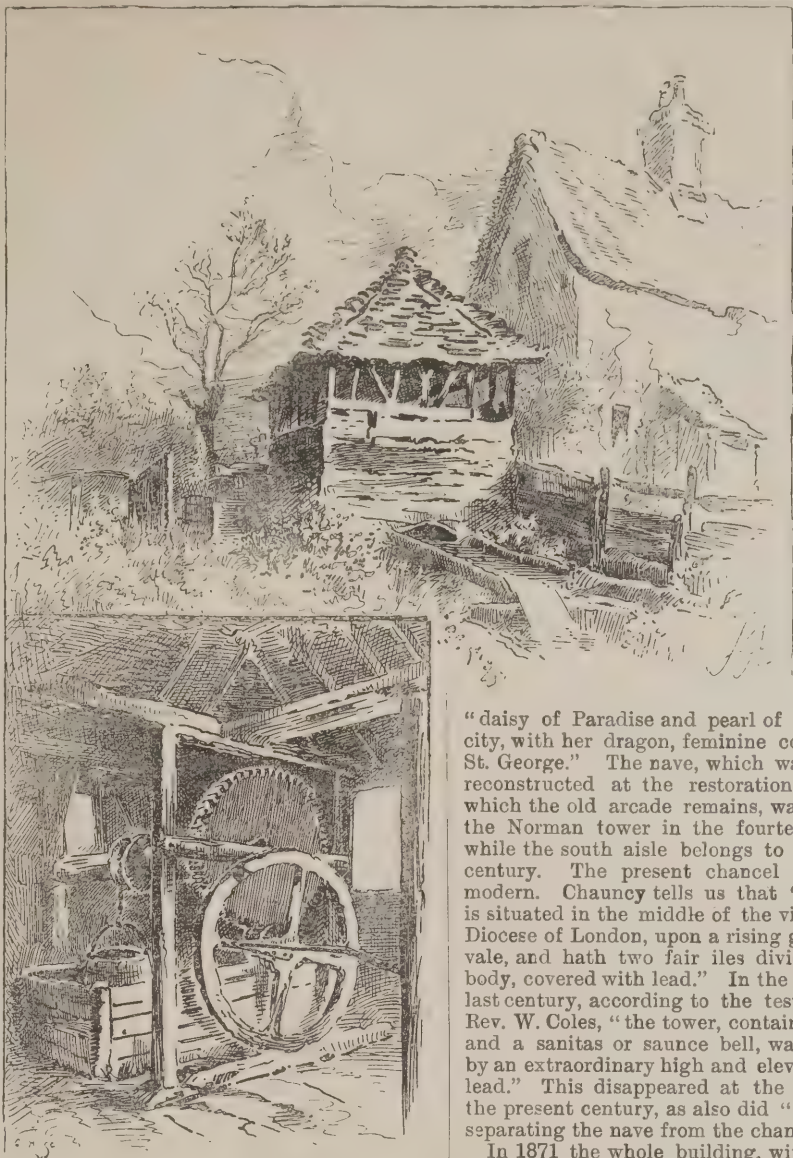
Passing over plain indications of a Danish occupation, the great and lasting impress upon the village story has been made by the Romans and the Britons. The northern boundary of the township was formed by the famous Ichnield Street, or highway of the Iceni, one of the four British intertribal trackways which formed the bases of the Roman military roads; while another of them—the Ermin Street—is only removed, if removed at all, a little way from the western boundary.

From Court rolls and old MSS. and maps in the British Museum and the Record Office it has been possible to bring to light no fewer than nine other Roman roads which, with lesser connecting ways, surround the village, and to prove beyond question the existence of Roman colonisation and the full occupation of the Romano-British agriculturist. Almost everywhere under the crowns of the many hills, on every commanding ridge, are to be traced evidences of the way in which the Romans made themselves at home and settled as colonists in the newly acquired territory which the legions had added to the empire and the road-makers had opened up for commercial as well as for military purposes.

There were the square or rectangular land holdings, sufficient for the maintenance of a family, together with a few larger estates; while in the "Champion" (an open plain) may still be traced earthworks and camps, with their sectional ways and gates at the cardinal points of the compass; also the *botontini*, or little hillocks of earth, marking out the boundaries, with ashes, dust, and potsherds underneath. And altars and votive tablets (see illustration) are not lacking. A figure of Mars



FIGURE OF MARS FOUND AT BARKWAY.



THE WELL-HOUSE: "WAGGON AND HORSES" INN. DRAWN BY ALEX. ANSTED.

(illustrated) was found in the neighbouring village of Barkway, in 1743, near a hill on which there still exist evident traces of Roman occupation. The image is of bronze, while the tablets or engraved plates are of silver-gilt, seven in number, containing figures of either Mars or Vulcan. They are now in the British Museum. The inscriptions show that they belong to the reign of Diocletian, which fixes the date near the close of the third century. Besides fragments of Samian ware (real and imitation), black, brown, and other coloured ware, Mortaria, glass, tiles, flue pipes, and numerous bones, a considerable number of Roman coins, of various reigns, are from time to time brought to light in the course of agricultural operations.

As regards ancient buildings, Minchin Bury (see illustration) may well be given as an ancient homestead or bury (the chief's or lord's house). The tithe-barn, with its oak pillars, roughly hewn, but forming part of a careful architectural design, probably dates back to the tenth century, when the estate was given to the newly-founded Convent of Chatteris. The timber of the pillars is formed of oak trees cut, beyond doubt, from the ancient wood which once came down to the southern border of the homestead, and placed *in situ* with the root end upwards.

Of the parish church as it existed in 1870 nothing now remains except the tower and the south aisle. The former is Norman, with traces of the incorporation of earlier Saxon style, rebuilt probably by one of the Scales family on his return from the first crusade. It is dedicated to St. Margaret, virgin and martyr of Antioch in Pisidia. And a fresco on the east wall of the present church commemorates the

"daisy of Paradise and pearl of the heavenly city, with her dragon, feminine counterpart of St. George." The nave, which was practically reconstructed at the restoration in 1871, of which the old arcade remains, was built on to the Norman tower in the fourteenth century, while the south aisle belongs to the fifteenth century. The present chancel is altogether modern. Chauncy tells us that "this church is situated in the middle of the vill, within the Diocese of London, upon a rising ground in the vale, and hath two fair isles divided from the body, covered with lead." In the middle of the last century, according to the testimony of the Rev. W. Coles, "the tower, containing five bells and a sanitas or saunce bell, was surmounted by an extraordinary high and elevated tower of lead." This disappeared at the beginning of the present century, as also did "a neat screen separating the nave from the chancel."

In 1871 the whole building, with the above exceptions, was rebuilt after designs of the late Mr. Butterfield, the style chosen by the architect being the geometrical middle pointed. A drawing is given of the village street, showing one of the old inns. The street itself contains about a dozen ancient houses, which originally formed the homesteads of the farmers of the old village. The inn, now the "Fox and Hounds," was formerly known as the "Black Swan," the sign being a shield suspended from the cross beam, which now supports the fox,



VOTIVE TABLET.



THE "WAGGON AND HORSES" INN, BARLEY. DRAWN BY ALEX. ANSTED.

dogs, horses, and huntsmen. It was a favourite house of resort of James I. (who used to ride over from Royston), as also, so tradition says, of the renowned highwayman, Dick Turpin. There is another ancient inn, situate on the Cross Hill, the "Waggon and Horses." Here in days gone by stopped four coaches to and from London and Cambridge, the road through Barley being the old north road to King's Lynn. An illustration is given of the old well, deep sunk in the chalk, which was attached to this inn, and which remains till this day as it existed in the "spacious days" of good Queen Bess.

The Town House, or Guildhall, opposite the church, was rebuilt by Dr. William Warham (afterwards Archbishop of Canterbury), rector 1495-1503; he added a free school, which he endowed. The ancient building was used as a school from 1530 to 1895, when new schools were built. It is still used for parochial purposes and technical classes. The front upper windows are modern.

Besides other ancient buildings and parish lands Barley still keeps and uses its Playstowe, or "Playing Fields," dating from times beyond Domesday. The Rectory House has been much enlarged, and practically rebuilt from plans by Salvin (1834). It is a handsome building, Elizabethan in style, and said to be one of the finest rectory houses in the county.

COLOUR IN ARCHITECTURE.

By A. TROYTE GRIFFITH.

(Continued from page 403, No. CCLXXXII.)

Mediæval Decoration.

(The value of stained glass.)

Though the remains of contemporary paintings and coloured decorations in mediæval churches are less scanty than those of the

Hellenic temples, yet so disastrous have been the results of religious prejudice, long neglect and careless restoration that it is nearly as difficult to conjure up the colour effect of a vaulted cathedral as of Doric peripteros. The extent and systematic methods of mediæval colour decoration are often greatly underestimated, and Gothic architects have been accused of perpetrating barbarisms of colour on very insufficient grounds. They should not be blamed for the harsh contrasts of stained glass with the cold tones of stone and plaster, nor for the somewhat crude effect of mediæval decoration seen under the glare of white light. The fact is that mediæval artists combined coloured glass with coloured walls to give one harmonious polychromatic effect. Coloured glass was seldom used without some other colour decoration, and the latter often comprised not only walls and roofs, but also piers and arches, mouldings and ornaments, screens, fonts, and all the fittings and furniture of the church. The conjunction of coloured glass with realistic painting is doubtless a barbarous method of decoration. This, however, was not a fault of mediæval artists, but has been left to nineteenth century painters. Moreover, another freak of Gothic revival decorators has materially assisted to bring the decoration of churches into contempt. It is unnecessary to mention instances, but everyone can call to mind churches in which the wall surfaces are emphasised with elaborate diapers and outline paintings—in colourless colour—red and black (with perhaps a touch of light blue) on buff grounds; while important constructional members are left in cold stone—the utter destruction of any architectural significance. But to return to a more pleasant subject.

Although traces of monumental painting are exceedingly scarce before the end of the eleventh century, we know that the churches of northern Europe were plentifully decorated, the severe, not to say bald, nature of the architecture giving ample scope for surface decorations in localities where mosaic and marble were unobtainable. For instance, Viollet le Duc states that all Gallo-Roman monuments between the fourth and eleventh centuries were painted inside and out.

Some idea of the prevailing style of decoration in Romanesque architecture in England



THE "FOX AND HOUNDS" INN, BARLEY VILLAGE. DRAWN BY ALEX. ANSTED.



THE TOWN HOUSE, BARLEY. DRAWN BY ALEX. ANSTED.

may be obtained from the walls and arches of St. Alban's Abbey. The colours used are red, yellow, buff, white, and black. The patterns are of the simplest description—rings of painted voussoirs, chevrons, brick patterns, and rudely executed wall paintings of an elementary character.

A more perfect example, though on a minute scale, is the little church of Kempley, in Gloucestershire, a Norman building of the twelfth century. The decorations formerly covered the whole interior, but those in the chancel alone are sufficiently well preserved to allow description. The chancel, which measures only 15ft. in width by 13ft. 6in. in length, is roofed with a plain barrel vault, springing directly from the walls, without cornice or moulding of any kind. The whole of the walls and vault are still covered with tempera paintings, with the exception of the portions near the floor where the plaster has decayed. These paintings form a complete scheme of decoration contemporary with the building. The centre of the vault is occupied by a figure of Christ enthroned in glory, surrounded by the symbols of the four Evangelists, arch-angels (St. Michael weighing souls), seven sacred candlesticks, St. Peter, and other figures. The interstices of the composition are filled in with sun, moon, and stars of fantastic shapes. On the side walls are painted figures of pilgrims, and the twelve Apostles seated beneath canopies; while the east wall is also decorated with figure subjects. The chancel arch and jambs of the windows have simple repeating patterns. The ground of the whole composition is a strong crimson-red, and the predominant colour of the figures is yellow or buff, touched up with greens, blues, and greys, and bold red or brown outlines. Though the figures are decidedly archaic in drawing and colouring, the decorative effect is good. While the artist conformed to traditional Byzantine methods, he permitted himself a pleasing license in the shapes and features of the heavenly bodies, the green nimbus of the bull and the angels being not unworthy of Blake himself.

Decorations of a similar style, though perhaps of more perfect execution, may be seen at St. Savin, the Château de Coucy, and elsewhere in France. At Coucy should be noticed the admirable effect of white and black lines and spots in enforcing the simplest schemes of reds, browns, and yellows.

Unambitious decorations of this description were found satisfactory both in England and on the Continent during the Romanesque period. The Byzantine mosaics were still the highest form of the pictorial art, while the artistic energies of the northern nations were principally directed towards the development and improvement of architecture.

However, colour was about to bewitch men's senses in a new material that had the most surprising effects on architecture itself. This was, of course, stained glass, which, though known to the Romans and already used in a different manner in the East, was now coming

into general favour in Europe. (The earliest existing stained glass, as we use the expression, is in the Cathedral of Augsburg.) By the middle of the twelfth century in France and the beginning of the thirteenth century in England coloured glass became of the first importance as a decorative material. Besides the direct influence on the architectural design, it exerted a secondary effect of considerable importance on the polychromatic decoration of churches.

The new method of decoration, by transmitted instead of by reflected coloured light, was a factor of the greatest value in the development of architecture. For though the gradual growth of Gothic architecture cannot be ascribed to any single cause, yet the most noticeable change was the contraction of wall spaces and enlargement of window openings. To such an extent was this carried that in the Abbey Church of St. Denis in France and elsewhere even the triforium was glazed, the mullions being carried up into the clerestory.

The wall surface has here practically disappeared, the piers and vertical members only being required to carry the vault and frame the windows. Never before or since has the desire for colour acted with such overpowering strength on architectural design.

Though in England the enlargement of window openings did not arouse such daring feats of construction as Beauvais or St. Denis, yet the magnificent square east ends of York and Gloucester are directly ascribable to the same cause. And in late Perpendicular work the width of the window opening became the gauge of the whole system of panelling which covers what remains unglazed of the walls of such buildings as King's College Chapel.

The Romanesque schemes of simple colouring were soon found to be quite inadequate by the side of brilliant glass pictures. A greater variety of colours was wanted, and it was proved by experience that blue was the colour that "tells" most, in large masses, when brought into direct competition with coloured glass. For this reason blue, heightened with gold stars, was often employed for painting the compartments of vaults. This treatment involved a greater strength of colour on piers and arches than had hitherto been usual. Viollet le Duc writes in this connection:—"It was absolutely necessary that the constructive forms, which are of such importance, in the buildings of the thirteenth century should be strongly emphasised by the system of colouring. For instance, the adoption of blue, studded with gold stars, for the grounds of vaults, compelled an equally strong arrangement of colours on the ribs and bosses. In these positions gold was of great value, and black outlines to vivid shades of reds and greens. When the painting of the vaulting ribs had been brought up to this pitch, colouring equally brilliant was required on the piers and mouldings by which they were supported, particularly as the irradiation from the windows tended to weaken their effect. Thus all supporting members which form the skeleton and nerves of the building stand out with strength and brilliancy. The grounds, on the contrary, are soft and low in tone."

Although it is impossible to point to any such complete scheme of mediæval colour decora-



INTERIOR OF MINCHIN BURY BARN, BARLEY. DRAWN BY ALEX. ANSTED.

tion in England, sufficient fragments remain to justify this ideal. The wooden vaulted roof of the choir of St. Alban's Abbey is an instance in point. The ground colour of the vaulting compartments is a greyish blue, probably considerably faded. In each compartment is a large foliated circle alternately red and green, the leaves marked and outlined with brown edgings of a strength sufficient to tell without becoming noticeable as colour. Each red circle encloses a sacred eagle with green nimbus, and each green circle an Agnus Dei with red flag and red nimbus, an example of that alternation of colours so frequent in Gothic colour decoration. The ribs are painted red, white, and black, with barber's pole pattern and powderings and the bosses red and gold. Shields painted in heraldic colours are fastened to the springings of the ribs. Imagination must complete the scheme on the stonework, as, beyond one or two figures now nearly perished, few traces of colour remain. The colour decoration here would be of the greatest value in har-

tions of mediæval churches, but also the fittings and furniture, whether of stone or wood, were freely decorated with colour. In Westminster Abbey very many of the tombs seem to have been originally painted and gilt, and at Tewkesbury Abbey the majority of the chapels and monuments have traces of the ancient colour decoration. The best preserved of these are the sedilia, in which the original colour scheme can be seen throughout. The delicate mouldings of the piers are painted green with red in the hollows, the vault red with green ribs, the carving all gilt with red grounds, and the backs are diapered with elaborate repeating patterns in various colours. The gilding of carved work is frequently found, both at Tewkesbury and elsewhere, and it is worthy of notice that the mediæval decorators seldom, if ever, applied gilding to a flat surface, but portions to be gilded were first modelled up in gesso or plaster.

At Hereford Cathedral may be seen a particularly fine example of a painted stone screen.

This divides a small oratory and chamber above from the Lady Chapel; a considerable effect of life and lightness is obtained by the barber's pole ornament and the ingenious counter-changing of reds and greens in the mouldings of alternate panels. It is difficult to understand how any cultured eye can tolerate the stiff forms of late Gothic work in cold stone or wood while such examples as this screen and many painted roofs bear unmistakable testimony to the intention of their originators.

Italian Colour Decoration.

(*Mosaics and Constructive Colour. Decorative Painting.*)

In considering the use of colour in connection with mediæval architecture no reference has yet been made to Italian decorative work. The importance of this school as the forerunner of the modern school of painting can hardly be over-estimated, though, as a precedent for modern ecclesiastical work, the colour decorations of England and France may be of more direct value. And constructive polychromy has never been carried out so extensively and so systematically as by the Italians of the thirteenth and fourteenth centuries.

Constructive polychromy naturally divides itself into two branches—the constructive use of variously coloured stones and marbles, and the facing or incrustation of a commoner by a more beautiful material.

A frequent instance of the first method is the use of coloured marbles or of stone and brick, in strongly marked horizontal courses, for the general walling. At S. Zenone, in Verona, red brick and warm stone are used in alternate bands. The brick bands are of varying depth, containing one, two, three, or four courses, while the stone bands are nearly uniform throughout. In many cases, as for instance the west front of Lucca Cathedral, is found the less effective method of covering a whole façade with bands of equal width. This arrangement of the courses becomes more telling and less monotonous when confined to a part only of the wall, as the gable or the wall below the cornice, or to emphasise some special feature,

as in the porch of the Cathedral of Pistoia. Another type, again, is found at the Frari Church, in Venice, where the dark-coloured bands are used only as string-courses to mark the springings of windows and other important architectural lines. It is difficult to form a correct judgment of the value of this method of decoration. Under a Northern sky the parti-coloured stripes might be too prominent, but under the brilliant sun of Italy they would probably fall into a due subordination to the whole scheme.

The combination of brick and stone to give colour to window openings and arcades is often found at Verona, Mantua, and other towns of Northern Italy. Labels are omitted, and their place is supplied by narrow red bricks; voussoirs of stone and brick are alternated, as at the Vescovato, in Mantua; stone soffit cusps are introduced into brick arches at Venice and Verona. In all these cases the stone is used as a rare and precious material, its value enhanced by contrast with broad masses of commoner brickwork. Marble and mosaic pavements need only be mentioned here. Though these are more often found in Italy than in other countries, beautiful coloured pavements have been associated with all great architectural epochs.

The second method of marble incrustation has the disadvantage of being less permanent and less constructive. But with reasonable care the former objection may be obviated, while, if no attempt is made to imitate wall construction, marble may be used as a lining no less legitimately than plaster or panelled wood. By fixing the marble in long vertical slabs, all deception is avoided, and natural patterns of great beauty may be obtained by reversing the slabs sawn from the same block. Marble was thus used in Italy, from the time of the Byzantine buildings of Ravenna as a simple base to more elaborate decorations, and in later periods a more extended use was made of this method of decoration. The mosaics themselves may be considered as a connecting link between constructional and superficial decoration.

In the consideration of Classic decoration no reference was made to the use of mosaics. Although these have been distinguished by Latin names of little descriptive utility, they can be divided roughly into two main classes: marble mosaics used by the Romans for floors, and glass mosaics used by the Christians on walls and vaults. Other varieties of mosaics may more reasonably be classified as inlays.

The origin of the art of mosaic is as uncertain as the derivation of the word itself. The Greeks appear to have made only an occasional use of this form of floor, probably preferring the greater breadth of marble paving. The Romans, on the other hand, after acquiring the art from the Greeks, carried it to the confines of their empire. Not only conventional patterns, but portraits and copies of historical pictures, have been discovered in the remotest districts to which Roman civilisation had penetrated. A well-known example is the elaborate battle of Issus at Pompeii. In pavements such as this the conventions of paintings were inartistically transferred to an uncongenial material, while the figures simulating high relief were equally unsuitable for the decoration of floors. The chief interest of these elaborate figure mosaics is rather archaeological than architectural, in the glimpses afforded of the compositions of Hellenic painters.

In the reign of the Emperor Constantine, the Christians, now free from the danger of persecution, were enabled to erect openly in Rome buildings for religious worship. The earliest Christian basilicas have been destroyed, but in buildings of the fifth century, as St. Maria Maggiore at Rome or the tomb of Galla Placidia at Ravenna, the large wall spaces and bare vaults, devoid of architectural detail, invited colour decoration. This demand was satisfied by the application of mosaics to the upper portions of interiors, with marble paneling below.

The traditions of Classic art may still be traced in the mosaics of the Chapel of the Empress Galla Placidia, built at Ravenna about 450 A.D. This is a building of consider-



BARLEY CHURCH.

monising the wooden vaulting with the more solid stone of walls and arcades.

A different treatment is found on the flat ceiling of the sanctuary, which was not brought into such direct competition with stained glass. The ceiling is divided into square panels separated by moulded ribs. The panels contain alternately monograms and angels bearing heraldic shields. The ribs were painted in red and black, as in the presbytery, but the ground colours of the panels are here red and grey. The heraldic devices on the shields required a considerable range of colouring, which perhaps detracts from a general harmony of effect. The successful use of a broken white in the scrolls, faces of angels, and monograms is noticeable, as well as the rich effect of a red leaf pattern laid direct on the blue ground of some of the monograms.

Not only the walls and constructional por-

able interest in the history of art as the first example of a domed construction rising from four supports. The plan is cruciform; the four arms of the cross are vaulted with plain barrel vaults, springing from a simple cornice, and the crossing is surmounted by a small cupola, whose base is circumscribed round the supporting square. The building is lighted by four small windows in the cupola and a window in each end wall. The vaults, cupola, and semicircular end walls above the cornice are covered with the original mosaics, the walls below having been formerly lined with marble slabs. The ground colour of the mosaics is everywhere a dark blue. The cupola is powdered with gold stars and the symbols of the Evangelists, and on each of the four walls are two figures of saints in white garments standing at the sides of the windows. The figures are feeble imitations of Classic designs, but the white masses are valuable as a connecting link between the light of the window and the subdued tones of the general decoration. The arches supporting the cupola and the jambs of the windows have meanders and patterns of good design. The barrel vaults of the long axis are closely diapered with gold rosettes and stars on the dark blue ground, and the vaults of the short axis with an even more beautiful scroll and acanthus pattern. On the semicircular end walls stags drink from pools bordered with rushes and embowered in thickets of acanthus. In all these decorations great effect is obtained from the use of deep red borders separated from the blue by white lines, and light blue patterns laid direct on the dark blue ground. This blue, a shade of great beauty, pervades the whole composition, and brings the different parts into complete harmony. The tradition of Classic art remains in the decorations in spite of the Byzantine methods of plan and construction.

The semi-Oriental influence of Byzantium, which began to react on Italian art in the reign of Justinian, was naturally felt most strongly at Ravenna. The mosaics of S. Vitale and S. Apollinare Nuovo, in the sixth century, are typical examples of the Byzantine style. Gold grounds take the place of the white and blue of earlier works. The proportions of the human figure are incorrect, the attitudes stiff, and the features devoid of expression. This debased style continued generally in Italy until the twelfth century, when new ideas, Norman and Arabian, were brought to bear on the art in Sicily. In the Capella Palatina at Palermo (about 1140 A.D.), and in other churches, the old Byzantine stiffness is somewhat relaxed, and the general colour effect is of the utmost magnificence. An improvement of the Italian mosaics generally may be noticed in the work of this century, as at S. Clemente in Rome and other churches too numerous to catalogue. As late as the commencement of the fourteenth century mosaics remained the national method of decoration in Italy. After this time the art gradually fell into disuse, though the ancient tradition was still continued in St. Mark's at Venice. The work of Cimabue in the Cathedral of Pisa (A.D. 1301) may be considered the last of the genuine school of mosaic. It is true that at a later date mosaics were executed from the cartoons of eminent painters, but whatever interest these may have as a new phase of pictorial art, as decorations they need not be considered.

It was natural that Italian mural paintings of the commencement of the fourteenth century should be affected by the Byzantine traditions of the mosaic decorations. In the paintings of Cimabue, who had himself worked in mosaic, this feeling is strongly marked. On the ceiling of the Church of St. Francis at Assisi he employed the gold grounds and ancient patterns of the less sympathetic material, and in later works Byzantine influence is still shown in wooden draperies and expressionless features. Giotto, the pupil and assistant of Cimabue at Assisi, first showed the possibilities of the new method. The comparative facility of execution and superiority of effect obtainable by fresco painting soon led to its almost universal adoption for mural decorations.

The Arena Chapel at Padua, decorated by Giotto between 1303 and 1306 A.D., was one of

the first examples of fresco on a considerable scale. The chapel consists of an oblong nave with an apsidal chancel and a sacristy on the north side. The semicircular barrel vault rises from the walls of the nave, with no cornice or intervening moulding. Six lancet windows on the north side of the nave, and a triplet window in the west gable, light the interior in the most effectual manner for the purpose in view—namely, to show the paintings to the best advantage. The exterior is correspondingly plain. The central portion of the vault is painted blue, with gold stars and medallions containing figures on gold grounds. The walls are divided into three horizontal bands of pictures, separated by painted borders, the lowest in monochrome, the two upper in brilliant colours on a blue ground. The majority of these paintings are from the hand of Giotto himself. The painter has completely relinquished the old Byzantine traditions, no less in the details than in the general composition of the paintings. The horizontal rows of pictures, so opposed to the vertical tendencies of Gothic architecture, the subordination of accessory details to the principal figures, and his naturalistic though dignified compositions all prove the originality of the painter's genius. Of this building Street remarked: "The architectural merit of the building is simply, I think, that it performs satisfactorily the office of giving ample unbroken surfaces of wall for paintings." In fact, as an architectural monument, the Arena Chapel is of no importance whatever; but as a landmark in the history of art it represents a change of the first importance, in painting itself as well as in its relation to architecture. Painting is no longer subordinate to architecture, and for the first time takes a place of its own. It still acknowledges and therefore decorates the wall, but the time is not far distant when it will do neither.

The later phases of decoration in Italy are overshadowed by the extraordinary development of pictorial art, from the simple conventions of Giotto and the Florentines, through the great works of Raphael and Michelangelo, to the complete chiaroscuro of Correggio. It is true that the discovery of the Classic decorations of the Baths of Titus, in the fifteenth century, gave a new impetus to architectural decoration, in the arabesque or grotesque style. Perugino and Raphael were the leading exponents of this method, their best known works being the decoration of the Loggia of the Vatican and the Villa Madama. In these grotesque decorations, the ground colour is often white or light in key; on this are painted natural and unnatural objects of every imaginable description, united by scrolls and wreaths of a conventional character. No portion of the ornament was allowed to overpower the rest, but the whole combines with a general richness and harmony of effect, in which the predominating note is given by the ground colour. So long as the master mind of Raphael directed the decorations, the grace of drawing and breadth of colouring redeemed the innate viciousness of the style. But his feeble successors were unable to continue the tradition, the great artists becoming engrossed in panel painting. The grotesque decorations were at any rate properly subordinated to the general architectural effect, a quality which the greatest admirers of Michelangelo will hardly claim for his work in the Sistine Chapel and elsewhere. With his great example, decoration now became subordinate to painting rather than to architecture. It is therefore difficult to give a satisfactory account of the decorative art of the Renaissance, apart from a general history of Italian painting, though a discussion of the just limitations of decorative painting will be most aptly illustrated by the schools of Northern Italy.

(To be concluded.)

Court of Common Council.—At last week's meeting it was decided to purchase Shadwell Market and adjoining property at a cost of £175,000. Authority was also given for the construction of a covered way, at an estimated cost of £2,000, between the Central Market and the Central Market Annexe.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Wood for Earth Work.

WALSALL.—OPTIMUS writes: "Which is more durable for outside purposes, oak or teak?—for instance, a post driven in the ground. Which timber is best to withstand rot?"

This query is hardly explicit enough, as "outside purposes" is rather too general a term. Elm is an excellent wood, and the sap in it is reckoned as good as the heart. It does not improve by seasoning, but should be used green, and even kept wet until wanted for use. Oak combines elasticity with toughness, and would be a better wood to use than teak; but an elm post would be the best in the ground.

R.I.B.A. Examinations.

LONDON, W.—STUDENT writes: "Can a person who has not been articulated enter for R.I.B.A. examinations—I mean a person who has entered an architect's office as office boy, and studied and qualified himself for a junior assistant? Please name a good cheap book on the Orders. If I cannot enter for the R.I.B.A. examinations, kindly advise me how to become an assistant without passing the Institute."

A candidate for the probationary examination of the R.I.B.A.—the first of the three progressive examinations—must fill in a form (which can be obtained on application at the Institute) giving full information of his age, education (architectural and otherwise), examinations already passed, &c. The fact of his having been articulated to an architect is not obligatory, though advantageous, but for the intermediate and final examinations it is necessary that he should be recommended as a "fit and proper person" to enter for these examinations by an architect in practice who can answer for the authenticity of the probationary work which the student submits. Chief assistants of more than thirty years of age are exempted from all but the final examination. A good book on the Orders for the use of students is "The Orders of Architecture," by Spiers; "Classic and Early Christian Architecture," by Smith and Slater, will also be found useful. If querist has had a fair training in office routine and draughtsmanship, and gained a good knowledge of practical construction, he should have no difficulty in obtaining a position as assistant; he would do well to make and keep by him some good practical drawings to illustrate his powers when applying for such a position. A. G. B.

Carrying up Walls and their Influence on Ancient Lights.

SILSDEN.—M. H. writes: "(1) To what height can the wall shown in black in the accompanying sketch (not reproduced) be built without affecting the light to the window? (2) Can the owner of the window claim the rights of ancient lights in view of the fact that the building has only been built six years and the whole site was sold in building plots? (3) In another wall adjoining it is necessary to insert weep holes to ensure the stability of the wall. This is objected to, though the water can do no damage. Is there any way of getting over this difficulty?"

(1) This question cannot be answered categorically. There is no particular height to which a wall can be raised legally without affecting the legal right of the occupiers of a neighbouring building to the access of light to a window in the latter. But the fact that 45 degrees are left unobstructed may, under ordinary circumstances, be considered *prima facie* evidence that there is not likely to be material injury. (Per Lord Selborne in *City*

of *London Brewery v. Tennant*, L.R. 9 ch. 220.) (2) No, but though the lights may not be claimable on the ground of being ancient, there may be a right to prevent their being obstructed by reason of the terms, express or implied, on which the plots were sold for building. (3) The owner of the adjoining property cannot be compelled to allow water from another plot to drain on to his land. He could maintain an action for an injunction and damages for discharging water in this way, at all events if appreciable injury were caused to the land on which it was discharged. H.P.B.

Stresses in Roof Truss.

CATERHAM VALLEY.—STUDENT writes: "I should be obliged if you would show me the

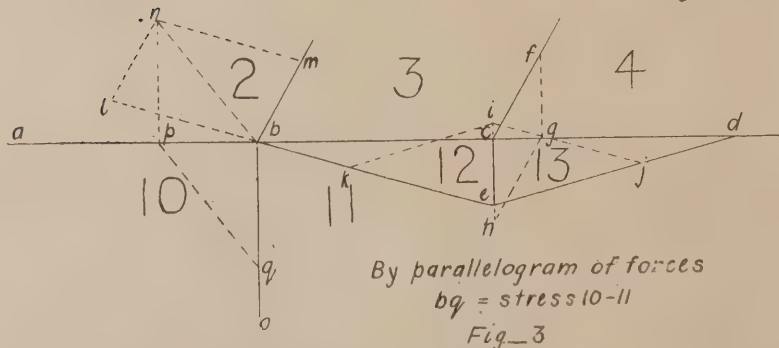
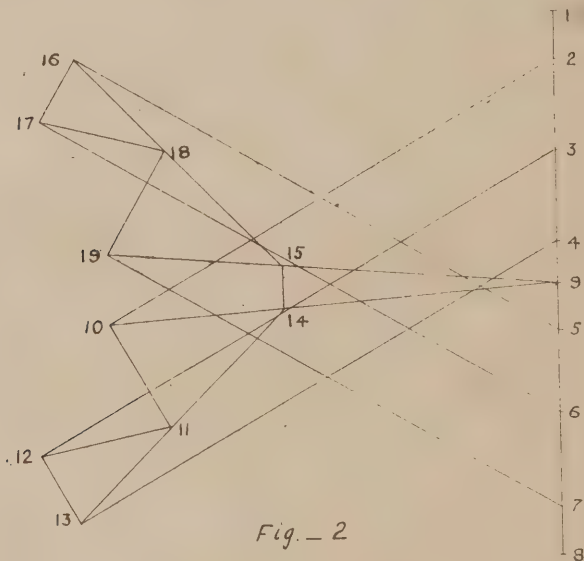
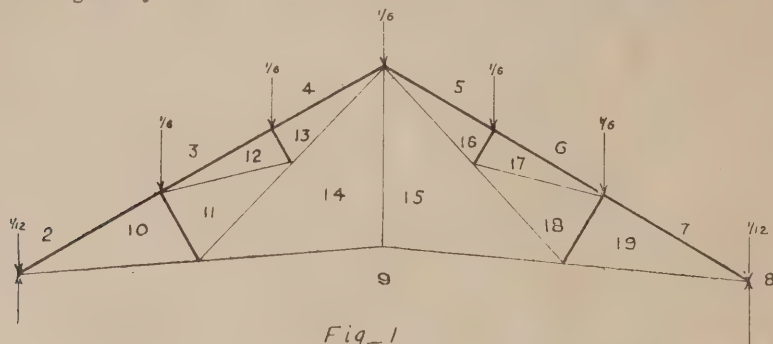
case to the corresponding lines in Fig. 1. It is possible also to work another way to find the value of 10-11—namely, by parallelogram of forces, as shown in Fig. 3, where the parts are lettered in order of construction. The rafter, *a b c d*, is there placed horizontally for convenience, and the force lines make their proper angles with it; the numbers correspond with those on Fig. 1.

HENRY ADAMS.

Pennell's Book on Pen Drawing.

SILSDEN.—TYKE writes: "On pages 251 and 252 of your issue for May 31st, 1899, you recommend 'Pennell's work on pen and ink drawing.' Please give the full name of this work, with publisher."

Messrs. Macmillan and Co., Ltd., of St.



STRESSES IN ROOF TRUSS.

reciprocal diagram of the steel roof truss shown in the accompanying sketch, according to Mr. Henry Adams's methods contained in his book 'Strains in Ironwork,' as I find a difficulty in applying the principles to this particular truss."

The truss in question forms an interesting case, because, although there is no direct means of obtaining a reciprocal diagram, as in other cases, a very slight assumption enables one to be correctly drawn. Fig. 1 shows frame diagram and Fig. 2 the corresponding reciprocal diagram. After drawing the load line 1-9 in Fig. 2, draw 2-10, 9-10, giving point 10; then draw 3-12, 4-13 and 10-11 indefinitely. Observe where the last line crosses the other two and bisect the space between; this will give point 11. From point 11 draw 11-12, and through point 11 draw 13-14, parallel in each

Martin's Street, Leicester Square, W.C., are the publishers of Mr. Pennell's "Pen Drawing and Pen Draughtsmen."

"Carbolineum Avenarius."

SHERBORNE.—J. E. B. writes: "Can you give me the address of the makers of 'Carbolineum Avenarius,' a preservative solution for timber?"

Peters, Bartsch and Co., Derby, and 68 Queen Street, Cheapside, E.C.

Clayton Hospital, Wakefield, is to have a new Nurses' Home. Messrs. Simpson and Richardson, of Wakefield, are the architects.

Masters and Men.

The Taunton Bricklayers and Carpenters' Strike has now been in progress since April 1st.

The Ipswich Bricklayers have struck for an advance of $\frac{1}{2}$ d. per hour. About 160 men are out.

The Colchester Building Trade Dispute has been settled, an agreement having been come to under which the men will apply for no further advance for the space of three years. Some few weeks back a manifesto was issued by the employers in which they offered certain terms provided the men would agree not to make further applications for advances in the rate of wages till April 1904. To this the men replied with a counter-manifesto, demanding certain advances and the adoption of a new code of rules. The men have now accepted the three years' armistice, but have failed to get the new rules adopted. On the other hand the masters have conceded an extra $\frac{1}{2}$ d. rise per hour for the carpenters—in response to an application for 1d.—to take effect from August 1, and the bricklayers' advance of $\frac{1}{2}$ d. granted in April last stands as it was.

Lock-out Clause for Cardiff Corporation Contracts.—Some time ago the Master Builders' Association of Cardiff suggested to the Corporation that, in addition to the strike clause, a lock-out clause should also be inserted for their protection. This proposal is vigorously opposed by the workmen's unions, who, however, entirely agree to the provision of a strike clause, and also an arbitration clause. Last week a deputation from the men waited on the Corporation and gave their reasons against the proposed lock-out clause. These were, briefly, that nothing had happened to justify the insertion of such a clause. They had worked amicably with the employers. They had a code of rules for working which prevented any strike occurring, and those rules included a conciliation rule. They first considered any dispute from a conciliatory point of view, and, failing to settle on that basis, they went further and referred matters to arbitration, and in the event of arbitration also failing they would finally appoint an umpire, whose decision was final and binding upon both parties. They understood the clause was not to be limited to their own area of the dispute, but was to have unlimited area; that it was not to be confined to the members actually interested, and that it would be prejudicial to the interests of those affected and partial and unjust in operation. Mr. Barr (representing 150 operative bricklayers) said that twelve months ago 2,000 men in his trade were locked out through the action of eighteen. They endeavoured to work in harmony with the employers, and, instead of getting six months' notice as they were entitled to, they were simply locked out at a day's notice. They felt it to be an injustice that men acting honourably with the employers should be victimised and their wives and families made to suffer through the action of a few individuals over whom they had no control. The master builders, when they enforced the lock-out, said they regretted to have to do it, but they were bound by the action of their executive.—A similar clause was rejected last week by the Cardiff Union Guardians.

Architectural Association of Ireland.

—The fourth annual excursion of this association took place on July 13th and 14th to Kilkenny and neighbourhood. About twenty members were present. Of all the places of interest visited perhaps Terpoint Abbey, near Thomastown, was the most interesting—a fine example of the Hiberno-Romanesque period. It is now unfortunately in ruins. The afternoon was spent in Kilkenny, where the Castle and its fine picture gallery were thrown open for inspection. St. Conice's Cathedral, St. Francis Abbey, and the Black Abbey—all mediæval work—were visited, and also the Roman Catholic Cathedral, a building of the "Revival" period.

THE BUILDING TRADES' GIFT TO THE NATION: ITS CONCEPTION, MANAGEMENT AND EXECUTION.

THE Building Trades' Gift to the Nation, which is practically the only tangible monument of that great wave of charity which has passed over the country during the Transvaal War, and to which our readers have so generously contributed through our Fund, will take the form of six fine homes for disabled soldiers, to be erected at Bisley and equipped with all the necessary offices, such as service block, &c., and a fine central building containing a recreation hall common to the whole of the inmates.

We have referred from time to time to this Building Trades' Gift, announcing the various donations in kind and in money, and it is needless to say that it has been closely associated with the trades in question. We were very glad to be able to announce a few weeks ago that actual building operations had been commenced on the land so generously presented by Lord Pirbright, which is now the scene of activity under the direction of one of our leading firms of builders—namely, Messrs. George Trollope and Sons, whose senior partner, Colonel George Trollope, is taking such a great personal interest in the matter.

The Origin.

It was at one of the fortnightly luncheons of the Executive of the British Fire Prevention Committee that the scheme was mooted by Mr. Edwin O. Sachs, and within a few hours a small committee had been formed to take up the matter, comprising only members of that Committee. Besides Mr. Edwin O. Sachs, who has acted as chairman throughout, there were Messrs. Hammond, Farrow and Marsland of the Executive of the B.F.P.C., Sir John Taylor, Mr. Arthur Cates and Mr. Thomas Blashill of the Council of the B.F.P.C.; and the first builder members were Mr. Howard J. Colls and Mr. Randall, who represent the building trades on that same Fire Committee. A few days afterwards a committee of stewards was formed, representing the large builders, the builders' merchants and the builders' manufacturers of Great Britain, these stewards also including a representative of the electrical trade and a representative of the furnishing trade; the names are as follows:—Messrs. W. Sapcote (President of the National Association of Master Builders); Thomas Gregory (President of the London Master Builders' Association); H. H. Bartlett (Perry and Co.); Robert Boyle (R. Boyle and Son); J. Mowlem Burt (John Mowlem and Co.); Max Byng (General Electric Company); F. J. Dove (Dove Brothers); H. Holloway (Holloway Brothers); Robert Neill (R. Neill and Son); F. May (Holland and Hannan); George H. Trollope (George Trollope and Sons); G. E. Wragge (Eastwood and Co.); Stanley G. Bird, and Sam Waring.

Finally, the scheme had the benefit of the secretarial offices of Mr. Thomas Rider, of Messrs. T. Rider and Son, past president of the Association of Master Builders, and it would be well to record that Mr. Sachs wishes it to be known how much he has been indebted to the able assistance of Mr. Rider in the successful issue of his scheme.

Gifts in kind were first asked for, and many of these immediately came to hand, from the 750,000 bricks of Messrs. Eastwood and Co. to such small gifts as a few bell-pushes and a gross of nails. The contributions came in from all parts, as much from the North of England as from the Home Counties, and after a time,

when the value of these gifts in kind had exceeded £15,000, there came a question of collecting the money for putting the materials together, whilst many firms also put their hands in their pockets and gave hard cash. It was then that Mr. Sachs was able to solicit the help of the working men of Great Britain, who in large numbers contributed their sixpences and shillings until now there is a very large total. One firm alone sent £80, subscribed by more than 2,000 men; but there are also cases of small masters employing twenty or thirty men who have made their little collection to help in this work. It is in the money direction, too, that assistance is now still specially required to fully complete the scheme. We understand that nearly £5,000 in cash is still required, and it is to be hoped, now that everything is in working order and a start has been actually made on the buildings this remaining sum will shortly be forthcoming. In hard figures, more than £20,000 have been collected in kind and cash, whilst £5,000 in cash, and £2,000 in kind are still required to complete the Homes. As to

The Buildings Themselves

(perspective and plans of which we are able to give this week through the courtesy of Mr. Sachs) the following points may be of interest: They have been designed by Mr. Sachs, in consultation with the other members of the executive, and the principle observed is that no Home shall hold more than sixteen inmates, whilst each pair of Homes shall be served from a mutual service block which, besides containing the kitchens, &c., will also afford accommodation for the matrons, nurses, servants, &c. The unit of habitation is therefore sixteen, and the unit of service thirty-two. Each unit of sixteen has its own living-room, dining-room, locker room and a number of bedrooms, its own large verandahs, bathrooms, &c. The two units are connected to the mutual service blocks by corridors, and everything has been planned in conformity with the latest hygienic principles, whilst being thoroughly comfortable.

The general recreation house contains a large hall, workshops, and the commandant's residence.

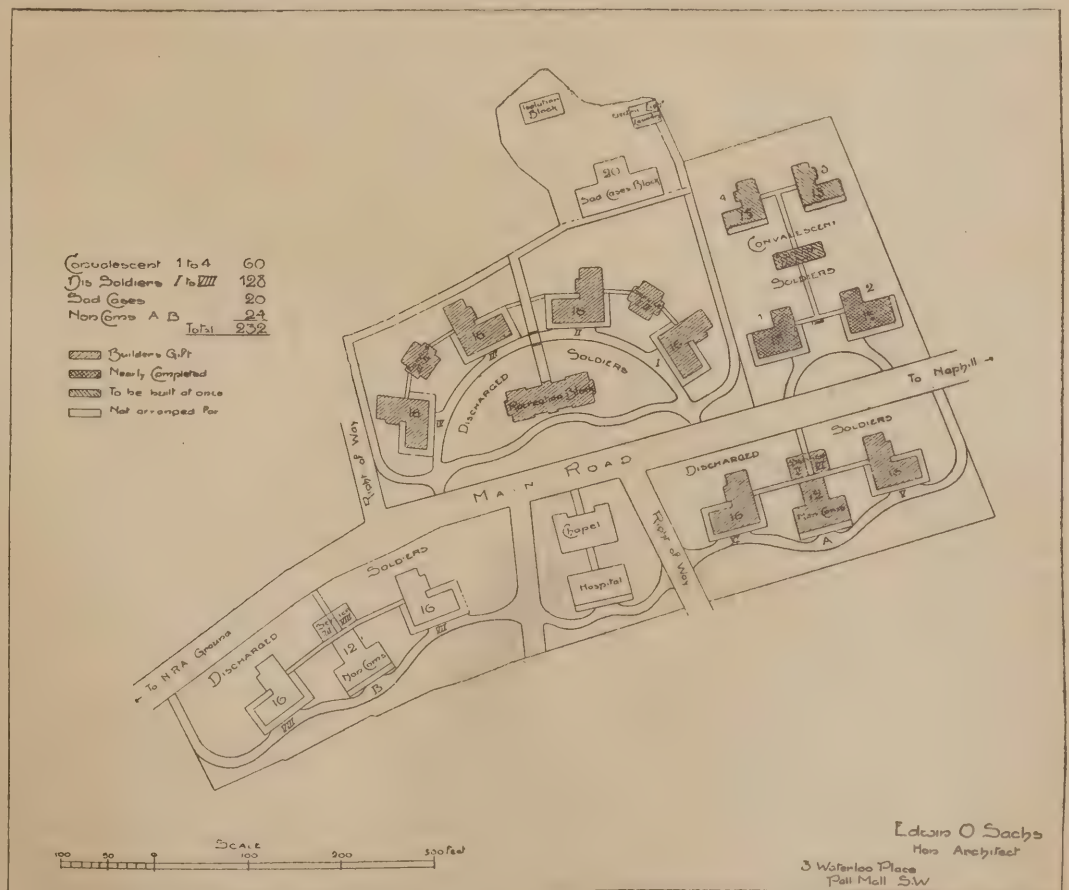
There is also a small church, a laundry, and an electric-light station, for which collections have been made in the electrical trade only.

The drainage system is now being laid down, the buildings fenced in, and the gifts even go to the extent of providing granite slabs and asphalt paths in the grounds.

As regards the date of completion, it is hoped that the Homes will be open at the end of the year, if not earlier. The furnishing, so kindly arranged for by Mr. Sam Waring (who has himself presented furniture for one entire Home), will be taken in hand, and the only point that will then remain will be to lay out the gardens for the coming Spring, and thus to complete what will be the only monument in Great Britain in which one great trade has combined—masters and men—for the welfare of fellow men who have been injured whilst fighting their country's battles.

It is of course only to be expected that an enterprise of this description should require an enormous amount of organisation and clerical work. Regarding the clerical work, this was undertaken at the offices of the British Fire Prevention Committee, whose staff are accustomed to the rapid methods with which Mr. Sachs is so generally associated. Besides the assistant-secretary of the Committee, Mr. Taylor, a very considerable amount of time had to be devoted to the work by a staff of typists and boys, and when one has to deal with many small subscriptions in money, besides a very complicated correspondence relating to the gifts in kind, it is not surprising that a good deal of "standardising" was applied as far as letter-writing was concerned. After the buildings had been designed and the quantities taken out, lists of the requirements in kind were printed, specifying the amount of material for each Home and service block, and the various donors were invited to state exactly what they would give.

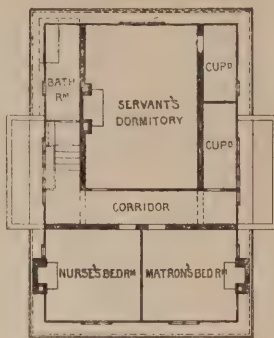
As was only to be expected, certain branches of the trades were exceedingly liberal in their offers, whilst others were absolutely the reverse. Thus, for instance, whilst the tiling, asphalt and wood-block flooring trades would have provided twenty times the amount of the material required, and chimney-pieces, brasswork, locks and doors could be had in any quantity, the timber trade has, up to the present, not supplied £50 worth of timber, nor has any timber merchant contributed any substantial sum of money; and this is a very curious fact, seeing how much the timber trade



PLAN OF SITE NEAR BISLEY.



FIRST FLOOR PLAN



FIRST FLOOR PLAN



FIRST FLOOR PLAN

HOMES 1 AND 2, WITH SERVICE BLOCK.

is associated with building generally. Of course the cement, lime and brick trades, as already publicly known, have given an enormous amount of assistance.

When the dearth of timber became so unpleasantly noticeable, a remodelling of the design to fit the materials had to be considered—wooden roof-trusses had to be altered to iron ones, and other details had to be changed.

Then the workmen had to be approached, and a very large number of posters and collection sheets had to be sent out all over the kingdom, the collections generally being made through the kind offices of the various builders, who again had the assistance of their foremen; and in many parts of the country there was a friendly rivalry among the firms as to who could get the best averages in comparison to the men employed. Frequently whole counties or large townships co-operated, and where there was co-operation there was generally a very good result.

The next step was in respect to dealing with towns where collection was not deemed advisable. Here concerts were organised, processions arranged, and the latest in this direction has been the sports at Walsall. Birmingham, Leicester, Nottingham and other Midland townships have been well to the fore in this special direction. Every letter regarding these matters was dealt with personally either by Mr. Sachs or by Mr. Rider, the answers being at least dictated by them personally, so that they were able to keep well in touch with all the donors and to bring their influence to bear upon their different friends.

The Actual Building Work.

When the question of getting the gifts in kind and the monetary contributions together was in full swing the question of execution had then to be dealt with, and it need hardly be mentioned that it was here that the splendid committee of stewards came in particularly useful. With nearly all of the leaders of the building trade round the table, a great number of questions could be settled in a few minutes, and perhaps one of the most momentous questions was when the selection of the builder who was to do the work came up for consideration. Colonel Trollope, whose interest in military work is so well known, was unanimously desired to help in this direction, and it was one of the most fortunate features of the scheme that he so kindly personally undertook to look after this matter:

The site being situated some distance from Brookwood Station, it was found necessary to run a special siding right on to it from the nearest railway points, which were Bisley Camp Station of the National Rifle Association and Brookwood Station, and it need hardly be said that, with the good facilities offered by Colonel Crosse and the War Office, this line was very soon put into working order, Mr. Symons, A.M.I.C.E., looking after the railway work.

Collecting the Gifts.

Then came the collection of the gifts. It is generally considered to be by no means an easy matter for a builder to get his goods together when he is ordering them from his merchants near at hand as a matter of business; it may therefore be imagined how complicated the matter becomes when in any one house materials are being presented by all kinds of firms of all possible trades from Edinburgh to Falmouth, and everything has to be brought up to time and got into the right place without undue expense.

The system adopted was one of issuing "authorities." The donor was authorised to deliver his materials, and where necessary tracings were attached to his authority. Messrs. Trollope were authorised to accept the goods, and then there was the revision stage on behalf of the Executive, whose member, Mr. Ellis Marsland, examined the presents before the receipts were issued. This again involved quite an organisation of "notices," and numerous forms were used for this purpose. Then of course came the question of addressing, and the goods were not only addressed, and labels supplied for this purpose, but each article received a label showing into which building it was to go—whether into Home No. 1 or 2, whether into the Recreation House, whether for the Church, or for the buildings generally. These various labels, besides bearing the number of the Home for which they were designated, showed different colours, so that every labourer could immediately see how to distribute his goods when unloading the trucks, &c.

It has been quite interesting to see the unloading operations at Brookwood and Bisley Stations, especially when there have been as many as twenty or thirty trucks at a time. There are a number of trolleys and a small locomotive running up and down the siding distributing the goods into their proper places.

Every "authority," "notice" or similar form, by the bye, is personally examined and signed by Mr. Sachs, who, together with Mr. Rider, jointly issue the various receipts. Mr. Marsland, as already stated, attends to the delivery, Mr. Hammond looks after the sanitary matters, and Mr. Farrow attends to the questions of ventilation and warming.

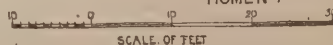
Everything being departmentalised and decentralised, although working from one headquarters, runs very smoothly, and during the whole of the operations there has scarcely been a hitch.

Taken altogether, there are many novel as well as interesting features in the organisation, management and execution of the Homes presented by the Building Trades of Great Britain, and quite irrespective of anything else it speaks well for the Executive of the British Fire Prevention Committee, as a small scientific society that manages to get through an enormous amount of work in a very short time, that a big scheme of this description—valued in all at £30,000—can be organised and managed with so little trouble and in such a popular manner solely from its own membership, and that the building trades generally have welcomed the assistance they have had from this young society, and have appreciated the manner in which this young body has been



GROUND FLOOR PLAN

HOME NO. 1



GROUND FLOOR PLAN

SERVICE BLOCK 1-2

HOMES FOR DISCHARGED SOLDIERS (BLOCK A)

able to bring so many conflicting elements together for a mutual effort in this patriotic scheme.

A.A. SUMMER VISITS.

OLD PLACE, LINDFIELD.

OLD PLACE, Lindfield, the residence and park belonging to the celebrated designer and artist in painted glass, Mr. C. Eamer Kempe, was visited by the Architectural Association on Saturday last, the third Summer visit of the session. The approach to the mansion is very picturesque; a large quantity of ancient domestic work exists in many directions to interest the visitor, until the grand old parish church is reached. This is a most interesting structure in various styles, with a characteristic Sussex tower and lofty spire, the building possessing a perfect store of fine mediæval design, while at the same time much of it has been done up in such a judicious manner (it cannot be called in the usual sense "restoration") that it is at once a most interesting place to the architect or the antiquary; whilst its pictorial qualities would appeal also to any artist—its grouping of parvises porch, deep transepts, large chancel and other features, culminating in the elegant entasis of the spire niches, the whole a centre of singular picturesque beauty. In the churchyard are some very admirable last-century tombs. Leaving the public footpath that passes through this place, and entering the road beyond, is seen a cluster of large ancient domestic buildings, the chief one being the west front of the mansion of Mr. Kempe.

Passing this to enter the building, one goes through a large pair of very elegant wrought-iron gates, when the visitor is at once confronted with the north side or entrance front of the mansion. This is an exceedingly picturesque three-storeyed erection, with many timber gables of varying sizes, and stone-covered roof, with mullioned windows filled with leaded lights, containing small portions of fine painted glass. The walling of the two upper storeys is covered with plaster, or fine rough-cast, upon which a pattern of large intersecting circles has been incised, the whole being tinted a soft yellow colour. The barge-boards to the gables (one or two of the gables being ancient) are of oak, weathered to a silvery grey tint.

The western elevation, a continuation of the one mentioned, is an entirely ancient structure of brick, stone, and much half-timber work, and is an eminently picturesque specimen of the work of the Elizabethan period. This portion of the house was erected as a residence by the ancient Sussex family of Challoner, in the time of Eliza-

beth, upon the site of a much older edifice, one that was then known by its present name of "Old Place"; it was purchased by its present owner about twenty-five years ago. The south or garden front continues this ancient elevation for a little distance, when the very large additions by Mr. Kempe are reached. These are carried out in the spirit of the old house in a most consummate manner, the difference between the old and the new work being so slight and the workmanship being all so admirable that one may be pardoned for not noticing it at first sight. In addition to this Mr. Kempe has, in making these extensions, devised in the most masterly manner the features of the fronts, so that the ideal of a first-class Sussex manor house of the sixteenth century is never obscured; the result is that the whole place is certainly one of the most beautiful mansions the Architectural Association have inspected. These additions were erected in 1884 and 1891.

Entering the porch in the old west front we are in what is termed the old kitchen hall, lined with Elizabethan panelling, with a ceiling of black oak joists filled in with plaster, and a fine Elizabethan fireplace. The next room to this is also most interesting, with small circular ornamental plaster panels in the ceiling, and another fine fireplace with secret cupboards built into it; upon the four-centred arch of the mantle are the arms of the Challoners. In the next room—the library, entirely filled up by Mr. Kempe—are some delightfully treated shelves and book lockers all in light oak with finely designed black iron hinges; a metal screen serving the same purpose, divided into squares and pierced, coloured alternately a rich blue and deep gold, was much admired; the ancient panelling terminated with a row of small circular pilasters forming a frieze was most interesting. A cabinet here made of carved panels of the time of Henry VIII. is an important feature in the furniture of the room. Passing through the entrance hall we come to the entirely new portion of the house, and enter what is termed the great parlour, an apartment about 35ft. long by 24ft. broad. The great feature here is the magnificent treatment of the ceiling in plaster and, apparently, wood. The whole is most richly divided by moulded ribs into panels radiating from centres, at each of which is placed a hanging pendant, forming, as the ribs curve down upon it, the well-known Elizabethan type of ceiling that seems founded upon the principle of fan vaulting. These pendants are terminated with a very graceful construction of small volutes and a flower. The fireplace is of great size, inlaid with wood and ivory, and was formed upon the model of one in the castle at Helmsley; it is full of very rich refined details. The bay windows have extremely fine paintings on glass by Mr. Kempe placed in the upper portions of them.

The furniture here, consisting of old oak and some fine mahogany articles, the grand tapestry and antique carpets, and the many little things of refinement, made a sumptuous apartment. Leaving this chamber, the drawing-room was inspected: this is carried out in the most artistic style. The halls are lined with new oak carved and moulded, with picture panels, and above is an Elizabethan floral frieze divided into compartments by a delicate arcade, each portion containing a vase with conventional flowers. The ceiling is similar in design to that of the great parlour. The windows are filled with exquisite stained glass in floral patterns with poetic mottoes, the whole of which are chiefly in delicate brown stain, rich yellow, and white glass. The general effect of this room is most refined though gorgeous, and the appearance is enhanced by the good taste in furniture and appointments. In general this room, like everything in the whole house, has that which is required to make it a complete whole. In no apartment, equally with the design of the house or its gardens, is there anything that may be termed superfluous, and the result generally is a most pleasing richness combined with artistic simplicity. The dining-room, like many of the other apartments, has, as its chief feature, an exceedingly fine ceiling based upon the principles of those of the time of

Anne or the early Georges. It is divided into large coffer, or panels, by massive intersecting beams richly ornamented and delicately moulded.

The room contains as usual a large fireplace modelled on those in the old portion of the house with a very fine dignified effect; the walls are hung with beautiful tapestry from the designs of the owner; the whole room is most pleasing and interesting. The principal staircase was inspected next; it is in new oak of a very light, if not raw colour, like so much of the oak about the house, and is very novel and picturesque in treatment. An upper long gallery was reached and the bedrooms were inspected. Their number is very considerable, and their artistic variety seemed inexhaustible; one room with a beautiful flowing design in plaster on its ceiling, a charming coloured frieze, and its walls hung with loose old dark green silk brocade, was much admired; the furniture was exceedingly costly, not only here but throughout the house. Many more beautiful bedrooms were seen, and much fine furniture, china, books, together with splendid specimens of Mr. Kempe's painted glass in various rooms, and in the chapel—a most interesting chamber, one that possesses a large and beautiful screen rejected from the parish church at its restoration. We proceeded to inspect the gardens laid out in the "formal" manner. This has been so done that they really formed a great part of the pleasure of the visit; the trees and shrubs are so charmingly disposed in conjunction with large plain surfaces of vivid green grass that the resultant effect is excellent. In the centre is a lofty sundial upon a brightly painted and banded shaft. So, with every expression of thanks to Mr. C. Eamer Kempe, the party returned to London, having inspected an almost ideal English country house.

H. D. W.

Views and Reviews.

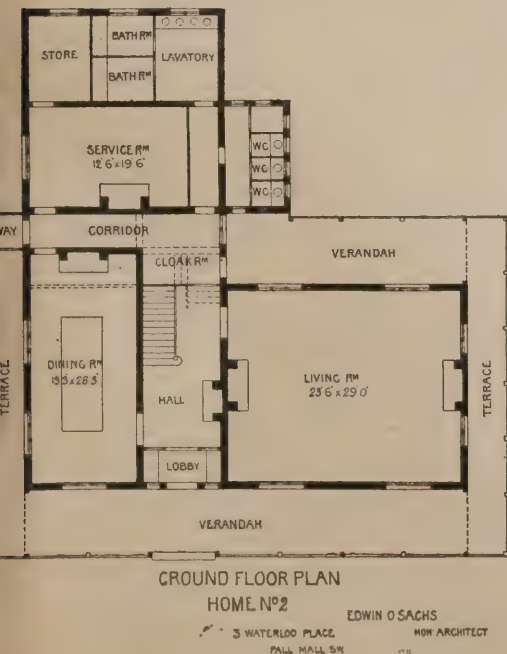
KENSINGTON PALACE.

The interest taken by the public in Kensington Palace is largely due to the fact that it is so closely associated with the early life of the Queen. As is well known, it was at Kensington Palace that Her Majesty was born, and here she lived up to the time of her accession. The Palace has, however, strong claims upon our attention by reason of its architectural interest. The orangery is one of Wren's most beautiful buildings, and the Palace itself, though by no means wholly satisfactory, contains much that merits the attention of the architectural student. Mr. W. J. Loftie's little book, a second edition of which has just been published, gives as much attention to these matters as can reasonably be expected in what is primarily a popular guide to the Palace and gardens. We think, however, it would have been well—even in a book intended for non-technical readers—to point out in what respect Kent's gorgeous decorations offend against the canons of artistic taste. To say that this "may be criticised" and that "must be censured" does not convey much information. A little more definite criticism in handbooks of this kind might do something to raise the standard of popular taste. Mr. Loftie writes agreeably, and evidently with knowledge. This new edition has been revised and enlarged, one of the most interesting additions being a plan of the gardens made in 1762. There are also several new illustrations from photographs.

"Kensington Palace and Gardens" (revised and enlarged edition), by W. J. Loftie, B.A., F.S.A. Farmer and Sons, Kensington High Street, London, W.

New Police Station at Swansea.—

A sub-committee of the Swansea Corporation recently considered plans of a new central police and fire-brigade station. The plans set forth two schemes, the cost of one scheme being £20,000 and of the other £15,000. The site of the proposed new station is at the rear of the Free Library, Alexandra Road. The matter was deferred.



Professional Practice.

Croydon.—The new Victoria Wing of the Croydon Hospital, opened recently by Princess Christian, is on the south-western side of the hospital. It contains on the ground floor an entrance hall with porch, committee-room, a ward for fourteen men, with ward kitchen, clothes-room, linen-room, bathroom, and lavatory, and a sanitary spur containing conveniences, slop sink, closets, and scrubbers' scullery; on the first floor the matron's bedroom and bathroom, a ward for fifteen children with adjuncts, and a ward for four women with sanitary spurs; on the second floor nurses' dining-room, sixteen bedrooms for nurses, bathroom, lavatories, linen-room, box-room, and a sewing-room; on the third floor, bedrooms for five servants and a box-room. There is also ample cellar accommodation in the basement. The staircase has been rebuilt, and a lift to all floors provided. In addition, in the Royal Alfred Wing, that portion of the ground floor which was at the level of the old original building has been lowered, so that the whole ground floor is now at one level. The old casualty-receiving and operating room has been given up as a waiting-room, and two small rooms, originally intended for night porter, have been thrown into one and fitted as the casualty-receiving room. The work has been carried out by Mr. E. J. Saunders, builder, of Croydon, from the designs of Mr. Charles Henman, architect, his clerk of works being Mr. E. Crane. Messrs. Wenham and Waters, of Croydon, installed the hot-water apparatus and electric lighting, and Messrs. Clark, Bunnett and Co., of New Cross, supplied and fitted the lift.

Sheffield.—The pavilion at Bramall Lane Cricket Ground is to be altered according to the designs of Mr. A. E. Turnell, architect. There will be a complete rearrangement, and the measurement of the new structure will be 170ft. by 50ft. In the basement at the Bramall Lane wing will be billiard and reading rooms for the players, together with public and players' lavatories. In the bowling-green wing, also in the basement, are to be the members' lavatories and other offices. On the ground floor at the Bramall Lane end the amateurs' dressing-rooms will be built, with smoking and reading rooms adjoining, and a private luncheon-room behind, together with an elaborate arrangement of baths. The size of this dressing-room will be 31ft. by 18ft., with a window overlooking the play 16ft. wide, thus affording the occupants a view of the game which in the present building has been virtually impossible. In the centre, on the ground floor, will be the members' public room, 63ft. long, the whole frontage being of glass and iron. At the back will be the pavilion bar, together with the public bar, this latter having a separate entrance from the rear of the whole building. At the bowling-green end is the secretary's office, cloak-room, and a series of large committee-rooms, with separate entrance to the bowling green, which it is proposed to still maintain. A verandah runs the full length of the building, with a raised platform at each end, the pavilion itself being raised three steps above the level of the verandah. On the first floor in the Bramall Lane wing are the professionals' dressing-rooms, with a similar series of baths to those below; next to this will be a much-needed writing-room for reporters, whose gallery will be in the balcony immediately in front, and very much in the same position as the present one. This gallery is 20ft. by 11ft., and should give good accommodation, whilst the room itself is 20ft. by 15ft., with the telegraphists' room immediately behind. Out of the reporters' room is a separate entrance to the general balcony, which runs virtually the whole length of the building. The public dining-room is also on this floor, 63ft. by 36ft., with a separate staircase; whilst at the bowling-green end are the committee's luncheon-rooms, ladies' tea-rooms, and other offices.

Change of Address.—Mr. T. Potter has removed from 95 Brigstock Road to 5 Outram Road, Croydon.

New Patents.

These patents are open to opposition until August 20th.

1899.—Ratchet Braces.—5,338. J. BLAKEMAN, 71 Stephenson Street, South Shields. The feature of this brace is that it can be used in a right or left handed direction. This is made possible by centering the hand lever in such a manner that it may be turned to bring one or other of its sets of teeth into engagement with the main toothed wheel.

Fixing Rainwater Piping.—12,081. A. B. GEE, 4 The View, Morland Avenue, Croydon. Ordinary rainwater pipes have a socket formed on the pipe itself, so that pieces may need to be broken off to make the piping fit. This invention provides a detachable socket which enables such broken lengths to be used, besides facilitating ordinary connections.

Mixing and Transporting Concrete.—12,400. J. H. FISHER, 639 G. Street, N.E., Washington, U.S.A. This invention is designed chiefly for street work, and its object is to mechanically mix the concrete while it is being taken to the place where it is wanted. The apparatus is mounted on wheels like a cart (with shafts) and consists of a drum made in two halves in which the materials are placed. By an arrangement of pawls and ratchets the drum only turns when the apparatus is drawn in one direction, remaining stationary when drawn in the other. The concrete is discharged down a chute.

Tile-making Machines.—12,453. E. HODGKINSON, Clifton House, Heathcote Street, Chesterton, Stoke-on-Trent. To the periphery of the clot rolls segments of suitable section are attached, and so roll out a continuous length of clay marked or shaped as required. Lengths are mechanically cut off by a knife operated by a lever which is moved periodically by pins on a roller.

Indicators for Cranes.—14,024. R. W. MONAHAN, 375 Chester Road, Manchester, and H. BARSDOFF, of the same address. A strong spring is introduced into the length of the derrick rods or chains, and when the crane is set to raise a load which exceeds the strength of the spring the latter is compressed and moves the hammer of a bell, opens a steam whistle, or shuts off the steam to the engine; thus avoiding accidents from over-loading.

Watering-carts.—14,573. E. S. SMITH, 35 Botanic Road, Wavertree Park, Liverpool. This invention relates to motor watering-carts. The initial pressure on the water is kept up by discharging the exhaust of the engine into the water tank.

Cooling Buildings.—15,964. F. R. COADY and J. J. COADY, both of 12 West Sixtieth Street, New York. The ceilings are made of metal or other waterproof material and slant upwards to the centre. During hot weather water is run over the top of them and collected in pipes that pass through the walls and communicate with outside pipes.

Fireproof Slabs.—W. P. THOMPSON, 322 High Holborn, W.C. (*Simmons and Bocks, Munich*). The foundation of the slab consists of asbestos treated in a rag engine and cement. Other materials are added and the mixture is pressed into moulds, a core of wire netting or other material being inserted if desired. The slabs are then dried and further impregnated with water-glass, sulphate of alumina, or similar substances.

1900.—Construction of Walls for Quays, Platforms, &c.—8,814. F. HENNEBIQUE, 54 Boulevard St. Michel, Paris. This is a system of construction of strengthened cement beton which is made into blocks and then transported to the site, where they are put in place by simple juxtaposition. Each block consists of a sole or base plate, a face and one or more buttresses. Iron rods are used in the erection for strengthening the construction.

The following specifications were published on Saturday last, and are open to opposition until August 27th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—10,386, DUCAT, aerobic bacterial filters for the purification of sewage. 12,883, DUMONT, apparatus for repairing incandescent electric lamps. 13,011, BOND, acetylene gas lamps. 13,060, ELLIS, construction of bricks and other moulded building materials. 13,163, NOAD AND BAKE, glazing or enamelling compounds for pottery. 13,423, WILLIAMS, BAGSHAW AND PENDLEBURY, treatment of wood. 13,470, BULLIVANT, BULLIVANT, BULLIVANT AND BULLIVANT, sawing-machines. 13,471, BULLIVANT, BULLIVANT, BULLIVANT AND BULLIVANT, sawing-machines. 13,472, BULLIVANT, BULLIVANT, BULLIVANT AND BULLIVANT, pulley stiles of sash window frames. 13,509, ALDRIDGE, electric cranes. 13,575, JANSEN, wardrobe hook. 14,282, MILLINGTON, heating and ventilating apparatus. 14,639, JOHNSON (*Kalle and Co.*), colouring-matters. 15,094, TUCKER AND DAWS, locking and unlocking of drawing compasses. 15,690, WILLIS AND BATES, tops or caps for soil or rainwater pipes. 15,765, WHITTAKER, bacterial treatment of sewage. 16,135, READ-HOLLIDAY AND SONS, LTD., TURNER, DEAN AND TURNER, manufacture of colouring-matters. 16,235, PARTL, acetylene gas generator and apparatus. 16,399, SALSBURY, acetylene lamps. 16,405, WILSON, water heater for domestic supply and hot-water heating purposes. 16,410, ECKSTEIN AND ANGOLD, electric arc lamps. 16,425, RICHES, sand-mould pressing machine. 16,469, TAYLOR, method of constructing brackets, stiffeners, gusset stays and beam pockets, used in girder work, steam generators, and other structures and erections. 16,794, TWEEDIE, anti-vibrating arrangement for incandescent gas lighting. 16,894, LAKE (*Fährdrich*), suspension gas lamps, chandeliers, &c. 17,119, FREEMAN AND PERRY, dust-collecting apparatus. 17,814, SPITTAL, bandstands or similar erections. 19,036, BJÖRNÖD, acetylene gas generating and storing apparatus. 20,056, LEVICK, manufacture of a certain part of ball floats. 23,204, HENAY, moulds for forming relief ornamentation on the walls and ceilings of rooms, book covers, &c. 23,623, MEYER, taps or cocks. 23,990, LÜHNE, manufacture of glass and other analogous substances.

1900.—839, LAKE (*Sugarman*), incandescent electric lamps. 1,292, JENSEN (*Margonari*), gas lamps for lighting and heating. 7,102, CROWE, grate bars. 7,204, CROWE, grate bars or frames. 7,539, MORIN, apparatus for generating acetylene gas. 7,611, MORO, incandescent vapour lamps. 8,633, KISTNER, roofing-tile made of artificial cement. 8,791, WHITMORE, roofs and roofing. 8,792, PFAHL AND MAYNARD, columns. 8,888, JACOLIN, instrument for drawing and measuring angles. 8,966, MURPHY, art of manufacturing tubes or pipes. 9,093, ADAMS, tip-up lavatory basins. 9,120, PELTON AND MOSHER, building constructions. 9,131, KIELBERG, manufacture of pipes from cement.

The Organ in St. George's Chapel, Windsor Castle, is being thoroughly cleaned and repaired, and some of the stops are being altered, while new ones are being added. St. George's Chapel is now lighted by electricity, both in the choir and in the nave, and the Queen has caused the Royal vault underneath the Albert Memorial (Wolsey) Chapel to be similarly lighted. An altar has been placed at the upper end of that sepulchre.

National Memorial to the Duke of Westminster.—It has been decided that, as a national memorial to the late Duke of Westminster, the rose window in the south transept of Westminster Abbey and the twelve lights below it shall be filled with stained glass of a more satisfactory character and more harmonious colouring than that which is now there. The work, which is estimated to cost not less than £3,000, will be under the general direction of Mr. Bodley, A.R.A.

Correspondence.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—It is about time, I think, that architects' assistants should unite and advocate for increased salaries: the paltry sums paid by architects to their assistants demand this. Take, for instance, the average young fellow who, after paying from 80 to 200 guineas for three, four, or five years' pupillage, when out of his articles has to accept a situation as junior at the splendid wage of 15s. to 25s. a week!—and on this he is supposed to dress well and keep up an appearance, which cannot be done without help from his parents. As he gets older, his chances do not greatly improve. If, at the age of thirty, he gets £2 a week he probably considers himself fortunate; yet most mechanics would scorn this pittance. I know several clever draughtsmen, well educated, with nine or ten years' experience, who are getting salaries under this sum.

Just look at the advertisement pages of the building papers week by week and note the consummate impudence of those advertising for assistance. Very often the assistant who gets a salary hardly sufficient to keep himself knows quite as much as, if not more (and may have better qualifications) than, his employer. The following are quite usual types of advertisement—they speak for themselves:—

ARCHITECT'S Assistant wanted at once.
Good draughtsman, able to prepare detail drawings and plans from rough sketches. Salary £1.

A man with six years' experience would hardly be able to do more than the advertiser requires.

ARCHITECTURAL Draughtsman required
in London. Only thoroughly qualified men of experience need apply. Designing, construction, details, surveying, perspective, and quantities. Salary 2 to 2½ guineas.

This needs no comment. Surely in no other profession requiring so many years' study and such all-round knowledge and education is the remuneration of the assistants so utterly inadequate.

Another grievance is the number of hours the architect's assistant has to work. The average office hours are from 9.30 A.M. to 6 P.M., and for any time he may work beyond this he usually receives—nil. One member of the profession with whom I am acquainted does not pay for overtime, but presents his assistants with sixpence for their tea! Such munificence is overwhelming!

I am sure you would be conferring a great boon upon architects' assistants in general if you could spare the space in your valuable paper for the discussion of this timely subject. I enclose my card, and remain at present,

DISGUSTED.

[This subject is one of wide interest and we shall be glad to hear what other readers have to say.—ED.]

Strength of Beam.

To the Editor of THE BUILDERS' JOURNAL.

Bromley, Kent.

SIR,—On page 411 of your issue of July 4th Mr. Henry Adams gives the safe load on a fir beam 12in. by 9in. and 13ft. long as 234 cwts, factor of 8. The querist I think stated that there is a storey post under its centre as well as both ends being fixed. The above result seems far short of what the beam would carry according to other formulæ, unless I have misunderstood Mr. Adams's result. Will he kindly tell me if the following are of any use? I have calculated a similar beam but only supported at ends and with no storey post, factor of 8 in each case:—

Molesworth.—B.W. in cwts. distributed load
 $= 8 K B D^2$
 L = safe load over 13ft. = say, 5 tons.

$K = 12$. B and D all in inches.

Hurst.—B.W. in cwts. distributed load
 $= 2 \times C \frac{b d^2}{L} = 4.35$ tons, safe load over 13ft.

$C = 3.6$ (fir). b and d in inches. L in feet.

Storey on Strains.—B.W. in cwts. distributed load

$$= 8 \frac{a d S}{l} = 3\frac{1}{2} \text{ tons, safe load over 13ft.}$$

$$\left. \begin{array}{l} a = \text{area} \\ d = \text{depth} \\ l = \text{length} \end{array} \right\} \text{in inches. } S = 1,346.$$

Quick:

$$\frac{W l^2}{8} = \frac{S b d^2}{6} = 4.43 \text{ tons, safe load over 13ft.}$$

$S = 6,500$. b and d in inches.

This is similar to Mr. Adams's.

The average is

$$5 + 4.35 + 3.75 + 4.43 = \frac{17.53}{4} = 4\frac{1}{2} \text{ tons, say,}$$

against Mr. Adams's 234 cwts.

Yours faithfully,

J. E. J.

Surveying and Sanitary Notes.

Improvement of Reading.—It is proposed by the Corporation of Reading to rent ten acres of land from Caversham Bridge to the Scours for the purpose of public walks and pleasure grounds. The projected promenade will enhance one of the prettiest reaches of the river.

The Surveyors' Department of the Oldham Corporation being hampered for room in consequence of the increase of work devolved upon the department in late years, it has been decided to increase the accommodation in the Town Hall. Plans have been drawn and the contract has been provisionally let for the work of alteration, the lowest tender being £347 10s.

The Parish of St. Pancras.—According to a report by Mr. W. N. Blair, engineer to the St. Pancras Vestry, of the 2,672 acres which constitute the total area of this north-western borough, 688 acres are unbuilt upon, and more than one-fourth of St. Pancras is public or semi-public open spaces and railways. The open spaces include parts of Regent's Park and Primrose Hill, Parliament Hill Fields, Waterlow Park and Highgate Cemetery.

Improvements at Barry.—The Barry Urban District Council last week decided to proceed with the construction of the lower part of the Gladstone Road and the proposed small-pox hospital, the latter to cost about £9,000. Earlier in the year the Council acquired powers to build the hospital and selected a tender for that purpose, but through postponement and delay the contractor declines to go on with the work at the original price, owing to the increased price of materials. The work will now be retendered for.

Open Spaces in the City.—On July 9th a committee of the House of Lords considered the Various Powers Bill of the Corporation of the City of London. The Bill proposes to acquire powers in relation to baths and wash-houses, a crematorium, public service works, open spaces, bridges and other structures over streets, public lighting, water-closets, obstructions, finance, &c. The section to which the main opposition was directed was that which proposed the throwing open of Finsbury Gardens, in the centre of Finsbury Circus, to the use of the public. Eventually the committee found the preamble proved and allowed the Bill to proceed.

Lighting the Embankment with Electricity.—On the Thames Embankment, close to the Charing Cross railway bridge, a big building is being erected, which, when completed, will be the generating station for the electric light with which the London County Council purpose to illuminate Westminster and Waterloo Bridges and the Embankment. This will be the first attempt of the Council to provide electricity, but Londoners need not be reminded that the Embankment has previously boasted electric light.

Builders' Notes.

Bristol Church Contract.—The tender of Mr. E. Walters, contractor, Montpelier, has been accepted for the completion of St. Michael and All Angels' Church, Windmill Hill, Badminster, Bristol.

Development of Ilkley.—A number of building sites on the Myddleton Estate were recently sold. Expansion to the north or south of the town was impossible, so land was acquired on the Myddleton side of the river by the Wharfedale Estate Company, and offered for sale, as above mentioned.

Contravening the By-laws.—John Peter, joiner, was recently summoned at Kirkintilloch for allowing new houses built by him to be occupied without getting a certificate from the surveyor. The party walls had not been carried 12in. above the highest roof, and the end gable had not been so constructed as to be damp-proof, while the height of the ceiling in one of the houses was 2in. less than that fixed by the Act. A penalty of 5s. was imposed.

Working-class Dwellings for Morpeth.—Councillor Jardin's scheme for erecting working men's dwellings at Morpeth has been adopted. The sanction of the Local Government Board has been obtained for the sale of a portion of the Middle Greens, comprising about 2,200 sq. yds; a reserve price of 1s. 8d. per sq. yd. over the whole area is to be fixed. Each of the houses erected is to be suitable for occupation by a working man and his family.

He said it was due to Pique.—Mr. Frederick Lee, a builder of Alfreton, was recently charged with fixing a water-pipe to a service pipe without the surveyor's consent. Mr. Lee said the present charge against him was due to pique. Attempts had been made "to get at him," and at last the chance had arrived, although he still affirmed it was not the custom in Alfreton to give notice. If it was the law, then he did the work in ignorance. A penalty of 5s. was imposed.

The London County Council at last week's meeting entered upon a long discussion on a return of works completed by the Works Department up to March 31st last. This report stated that there had been a loss of £19,950, the estimates being exceeded by that figure. Mr. Beachcroft said the department had shown that at any rate it could not erect working-class dwellings successfully in competition with the contractor. Mr. Burns contended that the department had never had fair play from the officials of the Council. He pointed out that the work done by the Works Department was of far better quality than that done by the contractors. He hoped the time would soon come when the Works Committee would be reconstituted.—Mr. Organ said the Baroness and Mr. Burdett-Coutts had offered to the County Council the freehold of the institute in Vincent Square, and a site adjoining. The whole site comprised half an acre, and the value of it and of the buildings amounted to £11,000.

West Riding County Council Contracts.—At a meeting of this Council on July 11th Mr. J. Crowther, vice-chairman of the General Asylums Committee, reported that the Acute Hospital at Wakefield was now approaching completion. As to the proposed new asylum at Storches Hall, an estimate was prepared some years ago, amounting to £103,283, for the erection of the Acute Hospital and two cottage homes, and this was approved by the Council at the January meeting. Since then eight tenders had been obtained for the work, the lowest of which was £110,900 and the highest £125,000. The Committee now found that by the use of certain stone already on the estate and the revision of certain minor details they could effect such a reduction as would bring the cost within the estimate originally approved, so that, instead of the expenditure being £106,900, they hoped it would now be £105,900. Some time ago the tender of Messrs. Obank and Sons was accepted for the erection of laundry buildings, boiler house and chimney

at the Scalebor Park Asylum. As to the Wakefield Asylum, the Committee felt it desirable to have a thoroughly qualified practical man to look after the heating, electrical and other work there, and consequently recommended the appointment of Mr. W. M. Harrop, of Sandal, as superintendent engineer and clerk of works at a salary of £200 a year. The tender of Messrs. Isaac Gould, Ltd., of Leeds, was accepted for the erection of a bakery at Scalebor Park for the sum of £916 10s., and other tenders were accepted for improving various parts of the asylum buildings.

A Claim for Breach of Contract.—

The case of *Cook v. Axbridge Poor Law Union* recently came before Mr. Justice Lawrence at the Bristol Assize. The plaintiff (who is a builder) claimed £500 for breach of contract in connection with a tramp ward at Weston-super-Mare which he agreed to build for the defendants. The contract price was £680, and the work was to be completed by July 12th. Plaintiff's counsel contended that his client was prevented from completing the work by reason of the defendants refusing him certain payments on account, and by altering the plans and taking away his men to do work which their engineer thought ought to be done. Plaintiff had been paid a certain amount, and he claimed the balance to bring it up to the contract price, because, he said, if he had been allowed to go on with the work he would have finished it and earned his money. In addition he claimed £232 for extras which, he stated, were ordered by the defendants' engineer, and a small sum for the detention of his plant. The answer of the defendants was that the plaintiff was not ready and willing to do the work, and that as he made default they were entitled by the terms of the contract to take it out of his hands and finish it themselves. The Guardians counter-claimed for the amount which it had cost them to finish the work. It was provided in the specification that the plaintiff, if he desired, should be entitled to draw to the extent of 80 per cent. at the discretion of the engineer, but the contract did not contain any such clause. Plaintiff did actually have "draws," and about a month before the contract should have been completed he wanted more money, but could not get it. That was the only reason why he could not proceed. A consultation took place between counsel, and Mr. Duke (defendants' counsel) offered to take judgment on the claim without costs, and to abandon the counter-claim, this to settle all matters between the parties. These terms were accepted. Mr. Duke remarked that the building had cost the Guardians about £1,000, instead of £600.

Congress of Archaeological Societies.

AT the congress of the 39 archaeological societies in union with the Society of Antiquaries held under the presidency of Sir John Evans, K.C.B., on July 12th, the following resolutions were adopted:—

1. "That, in view of the discussion on the British Museum Bill lately before the House of Commons, this congress desires to press on the Government the immediate necessity of adding to the buildings at the British Museum."

2. "That this congress protests against the Bill now before Parliament to amend the Union of Benefices Act of 1860 by extending to the country at large the statutory powers now existing in the City of London by which the City churches are gradually being destroyed as a necessary consequence of the union of benefices."

3. "That in the opinion of this congress any attempt strictly to enforce the law of treasure trove would have an injurious effect not only on archaeological science but on all collections of antiquities, both public and private."

4. "While gladly hailing the proposal properly to house Diocesan records, this congress is of opinion that it would be advantageous to defer the passing of Lord Belper's Bill until after the departmental committee on the custody of local records has made its report."

On the proposal of Mr. J. Horace Round it was resolved to take steps to promote the systematic study of place-names on the lines so successfully adopted in France.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"The more extensive your acquaintance is with the works of those who have excelled, the more extensive will be your powers of invention, and, what may appear still more like a paradox, the more original will be your conceptions."

—SIR JOSHUA REYNOLDS.

Our Inset Sheets.

THE story of the Building Trades' Gift to the Nation will be found on another page of this issue. The figures in the relief "Charity," by Mr. George J. Frampton, A.R.A., are portraits. The panel is in a very rich marble—the frame being in several colours decorated with little white-metal boy angels blowing trumpets. The pear-trees behind the figures are symbolical of Love and Affection. The monument is now in Kirkby-Wiske church, near Thirsk, Yorkshire, and looks very beautiful, as it is in an excellent light. The statuette by Mr. F. W. Pomeroy is in bronze and ivory, and is a portrait of Mrs. Emslie Horniman. The bronze was cast by the Cireperdu method. The head and hands are carved in ivory. The inlay of mother-of-pearl in the belt is to represent the colour of a most beautiful belt executed for Mrs. Horniman in steel and enamel by Mr. Alexander Fisher.

The Late Mr. Gould.

THE death of Richard Davis Gould, architect, who for a considerable time was borough surveyor at Barnstaple, occurred at his residence in that town on Monday last week. Deceased was 83 years of age, and was a prominent architect in his day; he was responsible for much of the architectural beauty of Barnstaple, notably the excellent pannier market, the Albert Clock Tower, the Bridge Buildings and various private buildings. He also prepared the designs of several churches in North Devon. After filing the office of borough surveyor for forty-six years, Mr. Gould was laid aside by a severe attack of paralysis, which confined him to his bed for eight years. When he was taken ill the Town Council of Barnstaple, in recognition of the very valuable work he had done for the borough, granted him a life pension of £100 a year. Mr. Gould was an elder brother to Mr. Frank Carruthers Gould, the widely-known and clever cartoonist, and was one of the founders of the Exeter Diocesan Architectural Society in 1841; at the time of his death he was the sole survivor of the original members, who numbered more than two hundred. He was a capital descriptive writer and a brilliant and accurate draughtsman. His numerous papers and drawings preserved by the Society testify that he was one of the foremost Gothic men in the middle of the century. His only son—John F. Gould—also a gifted architect, predeceased him by some years. Mr. Gould was buried on July 12th.

A Favourite House of Dickens.

THE Golden Cross Hotel, Charing Cross, is to come under the hammer at the Mart this month. It was, as a coaching house, known as "The Bull and Mouth of the West," and from a hostelry with a sign-post and water-trough outside has become a hotel with sixty-five bedrooms. On May 13th, 1827, Mr. Pickwick and friends commenced their travels on the Rochester coach from the Golden Cross, and here it was that the pugnacious cabman "spurred away like clockwork" at the Pickwickians, who were rescued by Mr. Jingle. It was a favourite house of Dickens, who introduces it into "David Copperfield." David's arrival is described in Chapter 19. Mr. Peggotty also visited David there, and the meeting is described in Chapter 40. The arch was abolished in 1851, and a few years ago extensive alterations were carried out at the present building, which is a little to the east of the original Golden Cross Inn of Dickens.

Old and New: A Mixture.

MR. HENRY H. B. SANG becomes very wrathful in the columns of the "City Press."

He says: "Who is responsible for the act of vandalism perpetrated at the Tower of London? I noticed the other day that a barrack is being run up between the Royal Armoury and the Jewel House upon the site of the old garden. It is a difficult matter to decide the style of this very new building, but, so far as I can make out, it seems to be a sort of cross-breed between Norman Shaw's Queen Anne style and the modern School Board building. I need hardly say that this modern erection does not in any way harmonise with the simplicity and grandeur of London's ancient fortress. We find within the precincts of the Tower many buildings which are not in keeping with the style of the ancient building founded by the Romans. Until lately, however, the heart of the citadel, the Armoury, remained untouched, but now it is being disfigured and hidden by the above modern barrack. If it was absolutely necessary to provide barrack accommodation within the Tower, why was the style of the ancient building not adopted instead of the inartistic light-coloured brick building now in course of completion? This is a fit case for the Society for the Preservation of Ancient Buildings to enquire into." We have not made an examination of the building, but looking at it from the river the other day, it did seem to be very fresh and out of keeping with its surroundings; but weathering will, of course, modify it a great deal.

Colston Hall, Bristol.

It will be remembered that the Colston Hall at Bristol was destroyed by fire some time ago. The rebuilding has made good progress and the new hall is now entirely roofed in, and the interior is so far finished that the main ideas of the architect and the splendid accommodation for the public and performers can be understood. There is every prospect of the building being completed by the autumn, in time for the many musical and other gatherings which may then be expected to take place. It will be a pity if the scheme for rearranging and improving the roadway and approaches to the hall is not carried out, owing to the fear of claims for compensation by frontagers. When one remembers what large sums have had to be paid to frontagers for slight concessions one cannot wonder at the hesitancy on the part of the civic authorities. Perhaps, however, sweet reasonableness may prevail, and future visitors to Colston Hall may with more comfort and ease be able to gain access to and depart from Bristol's largest public building.

Keeping the House Cool.

THE fountains at the Palace of Westminster were very busy last week. Probably few persons are aware that there are fountains within the precincts of the Houses of Parliament. They are eminently useful, and not in the least ornamental, their purpose being to keep the roof of the lobbies in the House of Commons cool. For the better achievement of this object they are filled with iced water, which falls on a flat surface in a fine spray, and the constant evaporation going on makes the atmosphere of the division lobbies almost bearable in the hottest weather. The temperature of the House itself is kept down to 60deg. by means of iced air, and this is only one of the many things done for the comfort of the Commons.

The Pavilions at Lord's.

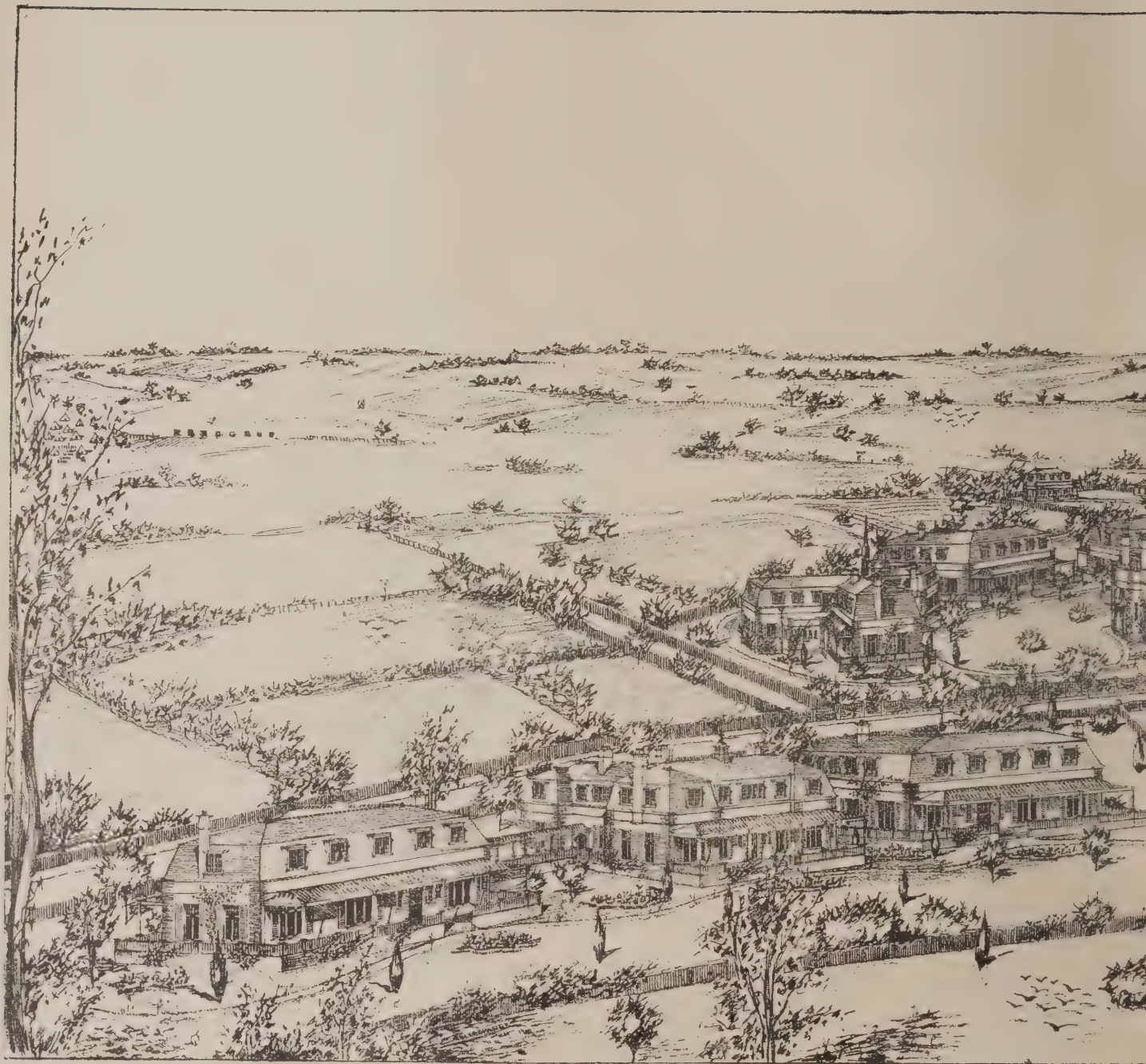
A NEW Press stand has been erected at Lord's, and the "Times" has become very cross because it is not in the place where it wanted it to be. And with this start its readers have taken up the cry against the M.C.C. management. One correspondent says:—"It was an extraordinary thing that something like £40,000 should be spent on structures without the knowledge of the general body of the club that such buildings were contemplated. It was extraordinary that a committee of taste, composed of members on and members outside the committee, was not

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RELIEF: "CHARITY." BY GEORGE J. FRAMPTON, A.R.A.

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THE BUILDING TRADES' GIFT TO THE NATION: HOMES OF RES



HOME FOR DISABLED SOLDIERS, BISLEY. EDWIN O. SACHS, Hon. Architect.

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BRONZE AND IVORY PORTRAIT STATUETTE. By F. W. POMEROY.

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appointed. It was also extraordinary that no competing designs were called for and no architectural expert appointed as an assessor to select from those designs. I do not mean that by the rules of the club it was incumbent on the committee to do all these things. But it was incumbent upon them to do what all men entrusted with the affairs of others are bound to do—namely, to take all precautions that important business involving large expenditure is done in the best possible way. They took no precautions, and the result was buildings which Mr. Furniss has stigmatised as monstrous, erected at a large outlay, to meet which it was necessary to add 200 life members at £200 each and to pass by poorer candidates whose names had been on the books for years." The pavilions at Lord's are certainly not beautiful; cricket and race pavilions are generally ugly. But that is no reason why they should be. Capable architects might effect a reform here by providing buildings which had artistic merit in addition to the requisite accommodation, which appears to be the only consideration at present.

the carver's work which emanated from Gibbons's chisel, but the very fine and vigorous heads on the keystones are assigned to him. Louis Laguerre, assistant and imitator of Verrio, was employed to decorate the twelve circular spaces of the round window or half storey on the south side with frescoes in chiaroscuro of the twelve labours of Hercules, for which, together with representations of the four seasons in south front, now disappeared, he received £86. Our illustration is from a drawing by Mr. Alfred J. Roddis.

A New Light-house.

THERE has just been completed on the foreland, near Lynton, on the north-west coast of Devon, a new lighthouse, which has been erected by the Trinity House authorities

Modern Stained Glass.

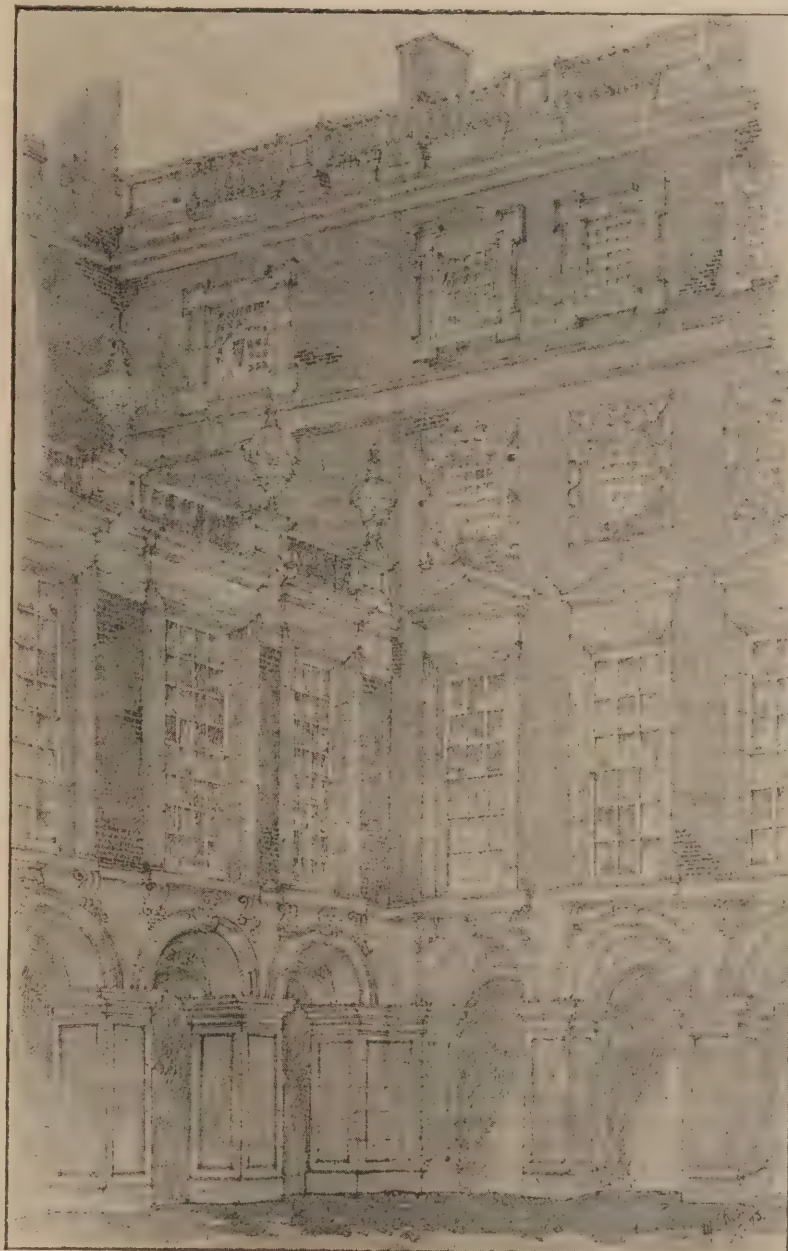
It is to be hoped that the new school of stained-glass work will not be adversely affected by the current discussion with regard to the propriety of placing modern stained-glass windows in ancient buildings. The art is being revived under most favourable circumstances; good work is being done, and there is promise of even better things in future. The practice which is most objected to, that of placing gaudy windows in surroundings absolutely unsuited for them, is one likely to die out now a new spirit has been introduced into this venerable and interesting art, under the influence of which no true worker would for a moment consent to receive a commission, on terms however tempting, for a window in modern ornamentation of an ancient church without a personal visit to the spot, and a thorough and reverent study of the building he was required further

Building over Graves.

AN interesting point recently occurred in a Chancery Court case in which a summons was taken out asking for a declaration that a plot of land situated in Deansgate, Jackson's Row and Bootle Alley, Manchester, comprised in a contract made with the Corporation, formed part of a disused burial ground within the meaning of the Disused Burial Grounds Act, 1884, and the Open Spaces Act, 1887, and could not be built upon for secular purposes. Plaintiff's counsel said the contract was that in consideration of the sum of £11,924 certain hereditaments were to be sold to his client. Upon investigating the title it was found that a plot containing 701 sq. yds. had formed part of what was formerly the burial ground for the members of the Society of Friends, the last interment having been made in the year 1847. The question was whether the purchaser was prevented from building upon it by reason of the provisions of the Disused Burial Grounds Act, 1884. There was another point raised by the Corporation. A section in the Act exempted from its provisions any burial ground which was sold or disposed of under the authority of an Act of Parliament. By the Manchester Waterworks and Improvement Act, 1875, the Corporation were empowered to acquire the land in question, and the trustees who sold to them did so under the provisions of the Lands Clauses Act. The Vice-Chancellor decided that the land was exempted from the operation of the Act, first, because, being the burial ground of Quakers, it did not come within the purview of the Burials Acts, and secondly, because it had been disposed of under the authority of an Act of Parliament. The summons was therefore dismissed.

Fountain Court, Hampton Court Palace.

THE Fountain Court, called so on account of the fountain which was erected by Queen Elizabeth in the Clock Court of Wolsey's Palace and afterwards removed to the new Quadrangle of William III. designed by Wren, does not, strange to say, form a perfectly rectangular space, the north and south sides being 116ft. 10in., its east side 110ft. 1in., and the west only 109ft. The ground floor is an open arcade of semicircular arches supported on rectangular piers of stone; the arches, from the inner sides of which extends brickwork groining, form the roof of the cloisters and support the floor of the state rooms above, and number twelve on the north and south and eleven on the east and west. The height of the cloister is 12ft. The subsidiary carving to the stonework—such as the garlands of flowers within the arches, the stone framework, representing lions' skins, round the windows, and the vases over the communication gallery—was carried out by William Emmitt, but was doubtless performed under the supervision of Grinling Gibbons. It would be futile to try to discover now the precise portions of



THE FOUNTAIN COURT, HAMPTON COURT PALACE. DRAWN BY ALFRED J. RODDIS.

at a cost of about £10,000. It has occupied quite two years in building, as great difficulties have had to be encountered and surmounted. It was necessary, for instance, to carry out extensive excavations, and a thousand tons of concrete were used in the foundations, in addition to which at least two miles of approach roads had to be made. The lighthouse, which stands about 200ft. above the sea, has residences for keepers attached to it, and it will be used for the first time next month.

to adorn. From the advance which has been made it may be hoped that the day of the stock subject is over, and that the benefactor of the future, desiring to present a memorial window to the church of his fathers, will no longer be content to order, as he would so much lead piping or so many hundred tiles, one of those St. Johns or Good Samaritans which the manufacturing firms are willing to supply at a day's notice, leaving it altogether to chance whether the new work shall harmonise with the old, or

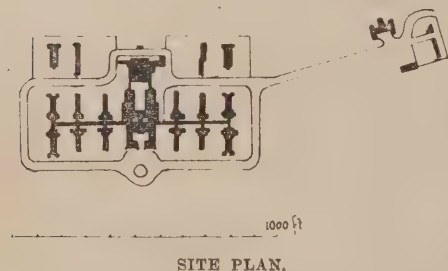
be, perhaps, a glaring disfigurement of a beautiful interior. Stock-in-trade stained glass has had a good commercial time of it. Let us now have something fresher and more beautiful.

NEW LONDON INFIRMARY.

ON Thursday last the Prince of Wales, accompanied by the Princess, opened the new buildings for accommodating the aged and infirm poor which have been erected at Ladywell, in the parish of Lewisham, S.E., by the Guardians of the St. Olave's Union, Southwark. The site, which comprises about thirty-four acres, cost £14,131. The scheme is based upon the absolute necessity for additional and improved indoor accommodation in order to properly safeguard the interests of the poor of the Union, and it avoids as far as possible the existing style, arrangement and management of the workhouse building, with much of its present stringent regulations. The scheme also takes into account the strong conviction generally existing that the old and infirm inmates should receive altogether more humane treatment and be surrounded by more generous and home-like conditions than can possibly exist in a workhouse, associated as they must necessarily be with the wasters and ne'er-do-wells who are amongst the regular *habitués*.

General Description of the Buildings.

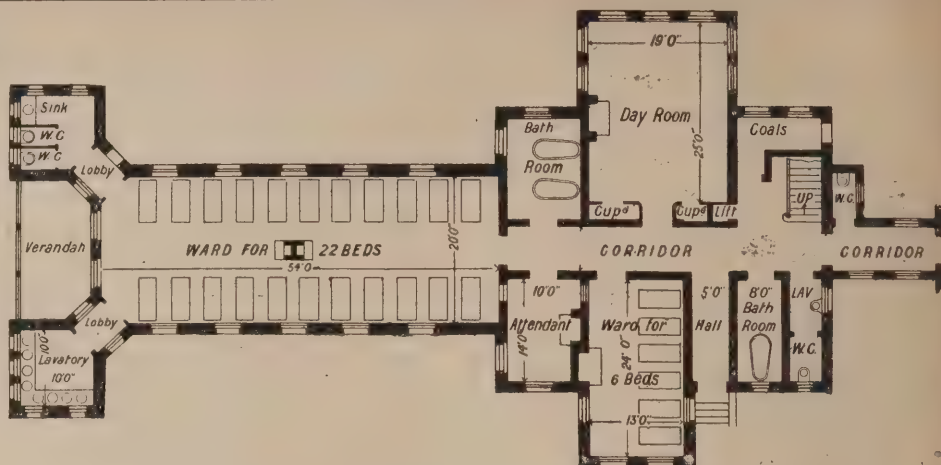
The establishment is approached from the Ladywell Road; at the entrance is the porter's office and lodge, in close proximity upon the left are the stables and mortuary, and upon the



right the receiving wards. By the roadway which encircles the main blocks the administrative buildings, which occupy a central position, are reached, and upon each side of them are the blocks for male and female inmates. In the rear are the chapels, isolation building, married couples' block, laundry, boiler and engine house, well house and water tower.

The accommodation comprises four blocks for the aged and infirm (336), six blocks for the healthy infirm (324), two blocks for small dormitories (90), one block for married couples (24), an isolation block (10), and receiving wards (28); giving a total accommodation of 812.

The administrative buildings (a plan of which is given on page 451) consist of the committee-room, clerks' office, medical officer's room, dispensary, matron's office, work-room, and stores on the one side, and upon the other the superintendent's house, superintendent's



NEW INFIRMARY AT LADYWELL—GROUND FLOOR PLAN OF A BLOCKS.

offices and stores. In the centre is the dining hall, and at the rear are kitchen, scullery, larders, and mess-rooms for male and female staff.

The A blocks, or infirm wards (see plan), of which there are four, provide upon the ground, first, and second floors the following accommodation:—Large ward for twenty-two, small ward for six, day-room, attendants' room, bath-rooms, lavatories, stores, offices, and verandah. Fire-escape staircases are provided at the end of the large wards, and at the entrance from the main corridor is a lift for service and other purposes to each floor.

The B blocks (see plan), six in number, are intended for the healthy infirm, and consist of dormitories for twelve and ten on the first and second floors, with attendants' room, bathroom, lavatories and offices, and with day-rooms for 54 on the ground floor. Fire-escape staircases are provided for the upper floors; also lifts.

Upon each floor of the C blocks, of which there are two, three small dormitories for five beds are provided, with day-room on each floor and the necessary attendants' room, bathroom, lavatory and offices, with verandahs and fire-escape staircases. These blocks have been specially designed with a view to a classification of the occupants of the establishment.

The married couples' block consists of two floors, with accommodation for six married couples on each. The rooms are fitted as combined sitting and bed rooms, and upon each floor is a general day-room, with bathroom, lavatories and the usual offices. In the isolation building accommodation is provided for five of each sex in two wards, with nurses' room between.

Upon the right after entering the establishment are the receiving wards, in which accommodation is provided for fourteen of each sex, with the necessary attendants' rooms, bath-rooms, waiting-rooms and offices. The first floor of this building is used as stores for the

inmates' clothes, and also for attendants' living-rooms.

The chapels are, as before stated, in the rear of the general buildings, the chapel for members of the Established Church accommodating 200 persons and that for Roman Catholics 150. The mortuary building is placed as near the entrance as possible, and comprises mortuary, post-mortem room, laboratory, viewing-chamber and waiting-room.

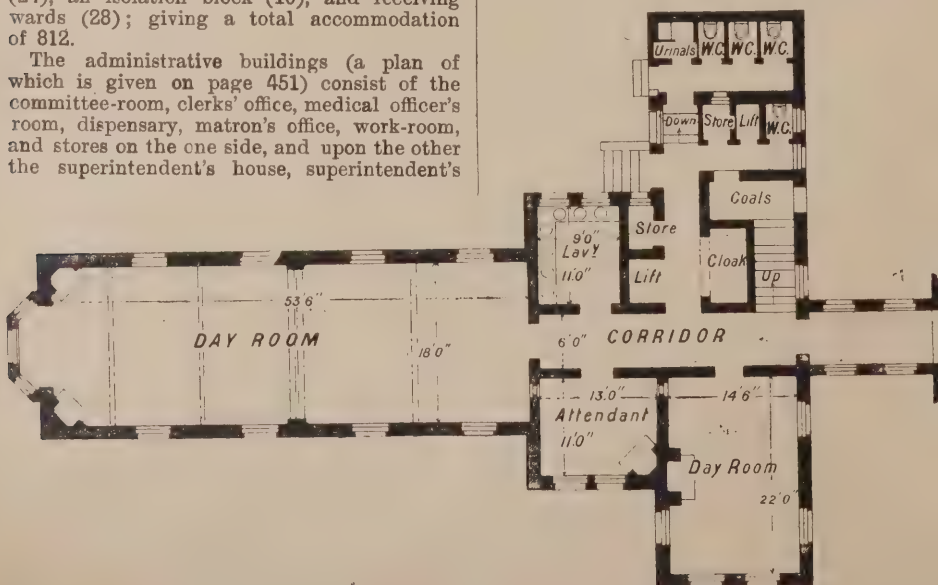
The sleeping accommodation for the male and female staff is provided on the first floor of the administrative building, the sitting-rooms and mess-rooms being on the ground floor, close to the kitchen. Airing courts are placed between the blocks and are laid out with grass and tar-paved walks.

The laundry is entered from the corridor at the back of the administrative building; upon the left of the receiving-room is the foul wash-house, and on the right the general wash-house, in which are fitted three pressure washing machines, two hydro extractors, &c. Passing through the drying closets, which are heated by Messrs. Seagrave and Bevington's patent apparatus, the ironing-room is entered, and fixed in this room are a large steam ironing machine, two box mangles, ironing stove, and the necessary tables for ironing and sorting. The delivery-room opens into the corridor, and the laundry superintendent's office is placed with a view to overlooking the whole of the laundry. All the machinery is driven by electric motors, which are controlled from the engine and dynamo room.

In the boiler house are fixed three Lancashire boilers 28ft. long and 8ft. in diameter, 150 horse power each, and provision has been made for a Green's economiser. These boilers provide the steam required in connection with the warming apparatus, hot-water supplies, cooking, laundry, and electric lighting. The dynamos, of which there are three, are driven by three vertical high-speed engines of 50 horse-power each.

From the engine-room is also supplied the current for the electric motors which drive the machinery in laundry, lifts, and deep-well pumps. The whole of the drainage is taken into the new sewer recently constructed by the London County Council, to which it has an excellent fall. The water supply will be taken from the well, which is 210ft. deep, situated between the water tower and laundry, and which has been found to give an abundant supply of water of excellent quality. The water mains are also connected with the public mains of the Kent Waterworks Company, and a separate supply is provided for the fire mains. The water is pumped from the well in the well house into the tank on the water tower, from which all the tanks in blocks and other buildings are supplied. The whole of the rain-water is collected in a tank close to the boiler house, and the water used for the boilers and in the laundry.

The warming throughout is on the low-pressure system, steam heaters being fixed in the chambers provided under the main corridor, and flow and return pipes being taken into each block to the coils, pipes, and radiators. The hot-water supply is upon the same system. All the pipes for heating and water supply, &c., are



NEW INFIRMARY AT LADYWELL—GROUND FLOOR PLAN OF B BLOCKS.

fixed in the subway under the main corridor, which extends the whole length of the buildings, 744ft. long.

The contractor for the work was Mr. Charles Wall, of Chelsea, S.W., who has also executed the roads and airing grounds. The whole of the engineering works, including boilers, hot-water, heating, laundry, and kitchen have been carried out by Messrs. Clements, Jeakes and Co., of Great Russell Street, W.C.; the well and pumps by Messrs. Baker and Sons, of Southwark Bridge Road, S.E.; the electric lighting by Messrs. Mackie and Co., of Turnmill Street, E.C.; the engines by Robey and Co.; the lifts by Messrs. Waygood and Co.; the telephones by the National Telephone Company; the wood block floors by Messrs. Goddard and Sons, of Farnham; the fire-escape staircases by the St. Pancras Iron Company; the glazed bricks, baths, and sanitary fittings by the Farnley Iron Company; the hot-air stoves by Mr. John Grundy and Messrs. Clements, Jeakes and Co.; and the stoves and ranges by the Albion Iron Company. Mr. F. S. Durston has acted as clerk of the works. Messrs. Newman and Newman, F.R.I.B.A., F.S.I., were the architects to the Board. The cost of the new buildings has been about £195,000.

Keystones.

The Will of the late Mr. R. A. M. Stevenson, the noted art critic, has been proved at £7,117 odd (gross value).

Eglwys Brewis Church, Glamorgan, a thirteenth-century building, is proposed to be repaired at an estimated cost of £500.

Bury's New Market.—A new market is to be erected at Bury on the Fair Ground. Mr Archibald Neill, of Leeds, is the architect.

A new Rectory House at Keighley for the Rev. H. J. Palmer, is to be erected from plans by Messrs. J. B. Bailey and Son, of that town.

A Memorial Window in the Free Church, Dunnichen, N.B., has just been erected. It is the work of the Royal Establishment of Munich, Bavaria.

A Collection of Water-colour Drawings of Cairo by Mr. R. M. Chevalier are now on view at the Princess' Gallery, 41 Jermyn Street, W. Many of them are architectural.

New Board School at Farsley, Leeds.

The Calverley School Board are about to erect a new school in Wesley Street, Farsley. The plans have been prepared by Mr. W. Bailey, of Bradford.

A new Riverside Walk at Durham has been constructed at a cost of about £800. It lies between Framwellgate Bridge and the Prebend's Bridge, and is to be known as Lambton Walk.

Tenders for Cardiff's new Town Hall.—It has been agreed to extend the time for the submission of tenders for the proposed new Town Hall at Cardiff from July 30th to a date to be fixed.

New Banking Premises at Ripon.—New premises for the Yorkshire Banking Company are about to be erected at Ripon. Messrs. Bedford and Kitson, of Leeds, have prepared the plans.

Lifting a Roof.—The roof of the Central District Board School at Southampton has been bodily lifted in order to provide a second floor and more accommodation. The roof weighed 120 tons.

The Victoria Almshouses, Ardsley.

—What will be known as the Victoria Almshouses are to be erected in the village of Ardsley, near Barnsley. Mr. J. P. Kay, architect, of Leeds, has prepared the plans.

Proposed new Mission Premises in Central London.—It is proposed to spend about £60,000 on the acquisition of a site and the erection of new mission premises in Central London, not far from Wesley's Chapel.

"The Bell" at Edmonton is to be offered for sale shortly. Cowper's description of John Gilpin's ride to "The Bell" is known to everyone. Charles Lamb always took his friends there during the latter part of his life, which was spent at Edmonton.

In Memory of Turner.—The tablet which Mr. Walter Crane has designed for fixture upon the front of No. 119, Cheyne Walk, Chelsea, the house in which Turner died, will shortly be placed in position. It is being executed in lead, and will bear a brief inscription.

Proposed Stratford Spa.—A scheme is on foot for purchasing certain lands belonging to the Stratford-on-Avon Town Council, forming part of the Rowley estate, erecting on them a hydropathic hotel and pump-rooms, and constructing winter gardens. It is understood that the promoters are willing to spend £40,000 on the works.

Gresham's School, Holt, Norfolk.—Plans are being prepared for building, within a quarter of a mile from the town of Holt, a head-master's house and school premises, with all modern requirements, including chemical and physical laboratories. Accommodation will be provided for about 200 boys, of whom about 60 will be boarders.

Municipal Building Scheme at Warwick.—The Warwick Town Council have decided to apply for sanction to borrow £3,500 for the purchase of common land, known as the Pigwells, for building purposes. The Council propose to improve a road, drive another road through the new property, and sell the remainder for the building of cottages.

Cottage Hospital for Radcliffe.—It is the intention of Mr. A. Bealey, of Manor House, Bury, to build a cottage hospital for convalescent purposes and to present it to Radcliffe. The hospital will be erected on land at Radcliffe Close, about an acre and a half in extent. The plans have been approved by the Streets Committee of the Radcliffe District Council.

A Peking Cathedral—M. Favier, the Roman Catholic Bishop of Peking, holds (or held?) the local rank of Mandarin of the grade equal to that of the Governor of a province. His palace and cathedral church and other missionary buildings are (or were?) situate in the Yellow or Imperial quarter of Peking, almost adjoining the Imperial Palace. The cathedral was built at the expense of the Emperor, and cost more than £30,000—two



NEW INFIRMARY AT LADYWELL. GROUND FLOOR PLAN OF ADMINISTRATIVE BUILDINGS.

NEWMAN AND NEWMAN, F.R.I.B.A., F.S.I., ARCHITECTS.

Chinese kiosques facing the main entrance to the cathedral bear inscriptions recording the Emperor's gift.

A New Suburban Theatre, to be called the "Marlborough," is to be erected on the site of the Parkhurst Theatre, in the Holloway Road, and about 120ft. of the land immediately adjoining. The site is now being cleared, and the plans for the new theatre have been approved by the County Council.

The Yorkshire Federation of Master Painters held their annual picnic last week. The members assembled at Thirsk, and drove over the Hambleton Hills to Rievaulx, visiting the ancient abbey and the terrace. They dined together at the Fleece Hotel, Thirsk, Alderman Kendall, of Huddersfield, presiding.

The Hanging Bridge, Manchester.—A deputation (including Mr. F. H. Oldham, president of the Manchester Society of Architects) recently waited on the Improvements and Buildings Committee to ask if they would preserve and expose to public view the Hanging Bridge at Manchester disclosed by the widening operations at Victoria Street, near the Cathedral. The chairman of the Committee said that no precipitate action would be taken in the matter. (For further particulars of the bridge see p. 172 of our issue for April 11th last.)

Wigan Technical College.—On Wednesday last the Countess of Crawford fixed the memorial tablet of the new Mining and Technical College, Library Street, Wigan. The site, 3,000 sq. yds. in area, has been exchanged by the Wigan Council for the site of the old school freehold, and the building will cost about £40,000. The new college is being erected according to the plans of Messrs. Briggs and Wolstenholme, architects, of Liverpool and Blackburn, and will include a hall to accommodate 700 persons, and an engineering drawing department for 100 students; while there is adequate accommodation for students in various other departments.

A Kendal Architect's Claim for Work Done.—At the Lancaster Assizes Mr. John Hutton, architect and surveyor, Kendal, recently sought to recover £147 for professional work done for a licensed victualler of Sedburgh. The defendant disputed the claim on the ground that the work done was unsatisfactory, owing to want of skill and negligence on the part of the plaintiff. The defendant also counter-claimed. The Judge held that the defendant could not legally recover, as an architect was not a guarantor but an adviser, and was not expected to guarantee when certain work would be completed. The jury found a verdict for the plaintiff for £118 11s. 3d. They dismissed the counter-claim.

A Case about a Trade-mark.—The case of *Hubbuck and Son, Limited, v. W. Brown, Sons and Co.* was heard in the Court of Appeal on Friday last. The plaintiffs sued the defendants for infringement of trade-mark, and also for getting up their goods so as to resemble the plaintiffs'. The defendants were paint manufacturers in Glasgow, and sold their paint in kegs of the same shape, size and material as the plaintiffs' kegs, but it was conceded that these features were common to the trade. The main ground of the plaintiffs' complaint was that the defendants' goods were so got up as to enable them to be sold in Spanish-speaking countries under the name "Dos Leones," which had come to denote the plaintiffs' goods. The Court dismissed the appeal.

Extension of the Law Courts.—Mr. Akers-Douglas said recently in the House of Commons: The buildings to be erected on the vacant site to the west of the Law Courts are four new courts and their adjuncts, which will form part of the Royal Courts of Justice, and must be in structural communication therewith. The extension will occupy about one-sixth of the area of vacant ground, which was temporarily laid out as a garden by the generosity of Mr. Smith, but was acquired and was always intended for an extension of the courts when needed. As the essential object in view in the erection of the Royal Courts of Justice was the concentration of the legal business of the country, the Government could not view favourably the suggestion to erect additional courts elsewhere.

Engineering Notes.

The Rotherhithe-Shadwell Tunnel.

—A Select Committee of the House of Commons had before them last week a Bill promoted by the London County Council to construct a tunnel under the Thames from Rotherhithe to a point near Shadwell Market. The tunnel would run for 1,662ft. beneath the river bed, but with the approaches would take a mile and a quarter of roadway on easy gradient. The estimated total cost, including approaches, is £2,198,250.

Messrs. John M. Henderson and Co., engineers and hoisting and transporting machinery makers, King Street, Aberdeen, are building additional buildings, at a cost of between £5,000 and £6,000. Messrs. Brown and Watt are the architects. The area covered will give in ground floor space about 14,000 square feet, but the greater area will be occupied by a two-storey building, which will give 9,000 square feet or thereby of additional working floorage. New offices are provided for in the buildings. The carpenter work is being carried out by Messrs. Watt and Clark, slating by Mr. Alexander Murray, and the masonry by Messrs. Fordyce and Co.

The New Waterworks at Earlestown, Lancs., are now approaching completion. Two boreholes have been made, 100ft. apart, and the water will be raised by two 13-in. pumps and discharged into a covered concrete tank, capable of holding 200,000 gals., or a day's supply. From this tank the water will be raised by a pair of double-acting horizontal pumps, and discharged direct into the mains. A reservoir and high-level tank will, in the near future, be constructed. The works have been designed by and carried out under the supervision of Mr. D. H. Lloyd, gas and water engineer to the district council. The estimated cost of the whole scheme is £23,000; the first section will cost about £6,000.

Public Works in New South Wales.

—The progress of New South Wales as regards its public works is clearly indicated in the annual report of Mr. Robert Hickson, M.Inst. C.E., the Under-Secretary for Public Works for that colony, which has recently reached this country. In his statement of the operations of his department during the twelve months ending June 30th, 1899, Mr. Hickson first refers to the gross expenditure for the year, which amounted to £2,165,818 14s. 11d. Tramway construction cost £174,605 16s. 8d.; country towns' water supply, £42,789 7s. 7d.; water conservation, irrigation, and drainage, £13,666 15s. 4d.; Government architect, £270,989 6s. 3d.; roads and bridges, £644,068 6s. 6d.; and sewerage construction, £202,826 16s. 8d.

A West-End Lighting Improvement.

—An important scheme of electric lighting will be completed within a very few days. It comprises the Vestry of the Parish of St. Martin-in-the-Fields, the "Royal Parish," inasmuch as it includes Buckingham Palace. The area extends in a line east and west from Drury Lane to the Palace, and in the opposite direction from the Horse Guards to Long Acre. For the first seven years—the period during which the instalments of capital and interest on the amount borrowed will be paid off—the annual extra cost will be about £1,400, which is but a small consideration for the inhabitants and tradespeople in the following highly important streets and thoroughfares, all of which are now electrically lighted:—The Haymarket, Panton Street, Whitcombe Street, Leicester Square, Pall Mall East, Cockspur Street, Charing Cross, Whitehall, Whitehall Avenue, Whitehall Place, Northumberland Avenue, Villiers Street, the Strand, Agar Street, Duke Street, King William Street, Chandos Street, Adelaide Street, Duncannon Street, Trafalgar Square, St. Martin's Place, St. Martin's Lane, Charing Cross Road, Green Street, Garrick Street, Cranbourne Street, Long Acre, Bow Street and Endell Street. The electric standards have already been criticised by us, and their bad design need not be pointed out again.

Trade and Craft.

The Huge Cement Combine.

It is perhaps news to some that the term "Portland cement" was first given by a Leeds bricklayer named Aspdin seventy-six years ago to an artificial compound of lime and clay prepared by him which had a fancied resemblance to the oolitic limestone of the island of Portland. In 1825 Aspdin erected works at Wakefield, and the success of the new material became assured, Brunel using it a few years afterwards for the Thames Tunnel. The price then, by the bye, was about 22s. a cask. At the present time the chief centre of the trade is on the Thames and Medway, the first factory having been established at Frindsbury, near Rochester. Year by year the demand increased, new factories were erected, until now the output is enormous, and Portland cement has become one of the most important of the materials used in building and constructional works. As will be seen from the prospectus printed on another page, it is now proposed to amalgamate all the thirty Thames and Medway firms (that is, practically the whole trade, because 80 per cent. of the output is produced at the places named) under the title of the Associated Portland Cement Manufacturers (1900), Limited, the capital of which consists of no less than £2,500,000 cumulative preference shares, £2,500,000 ordinary shares and £3,000,000 first mortgage debenture stock. The objects are to avoid fluctuations in profits, to improve the manufacture, and to lower the cost, while the tendency to cut prices in the winter will be avoided. It will be seen that the profits made have been considerable, and, with the introduction of new machinery and new facilities, should be still larger, so that the amalgamation is one which should find an eager public ready to share in the benefits offered. It should be noted that the capital is not underwritten.

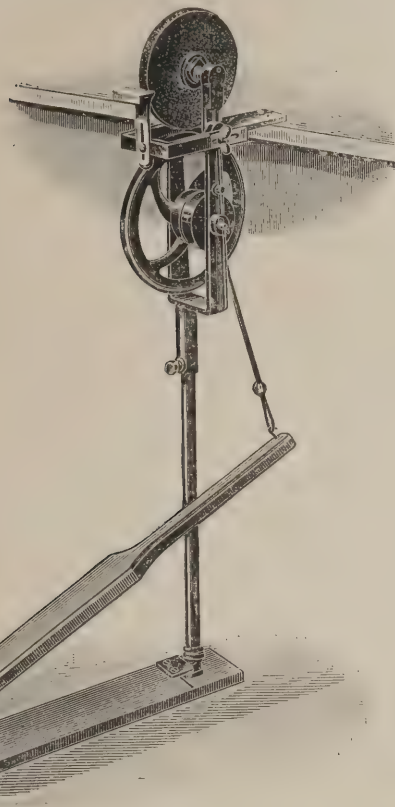
Tiles for Decoration.

The application of tiles to the decoration of the walls and floors of buildings is no new thing. The triumphs of the Persians, the Arabs and the Moors in this method form one of the brightest chapters in the whole history of ceramic art. It is impossible for the modern tile-maker in some respects to attempt rivalry with these glorious productions of the past, as the great demand for his wares is no longer for the decoration of palaces and mosques, where cost and time are not of the first importance, but for the decoration of houses, shops and public buildings where price and time are most important factors in controlling the employment of any material.

It is no longer possible to produce the tiles required for modern purposes by the patient labour of the hand. Machinery has been called in to expedite matters, though unfortunately, in many cases, this gain has been more than counterbalanced by the loss of all artistic quality in the work produced. The aim of Pilkington's Tile and Pottery Company, Limited, of Clifton Junction, near Manchester, is to demonstrate that the absence of artistic merit is not a necessary accompaniment of modern methods of manufacture. Under the able artistic guidance of Mr. Lewis F. Day they have gathered together designs by such well-known artists as Mr. Walter Crane, R.I., Mr. C. F. A. Voysey, Mr. Edgar Wood, and Mr. Day himself, in addition to the work of younger decorative artists of promise, among whom we may mention Mr. John Chambers, Miss Florence Steele and Mr. J. R. Cooper; and the exhibits now at the Paris Exhibition show how excellent is the result. The firm do not claim to have solved more than a few of the problems which beset the application of tile work to the decoration of modern dwellings, but at all events they have brought scientific knowledge and artistic skill to bear on the problem of workshop production in a greater degree than has ever been the case in England before in the manufacture of tiles; a feat which deserves high praise.

Emery Grinding Machines.

Messrs. Poth, Hille and Co., engineers, merchants and manufacturers, of 27 Leadenhall Street, E.C., are the makers of the very handy foot-power emery grinding machine called the "Excelstor," illustrated below. It will do all kinds of work in one-fourth of the time required on a grindstone; it can be attached to any work-bench; it will do three-fourths of the work usually done with a file, and is invaluable for light work. The wearing parts are few and can be renewed at little cost, and there is nothing complicated in the construction; the machine weighs but 20lbs. The wheels are adapted to produce a perfect edge and not to draw the temper of the tools, and a speed of 3,000 revolutions a minute can be maintained without much exertion. The price complete with a 6in. wheel $\frac{3}{4}$ in. thick, and an adjustable tool-



EMERY GRINDING MACHINE. BY POTH, HILLE & CO.

rest, is only 25s. The firm also make all kinds of grinding and polishing machinery, the chief features of which are that good design is combined with good workmanship and compactness with serviceability.

Leaky Chimneys.

A good deal of trouble is occasionally experienced, especially in old buildings, from the leakage of chimneys. Smoke and smell from this cause are found in different parts of the house, and the mystery is whence they come. Wainscotting and other wall coverings, as well as floors and ceilings, very likely hide the actual cracks in the brickwork, and so make the discovery of the mischief difficult; and, in addition to causing smoke and smell, these leaky chimneys are a great source of fire-risk in buildings. By the use of the air-pump with scented air the faulty places in the chimney can be traced and rectified. The pump, which is made by Messrs. Alexander Boyd and Son, of 105 New Bond Street, London, W., consists of a long box or cylinder in which a piston (somewhat like that in an ordinary force-pump) is worked to and fro by a handle. A perforated metal box contains saturated tow or dry tobacco, and scent is thus forced with the air into the suspected space through the outlet nozzle. All old houses should have their chimneys occasionally tested in some such way, so as to avoid even an alarm of fire, and this pump should therefore find a ready market.

Acetylene Gas Lighting.

The Acetylene Illuminating Company, Ltd., have furnished us with a pamphlet in which are very clearly set forth the merits attaching to the new illuminant, acetylene. It will be remembered that this company possesses the right in the British Isles of manufacturing the carbide of calcium by means of electrical furnaces under the Willson patent. What appeals to us most in this little work is the honesty and modesty of the claims made for the new gas. No attempt has been made to prove that acetylene is the cheapest light. It is admitted that it comes behind electric and incandescent gas light. But in many places these lights are not procurable, and in such a case acetylene is then the most suitable illuminant in the market. Acetylene gas should not be confused with liquid acetylene, which is a most powerful explosive, and is prohibited in this country. Many persons interested in the suppression of the new industry have helped to foster this confusion in the public mind, and much damage has also been done to the prospects of acetylene by the makers of ill-designed generators, and by the exploitation of the gas for bicycle and other lamps, for which purpose it is quite unsuited. If it is regarded and treated in every way like coal gas it will be found most satisfactory and quite harmless. To country photographers it should be invaluable, for it is the most suitable light known for photographic operations, and we have had experience of it in this respect.

New Companies.**European, British and Colonial Lands and Buildings Company, Limited.**

This company was registered on July 6th with a capital of £5,000 in £1 shares.

Tilbury and Stanford Brick Co., Ltd.

This company was registered on July 5th with a capital of £15,000 in £1 shares. Registered office: King Street, Stanford-le-Hope, Essex.

The Western Quarries, Limited.

This company has been registered in Scotland with a capital of £10,000 in £1 shares to acquire and develop quarries or mines.

McLintock's Paint and Compositions Company, Limited.

This company was registered on July 4th with a capital of £12,000 in £1 shares to carry on the business of chemical manufacturers and merchants, &c. The number of directors is to be not less than three nor more than seven; the subscribers are to appoint the first. Registered office: 64 Moorgate Street, E.C.

W. Key and Son, Limited.

This company was registered on July 9, with a capital of £25,000 in £1 shares, to acquire the business carried on by T. H. Norris at Great Berkhamsted, Hertfordshire, as W. Key and Son, and to carry on the business of timber merchants and importers, sawmill proprietors, timber growers, veneer cutters, &c. The first directors (to number not less than three nor more than five) are T. H. Norris, E. C. Hall, W. Wilkinson, and J. Mitchelmore. Registered office: Castle Wharf, Great Berkhamsted, Hertfordshire.

Eltringham Sanitary Pipe and Brick Company, Limited.

This company was registered on July 2nd with a capital of £5,000 in £1 shares to acquire the business carried on by W. Ferguson, R. Herron and W. Dodd, at Eltringham, Northumberland, as the Eltringham Sanitary Pipe and Brick Company, and to manufacture and deal in bricks, tiles, pipes, pottery, &c. The first directors (to number not less than three nor more than five) are R. Herron (chairman), W. Ferguson, J. Elrick, J. W. White and W. Dodd. Registered office: 24 Grainger Street West, Newcastle-on-Tyne.

COMING EVENTS.**Wednesday, July 18.**

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Half-yearly meeting of the members.

Thursday, July 19.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Twenty-seventh annual general meeting at Westminster Town Hall. (First day.)

Friday, July 20.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Annual meeting. (Second day.) ROYAL ARCHITECTURAL MUSEUM AND WESTMINSTER SCHOOL OF ART.—Annual meeting at the Museum at 4 p.m.

Saturday, July 21.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-UPON-TYNE.—Council Meeting at 1.30 p.m.

INCORPORATED ASSOCIATION OF MUNICIPAL AND COUNTY ENGINEERS.—Annual meeting. (Third and last day.)

Thursday, July 26.

SOCIETY OF ARCHITECTS.—Meeting at the North-Western Hotel, Lime Street, Liverpool, to ascertain the attitude of Provincial architects on the Architects' Registration Bill. 6 p.m.

CURRENT PRICES.**OILS AND PAINTS.**

		£ s. d.	£ s. d.
Castor Oil, French	per cwt.	1 8 0	1 11 6
Colza Oil, English	do.	1 10 6	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 17 0	—
Lead, white, ground, carbonate	do.	1 2 10	—
Do. red	do.	1 0 4½	—
Linseed Oil	do.	1 14 9	—
Petroleum, American	per gal.	0 0 6½	0 0 6½
Do. Russian	do.	0 0 6½	—
Pitch	per barrel	0 8 6	0 9 0
Shellac, orange	per cwt.	3 1 0	—
Soda crystals	per ton	2 17 6	3 0 0
Tallow, Town	per cwt.	1 4 9	1 8 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	1 13 3	—

METALS.

Copper, sheet, strong	per ton	83 0 0	—
Iron, Staffs, bar	do.	10 15 0	11 10 0
Do. Galvanised Corrugated sheet	do.	13 10 0	14 0 0
Lead, pig, Spanish	do.	17 10 0	—
Do. do. English common brands	do.	17 17 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	8 15 0	9 5 0
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	143 0 0	143 10 0
Do. English ingots	do.	145 0 0	145 0 0
Zinc, sheets, Silesian	do.	23 10 0	—
Do. do. Veille Montaigne	do.	24 5 0	—
Do. Spelter	do.	19 0 0	20 10 0

TIMBER.**SOFT WOODS.**

Fir, Dantzic and Memel	per load	3 0 0	4 0 0
Pine, Quebec Yellow	do.	4 7 6	6 0 0
Do. Pitch	do.	3 16 0	4 0 0
Laths, log, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle	0 1 2	0 1 3
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	18 0 0	—
Do. do. 4th & 3rd	do.	13 5 0	—
Do. do. unsorted	do.	12 5 0	12 10 0
Do. Riga	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow	do.	12 10 0	18 0 0
Do. do. 2nd	do.	10 10 0	14 10 0
Do. do. Unsorted	do.	8 15 0	9 10 0
Do. do. White	do.	11 5 0	—
Do. Swedish	do.	13 10 0	18 0 0
Do. White Sea	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st	do.	13 15 0	23 15 0
Do. do. 2nd	do.	18 15 0	—
Do. do. 3rd &c.	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd	do.	7 5 0	9 10 0
Do. New Brunswick	do.	7 5 0	8 0 0
Battens, all kinds	do.	10 0 0	10 15 0
Flooring Boards, 1in. prepared, 1st	per square	0 12 0	—
Do. 2nd	do.	0 8 9	0 13 0
Do. 3rd &c.	do.	0 11 3	0 11 6

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin. Cuba	per ft. sup.	0 0 3	0 0 3½
Do. Honduras	do.	0 0 3½	—
Do. Tobasco	do.	0 0 3½	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras	per ft. sup.	0 0 4½	—
Do. African	do.	0 0 3½	—
Do. St. Domingo	do.	0 0 6½	—
Do. Tobasco	do.	0 0 4½	—
Do. Cuba	do.	0 0 6½	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 1 8	0 3 2

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING.			
July 21	Ardley, near Barnsley—Almshouses	Public Works Committee	J. P. Kay, 34 Prudential Buildings, Leeds.
" 20	Birmingham—Wall	"	Engineer, Council House, Birmingham.
" 20	Halifax—Shed	"	W. H. D. Horsfall, Architect, Tower Chambers, Halifax.
" 20	Kyo—Alterations	School Board	G. T. Wilson, 121 Durham Road, Blackhill.
" 20	Nelson—Wall	Sewage and Streets Committee	B. Ball, Borough Engineer and Surveyor, Nelson.
" 20	Assett—Stores	"	J. Kirk and Sons, Architects, Dewsbury.
" 21	Rathdrum—Dispensary	Guardians	Clerk, Board Room, Workhouse, Rathdrum.
" 21	Bodmin—Farm Buildings	Visiting Committee	R. P. Edyvean, Clerk, Bodmin.
" 21	Wrexham—Alterations	Urban Authority	Borough Surveyor, Guildhall, Wrexham.
" 21	Camborne—Roof	"	O. Caldwell, Architect, Camborne.
" 21	Truro—Hotel	W. H. Mallet & Co.	W. Swift, 38 Lemon Street, Truro.
" 23	Hull—Dwellings	City Improvement Committee	J. H. Hirst, City Architect, Town Hall, Hull.
" 24	Birkenhead—Car Shed	Corporation	O. Brownridge, Town Hall, Birkenhead.
" 24	Mount Tabor—Houses	"	Jackson and Fox, 7 Rawson Street, Halifax.
" 24	Tunbridge Wells—Cottages	Town Council	W. H. Maxwell, Town Hall, Tunbridge Wells.
" 25	Southend-on-Sea—Engine House	Corporation	A. Fidler, Borough Engineer, Southend-on-Sea.
" 25	Epsom—Generating Station	Urban District Council	A. E. Pridmore, 2 Broad Street Buildings, E.C.
" 25	Gravesend—Repairs	School Board	Rayner and Bridglond, Architects, New Road, Gravesend.
" 25	Pulham-Market—Laundry	Guardians of Depwade	A. Clarke, 126 London Road, Lowestoft.
" 25	Fulham—Stables	Vestry	Surveyor, Town Hall, Waltham Green, S.W.
" 26	Bury—Market	Markets Committee	A. Neill, 18 Cookridge Street, Leeds.
" 26	London, S.E.—Generating Station	Vestry of St. Mary Magdalen, Bermondsey	The Clerk, Town Hall, Spa Road, Bermondsey.
" 26	Antrim—Dispensary	Guardians	J. Clark, Union Office, Antrim.
" 26	Fenny Stratford—Police Court	Buckingham County Council	R. J. Thomas, County Hall, Aylesbury.
" 27	Lichfield—Casual Wards	Guardians	W. H. Woodroffe, 24 Great Dover Street, London, S.E.
" 27	Leicester—Chimney Shaft	Sanitary Committee	E. G. Mawbey, Town Hall, Leicester.
" 27	Pontardulais—Chapel	"	Rev. G. Jones, Maesdderwen House, Pontardulais.
" 23	Rugby—Bandstand	Urban District Council	D. G. Macdonald, Council Surveyor, Rugby.
" 28	Wrenbury—Wall	School Board	T. H. Whiteley, 54 Welsh Row, Nantwich.
" 28	Coventry—Additions	School Board	T. F. Tickner, 7 Bishop Street, Coventry.
" 28	Newquay—House	"	Estate Surveyor, Commercial Square, Newquay.
" 30	Cardiff—Town Hall and Law Courts	Corporation	Town Clerk, Town Hall, Cardiff.
" 30	London, E.—Underground Conveniences	Whitechapel District Board of Works	Engineer, Board of Works Offices, 15 Great Alie Street, Whitechapel, E.
" 30	Rawtenstall—Laying Out Park	"	D. Bird, Atlantic Chambers, 7 Brazennose Street, Manchester.
" 31	Bury—Hospital	Health Committee	Borough Engineer, Bank Street, Bury.
Aug. 1	Lurgan—Schools	Presbyterian Church Committee	H. Hobart, Architect, Dromore, County Down.
" 2	Canterbury—Asylum Buildings	Visiting Committee	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
" 4	Markethill, Ireland—Renovation	"	J. Brown, 41 Kilmorey Street, Newry.
" 15	Irvinestown, Ireland—Shooting Lodge	"	T. Elliott, 37 Darling Street, Enniskillen.
ENGINEERING.			
July 20	East Grinstead—Septic Tanks	Godstone Rural District Council	Fairbank and Son, 13 Lendal, York.
" 21	Manchester—Electrical Equipment	Tramways Committee	J. M. McElroy, Town Hall, Manchester.
" 23	Blackpool—Tramways Extension	Corporation	R. C. Quin, Borough Engineer, Blackpool.
" 23	Callao—Reconstruction of Railway	Peruvian Government	Commercial Department, Foreign Office, S.W.
" 23	Durban, Natal—Electric Tramways	Corporation	Webster, Steel and Co., 5 East India Avenue, E.C.
" 23	Kolbergmunde, Germany—Dredger	Harbour Superintendent	Der Hafenbauinspektor, Harbour Works, Kolbergmunde, Germany.
" 23	Leeds—Turntable	Gas Committee	R. H. Townsley, Municipal Buildings, Leeds.
" 24	Rothwell—Engines	Urban District Council	W. T. Pearson, Market House, Rothwell, Northants.
" 24	Manchester—Widening Line	Lancashire and Yorkshire Railways	Engineer, Hunt's Bank, Manchester.
" 24	Paris—Telegraph Apparatus	"	Post and Telegraph Department, 103 Rue Grenelle, Paris.
" 24	Nuneaton—Tanks	Urban District Council	J. S. Pickering, Council Offices, Nuneaton.
" 25	Southend-on-Sea—Light Railways	District Light Railways	A. Fidler, Borough Engineer, Southend-on-Sea.
" 25	Southend-on-Sea—Electrical Plant	Corporation	A. Fidler, Borough Engineer, Southend-on-Sea.
" 25	London, S.W.—Superheater	Vestry of St. Mary, Battersea	W. M. Wilkins, Municipal Buildings, Lavender Hill, S.W.
" 26	Burton-on-Trent—Boilers	Corporation	F. S. Ramsden, Gas and Electric Light Works, Burton-on-Trent.
" 30	Keyst-sur-Mer, Belgium—Waterworks and Sewerage	"	Mayor, Keyst-sur-Mer, Belgium.
" 30	Newcastle Emlyn—Reservoir	Urban District Council	T. Thomas, Terra Cotta Buildings, Newcastle Emlyn.
" 31	Hapton—Electric Lighting	"	E. O'Shaughnessy, 16 Hammond Terrace, Padstow.
Aug. 1	Aylesbury—Girder Bridges	Urban District Council	J. H. Bradford, 2 Rickford's Hill, Aylesbury.
" 2	Southend-on-Sea—Seawater Scheme	Corporation	A. Fidler, Borough Engineer, Southend-on-Sea.
" 9	Grays, Essex—Electric Lighting Work	Urban District Council	Preece and Cardew, 13 Queen Anne's Gate, Westminster, S.W.
" 18	Madrid—Electric Tramway Lines	Spanish Government	Commercial Department, Foreign Office, S.W.
" 28	Warsaw—Telephone Service	Russian Government	Commercial Department, Foreign Office, S.W.
Sept. 5	Lisbon—Iron Bridge	"	Public Works Department, Lisbon.
" 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depot, Hammerton Street, Bradford.
IRON AND STEEL.			
July 23	Hanwell—Fencing and Gates	Urban District Council	Surveyor, Council Offices, Hanwell.
" 23	Ilford—Fencing	Urban District Council	H. Shaw, Council Offices, Ilford.
" 24	Gosport—Railing	Urban District Council	H. Frost, Council Surveyor, Gosport.
" 25	Southend-on-Sea—Rails	Southend and District Light Railways	A. Fidler, Borough Engineer, Southend-on-Sea.
" 27	Epsom—Water Pipes	Rural District Council	W. O. Reader, Lonsdale, Epsom.
PAINTING AND PLUMBING.			
July 24	Mountain Ash—Painting	Graig Isaf Building Club	P. James, Tanyrallt, Mountain Ash.
" 24	Stoke—Painting	School Board	R. Scrivener and Sons, Architects, Hanley.
" 27	Devonport—Painting	School Board	Clerk, School Board Office, Ker Street, Devonport.
" 30	Uxbridge—Painting	Urban District Council	W. L. Eves, 54 High Street, Uxbridge.
ROADS.			
July 20	Burnham-on-Crouch—Flints	Urban District Council	E. Dillway, Clerk, Burnham-on-Crouch.
" 20	Gravesend—Making Up	"	G. W. Cobham, 1 Edwin Street, Gravesend.

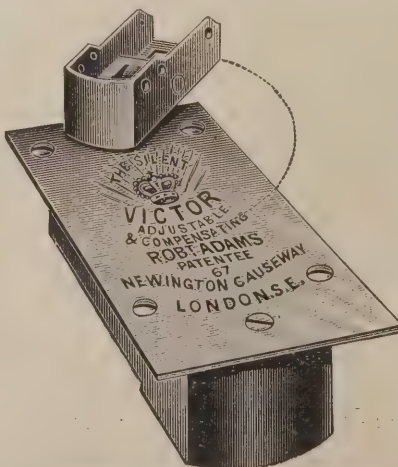
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DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
July 20	Roads.—Continued.		
" 20	Nelson—Street Works	Sewage and Streets Committee	B. Ball, Engineer, Town Hall, Nelson.
" 21	Pudsey—Kerbing		P. Dufton, 12 Somerset Road, Pudsey.
" 21	Poulton-le-Fylde—Paving	Urban District Council	W. Gornall, Market Place, Poulton-le-Fylde.
" 21	Lewes—Granite	Town Council	M. S. Blaker, Town Hall, Lewes.
" 21	Middlewich—Materials	Urban District Council	W. W. Morris, Council's Surveyor, Middlewich.
" 21	Newton-in-Makerfield—Street Works	Urban District Council	A. Bowes, Town Hall, Earlestown.
" 23	Stevenson—Granite	Urban District Council	Clerk, Council Offices, Stevenson
" 23	London, E.—Paving Works	Limehouse District Board of Works	S. G. Ratchiff, Board Offices, White Horse Street, Commercial Road East, E.
" 23	Hampton—Tar Paving	Urban District Council	J. N. Horsfield, Council Offices, Hampton Wick, Middlesex.
" 23	Warrington—Paving	Paving and Sewerage Committee	T. Longdin, Town Hall, Warrington.
" 25	Wembley—Gravel and Hoggins	Urban District Council	C. R. W. Chapman, Public Offices, Wembley.
" 25	Beeston—Kerbing	Urban District Council	J. P. Evans, Public Offices, Beeston.
" 25	London, N.—Relaying Stone	Islington Vestry	Electricity Department, 50 Eden Grove, Holloway, N.
" 26	Ealing—Making Up	Urban District Council	C. Jones, Public Buildings, Ealing, W.
" 26	Moss Side—Paving	Urban District Council	H. B. Longley, Council Offices, Moss Side, Manchester.
" 28	Swinton—Tar Paving	Urban District Council	H. Entwisle, Council Offices, Swinton, near Manchester.
Aug. 7	Dartmouth—Sidewalks	Urban District Council	T. O. Veale, Castle View House, Dartmouth.
July 21	SANITARY.		
" 23	Tadcaster—Emptying Ashpits	Rural District Council	W. Denham, Inspector of Nuisances, Aberford, near Leeds.
" 28	Newmarket—Sewerage Works	Urban District Council	Clerk, Town Hall, Newmarket.
" 28	Beaconsfield—Sewerage Works	Urban District Council	G. H. Charsley, 11 Mackenzie Street, Slough
" 28	Marple—Sewer	Urban District Council	Engineer, 2 Rudgefield, Manchester.
" 28	Swinton—Draining	Urban District Council	H. Entwisle, Council Offices, Swinton, near Manchester.
" 30	Whittingham, near Preston—Drainage, &c.	Lancashire Asylums Board	North-Eastern Sanitary Inspection Association, 2 Neville Street Newcastle-on-Tyne.
" 30	Frimley—Sewerage Works	Urban District Council	W. J. Hodgson, Surveyor, High Street, Camberley.
Aug. 8	Wrexham—Sewers	Rural District Council	J. Price Evans, Engineer, Argyle Chambers, Wrexham.
July 20	TIMBER.		
" 23	Bath—Wood Bloc's	Urban Sanitary Authority	O. R. Fortune, City Surveyor's Office, Guildhall, Bath.
" 23	Blackpool—Planks	Corporation	J. Wolstenholme, Town Hall, Blackpool.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
July 31	Cheadle—Cemetery		J. H. Duckworth, Public Offices, Cheadle, Cheshire.
Aug. 1	Sunderland—Church		William Wilson, 7 Azalea Terrace, South Sunderland.
" 25	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
Sept. 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
" 30	Musselburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	" Architectural Review."

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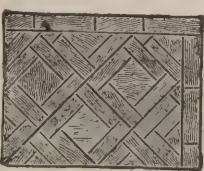
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ABBEYDORE (near Hereford).—For the erection of new infirmary, receiving wards, and tramp wards at the work-house. Mr. E. H. Lingen Barker, architect:

W. Phillips ...	£2,690 0 0	Lewis & Co., Here.	£2,400 0 0
A. J. Howell ...	2,625 0 0	ford's ...	2,357 0 0
C. Cooke ...	2,494 10 0	H. Smith ...	Accepted.
W. Gibson ...	2,480 0 0		

ASHTON-UNDER-LYNE.—For alterations to property at Portland Street, for the executors of the late Mr. E. Heginbottom. Messrs. J. H. Hurton & J. A. Percival, architects, 150A Stamford Street, Ashton-under-Lyne:

T. Dean ...	£270 10 0	E. Williamson,	
J. Robinson ...	251 0 0	Hurst ...	214 14 9
C. Evans ...	231 0 0	Matthews & Co.*	210 0 0
E. Marshall ...	226 10 0		

* Accepted. (Rest of Ashton-under-Lyne.)

BISHOP AUCKLAND.—For the erection of St. Chad's Roman Catholic School Chapel, Winton Park. Mr. H. T. Gradon, architect, 22 Market Place, Durham:—

Thos. Walton ...	£1,950 0 0	A. Manley ...	£1,188 7 3
G. H. Bell ...	1,192 9 0	Geo. Scott* ...	1,070 0 0
Thos. Hilton ...	1,136 0 0		Accepted.

FARINGDON (Berks).—For the construction of a service reservoir, engine-house, laying cast-iron pipes, &c., for the Rural District Council. Mr. G. Winship, C.E., Abingdon. Quantities by engineer:—

W. Coker ...	£5,636 10 0	H. Roberts,	
G. H. Tucker ...	5,648 0 0	Ludlow* ...	£3,990 0 0
J. Peattie ...	4,837 0 0	Meredith &	
J. Jameson ...	4,750 0 0	Co., Ltd. ...	3,797 4 6
A. Woodhouse ...	4,451 12 4		Amended and accepted.

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Hornby & Sons, Ltd., Grantham*	497 0 0
Hugh Campbell ...	485 0 0

* Accepted.

HAMPTON (Middx).—For the execution of street works, Station Road, &c., for the Urban District Council. Mr. J. Kemp, surveyor, Park House, Hampton:—

Mowlem & Co. ...	£8,644 14 3	Fry Bros., Green-	
T. Adams ...	8,047 11 2	wich* ...	£7,922 11 5

* Accepted.

LONDON.—For enlarging Kenmont Gardens School, for the London School Board. Mr. T. J. Bailey, architect:

McCormick & Sons	£7,488	Johnson & Co., Ltd.	£8,886
Smith & Sons, Ltd.	7,329	J. Appleby ...	6,792
Wad & Co. ...	7,298	Lathew Bros. ...	6,750
Garrett & Son ...	7,183	Lorden & Son ...	6,695
Miskin & Sons ...	6,946	Treasure & Son, Lon-	
Leslie & Co., Ltd.	6,944	don and Shrews-	
Stimpson & Co. ...	6,910	bury* ...	6,472
O. Craske ...	6,895		Accepted.

LONDON.—For alterations and additions to Woodland Road School, for the London School Board. Mr. T. J. Bailey, architect:—

Martin, Wells &		J. & C. Bowyer ...	£2,581 0 0
Co. ...	£2,010 0 0	Johnson & Co. ...	2,322 0 0
W. Downs ...	2,005 19 0	R. P. Battie ...	2,211 6 3
Falkner & Sons ...	2,387 0 0	H. Leney* ...	1,850 0 0

* Accepted.

LONDON.—For rebuilding offices, removing old covered playground, &c., at Lyham Road School, for the London School Board. Mr. T. J. Bailey, architect:—

Martin, Wells & Co. ...	£2,215	E. Triggs ...	£1,626
W. Downs ...	1,390	Whitehead & Co., Ltd.	1,635
Falkner & Sons ...	1,847	W. Hammond* ...	1,695
H. & G. Mallett ...	1,057		Accepted.

LONDON.—For improvements to Gallery Road School, for the London School Board. Mr. T. J. Bailey, architect:—

F. & F. J. Wood ...	£14,498	W. H. Lorden & Son	£12,444
W. Downs ...	12,065 19 0	Lathew Bros. ...	12,304
C. Cox ...	13,177	Johnson & Co., Ltd.	12,201
F. & H. F. Higgs ...	12,528	A. White & Co.*	11,740

* Accepted.

WALSALL.—For additions to schools, Elmore Green, Bloxwich, for the School Board. Messrs. Bailey & McConnell, architects, Bridge Street, Walsall:—

J. W. Smith ...	£1,839	W. Wistance ...	£1,754
J. Ballow ...	1,822	S. Wootton ...	1,643
Martin, Wells & Co. ...	1,812	Lathew Bros. ...	1,604
J. Mallin ...	1,805	Hickin & Sons ...	1,600
T. Tildesley ...	1,772	T. Mason, Hednesford*	1,512

* Accepted.

WEST HARTLEPOOL.—For the erection of business premises, for Messrs. M. Robinson & Co. Messrs. Barnes & Coates, architects, Scarborough Street, West Hartlepool:—

G. Leeder† ...	£14,084 18 0	Howe & Co.,	
T. Dickinson ...	12,849 18 0	Whitby Street,	
Atkinson Co. ...	12,067 19 0	West Hartle-	
J. Davison ...	11,268 5 8	pool* ...	£10,478 0 0
Watt Bros. ...	10,666 2 2	Perks & Son†	9,788 11 3

* Accepted. † Exclusive of painting, glazing, plumbing, and ironfounding. ‡ Exclusive of plumbing, glazing, and ironfounding.

CONTRACTS OPEN.

EPSOM URBAN DISTRICT COUNCIL.

The Council are prepared to receive APPLICATIONS from Builders willing to Tender for the ERECTION of an ELECTRIC SUPPLY STATION at the rear of their Offices in Church Street, Epsom.

Builders must send in their names to the Architect, Mr. A. E. PRIDMORE, 2 Broad Street Buildings, E.C., together with £2 2s. for the bills of quantities, which will be returned on receipt of a bona-fide Tender.

Drawings and specifications may be seen at the offices of the Architect and of the Town Surveyor, Epsom.

The builder shall under a penalty of £50 observe the rates of wages obtained in the several trades employed.

Tenders are to be delivered at the Clerk's Offices, Epsom, on or before FOUR o'clock, on JULY 25th inst., on the printed forms supplied.

The Council do not bind themselves to accept the lowest or any Tender.

Epsom, July 1900. By order, E. G. WILSON, Clerk of the Council.

EPSOM RURAL DISTRICT COUNCIL.

CHESSINGTON WATER SUPPLY.

The above-named Council are prepared to receive separate TENDERS for:—

1. Supplying about 2,688 yards of 3-inch Cast-Iron Water Pipes, with valves, hydrants, and other fittings.

2. The Excavating of Trenches, the Carting and Laying of the Pipes, and the Fixing of Hydrants, &c.

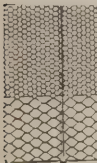
Specifications of the works can be seen at my Office, or at the Office of the Surveyor to the Council, Waterloo Road, Epsom.

Tenders, upon prescribed forms (to be obtained on application), must be delivered at my Office not later than NOON on FRIDAY, the 27th day of JULY, 1900, addressed to "The Chairman, Epsom Rural District Council, Lonsdale, Epsom."

The Council do not bind themselves to accept the lowest or any Tender.

Lonsdale, Epsom, July 1900. By order, W. O. READER, Clerk to the Council.

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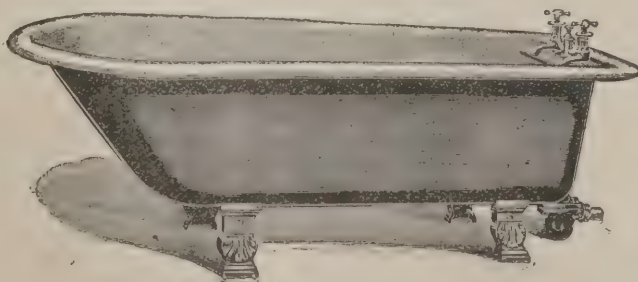
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BEACONSFIELD URBAN DISTRICT COUNCIL. TO CONTRACTORS.

The Urban District Council of Beaconsfield are prepared to receive TENDERS for the CONSTRUCTION OF WORKS of SEWERAGE, comprising about 5,000 lineal yards of Stoneware Pipe Sewers, Manholes, &c.

The drawings may be inspected between the hours of TEN a.m. and FOUR p.m. at the Office of the undersigned Clerk to the District Council, at No. 11 Mackenzie Street, Slough, when a copy of the specification, schedule of quantities, and form of Tender may be obtained upon depositing a cheque for £2s., which will be returned on the receipt of a bona-fide Tender.

Sealed Tenders, on the form of Tender attached to the specification, must be addressed to the undersigned, endorsed "Tender for Sewerage Works," and be delivered at No. 11 Mackenzie Street, Slough, aforesaid, on before the 25th July. The Council do not bind themselves to accept the lowest or any Tender.

G. H. CHARLEY,
Clerk to the Urban District Council.
Slough,
July 1900.

CITY and COUNTY BOROUGH of CANTERBURY. NEW LUNATIC ASYLUM. CONTRACT No. 2.

The Visiting Committee of the New Asylum at Stone House, Canterbury, invite TENDERS for the COMPLETION OF BUILDINGS and other Works in connection therewith, in accordance with drawings and specifications, which may be seen at the offices of the undersigned, where also copies of the bills of quantities may be obtained on and after the 16th JULY, on depositing the sum of £10, which will be returned on receipt of a bona-fide Tender.

Tenders on the forms supplied are to be sent to the Chairman of the Committee of Visitors not later than THURSDAY, the 2nd AUGUST, at SIX p.m.

No pledge is given to accept the lowest or any Tender.
W. J. JENNINGS,
Architect.

No. 4 St. Margaret's Street,
Canterbury,
June 1900.



No. 83 HEAD.-6s.



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GRIMSBY ROAD,
CLEETHORPES.

TO BUILDERS.

The Trustees of the Hamlet of Ratcliff School are prepared to receive TENDERS for the CONSTRUCTION of an EXTERIOR STAIRCASE at the School in White Horse Street, Commercial Road East, E.

Copies of the specification may be obtained, and the plan may be inspected, on personal application to the Secretary, at the School, between TEN and FOUR o'clock; and Tenders must be delivered to him at the School before NOON on MONDAY, the 23rd July instant, and endorsed "Tender for Staircase."

The Trustees do not bind themselves to accept the lowest or any tender.

By order,

HENRY EVERETT,
Secretary to the Trustees.

Hamlet of Ratcliff School,
No. 51 White Horse Street,
Commercial Road East, London, E.
July 1900.

VESTRY OF THE PARISH OF FULHAM. TO BUILDERS AND OTHERS.

The Fulham Vestry hereby give notice that they will be prepared at their meeting, to be held on WEDNESDAY, the 25th day of JULY, 1900, to receive TENDERS for the ERECTION OF STABLES (for about 50 horses) and other Works in connection therewith, in extension of their present stables in Munster Road, Fulham.

Quantities and forms of Tender are now ready for delivery, and will be supplied on application to Mr. CHARLES BOTTERILL, A.M.I.C.E., Surveyor to the Vestry, upon payment of a deposit of Two Guineas, which will be returned on receipt of a bona-fide Tender.

The conditions of contract, specification, and drawings may be inspected any day, between TEN and FOUR o'clock, at the Surveyor's Office, Town Hall, Walham Green.

The contractor will be required to sign a declaration that he pays the trade union rate of wages to the several trades that will be employed on the works, and all unskilled adult labour the minimum rate of sevenpence per hour.

Sealed Tenders, with priced bills of quantities, to be delivered before FOUR o'clock on the above-mentioned day. The lowest or any other Tender not necessarily accepted.

By order,

W. J. H. DENSELOW,
Clerk to the Vestry.

Town Hall, Walham Green.

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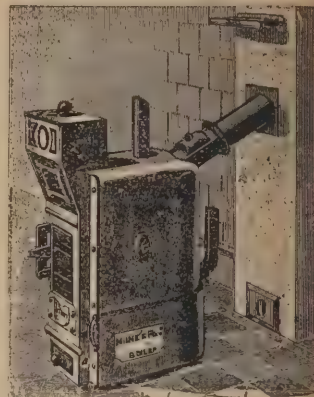
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JULY 25, 1900.
No. CCLXXXV.

EMMINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

Art and Social Revolution.

SOCIAL REVOLUTION, its causes, influences, and, above all, its effects, is a

matter of discussion which is very near to the actual course of events in this present age. History marches upon its irresistible course in many and various ways, and by many and various methods: yet of all its methods, and of all its modes of travel, it brings to pass the greatest changes, good or ill, in the shortest time by the aid of Social Revolution alone. I will not discuss the causes which promote such a state—war, the gradual awakening of a People to a sense of wrongs, of grievances unbearable, or the mad flame of hatred and of blood which springs suddenly into being, like the French Revolution. All these bring about that rousing self-reflection which must ever prove itself a blessing to any nation of strong intellectual stamina; and it is this I wish to look into, examining the effect of Social Revolution upon one branch of our English intellectual effort—our artistic national mind.

To go back into history for proof of what I wish to say will be easy. Let us take for example that wonderful art life of the Greeks, the Greeks who accomplished so much—the splendour of form and beauty in their sculpture, the most perfect architecture the world will probably ever know, and the birth and maturity of a literature which has never been surpassed. Yet all this was practically accomplished and consummated within the life of one man, who lived, it is true, somewhat beyond the average grant of years. Not only was this marvellous record built up within so short a time, but while continuous revolt and war were going on—civil war between city and city, and the great invasion of Xerxes, when the tiny army of the Greeks, which stood for all the civilisation of the world, swept back in a truly miraculous manner the tide of Persian invasion which so nearly overwhelmed them. If we take the history of Venice—Mistress of the Seas, as Ruskin calls her—we shall find here that her artistic vigour was impaired and sapped by the insidious forgetful ease and sluggishness of peace; her wars saw her supreme politically and (excepting Florence) supreme artistically. The growth of Gothic art progressed through all the tumult of the forma-

tive wars of Northern Europe, while the great birth of the Renaissance came at that critical revolutionary time when the Holy Roman Empire was in its final death throes and the modern European States were in the making.

How can it be doubted, extraordinary as it may seem, that Revolution promotes artistic movement, when Assyria, that most militant of ancient empires of Asia, had such a vigorous creative art throughout the period of long wars of conquest? These examples from history should be sufficient to show that there is a link of connection between such patently alien influences as Art and Revolution. To examine into the nature of the link, seeking the reasons for such connection, is more difficult and can only be imperfectly hinted at here; yet we can go a short way towards getting the truth.

Carlyle has claimed that War and Revolution—social, political or artistic—in reality spell Evolution for mankind. Such disturbances, he says, shake the torpidity from the

ease and placid peaceful skies, and now out of sheer wantonness they interpret force as torpidity, art as commercialism, morals as maxims merely, and that fine spirit of sincerity as a lifeless sham. They think they can dispense with that great moving spirit, Force, so they heap him over with conventionalisms, call him uncouth, and cover him with a dainty tissue of eccentricities, and say it is Art. But it is not Art, and never will be, while the Force is absent. What Matthew Arnold demanded of the highest poetry will apply to us here. It must, he says, deal with the fundamental basis of things, with life and death and their problems, with "joy in widest commonalty spread," and Art must do the same. If, through the stress and trouble of Revolution, Art can find a way for the expression of Wordsworth's great hope—can find a way to "joy in widest commonalty spread," there will be an undertone of hope in the complaint of wars and rumours of wars, with their apparent hark-



CHURCH ON THE ARDMORE ROAD, ARDMORE. DRAWN BY H. F. WARING.

liver of a nation until it regains its real moral and intellectual health and ascendancy, which had been tainted by the continued sweets of peace. There can be little doubt that such changes shake a people to the very heart. It is vital to them, and brings them *real feelings, real thoughts, and real ideas* very different from the assumed mediocre emotions of a commercialised peace. It takes them back to primitive facts, the broad chances of life and death, with all the grim brutality as of a return to barbarous existence.

In all this there is one thing, and that is Force, which will redeem any art from the commonplace, any mind from the sham. Why is primitive art so engrossing? Why is that crude Early Gothic sculpture so fascinating? Because of its vitality, its force. It is this force, this living spirit of strong vitality coerced into art which makes it live, almost breathe, and irresistibly appeal to us degenerates of weak nerves and idle senseless conventionalisms. The people of to-day have had a fulness, a surfeit of uneventful

ing backward to barbarism. "Give me hatred," says Carlyle, "but not indifference," and we must demand of our Art either love or hate, but not indifference. We are not, I think, indifferent to-day, but there is much to hate, and, this being so, still are there wide realms to conquer, vast stretches of territorial shams to go down before determined onslaught; and truly this is a noble heritage for artistic futurity.

In speaking as I have done of Force in this article I do not disclaim the benefits of culture. Having once gained our force it must perhaps be civilised, made to conform to art standards, but the fact of its presence is imperative. This alone gives the element of inevitability to any effort, and inevitability is the sign of power, the sign of real imperishable merit in any work.

It will not, I hope, be taken from this that I counsel against peace, my object being rather to show the compensating advantages of war, and truly they are great; yet without peace they would be as nothing. F. B.

Speculative Building.

THE vast majority of speculative building may be described as the compounding of a showy exterior and a moderately-convenient interior with a cheap, unsound and unenduring fabric; or, to dignify the definition, we may call it a combination of inexpensive pseudo-art with a feeble imitation of scientific method. It is no child's play to unite these qualities, though, to the layman, it may seem the very quintessence of ease; but, all these difficulties being solved, What does it matter to the builder if cracks do appear within a year? What if the beautiful tuck-pointing does lose its gaudy effect after a few rainstorms? These are mere details which we can scarcely expect the builder to foresee 'mid the maze of endless items which beset him at every turn—items (to mention but few) of doors and windows, ornamental stone window and door heads ordered by the gross (possibly from some foreign source), and the building all the time needing to be reared up around them! Then, too, what an anxious time is it for him until that bond of stability, the wall-paper, is duly fixed!

We are told that we live in progressive times, and that to avert the catastrophe of being behind the times we must move with them—a fact which is fairly obvious; but on taking any average suburb, and on noting the buildings recently erected and in course of erection, can we, applying to this question the statement enunciated above, cajole ourselves into believing that domestic building, not to say architecture, has moved with the times? Of course, if the times tend to show an advance in instability—moral, social, and material—and in the art of concealing that instability, then we may be very well sure that we are advancing with the times. Though their powers are perhaps somewhat exceeded in some cases, the various local Boards of Works are, it is very generally admitted, doing inestimable good in checking the erection of flimsy dwellings, and the plea of the builder is that he cannot afford to spend more money upon other parts of the fabric, because the by-laws of the Boards are so strict and require absolute satisfaction in the matter of drainage, foundations, thickness of walls, &c., parts which it must be to everyone's interest to have properly built. It is a strange fact that the public, the ultimate dwellers in and possessors of this class of property, do not seem to realise that it is a penny wise and pound foolish policy to stint the builder in these operations; for, in the majority of cases, speculative builders only do what they do, knowing that they can obtain but a certain sum for a completed house; therefore they argue, "Why should we spend money on improvements, although necessary, which the purchaser neither sees nor appreciates?" We should reduce our profit without conferring any known advantage upon the purchaser." This is but the outcome of present-day circumstances. The case seems to resolve itself into the fact that, until the public are prepared to esteem at their proper value the benefits of sound building, and to pay for them accordingly, all that is to be expected is the determination of the builder to keep to his well-practised methods, only doing enough to satisfy the official building inspectors and to make the building apparently inhabitable.

G. P. K.

On Reflection.

Water-Gas.

THE subject of water-gas cropped up in the House of Commons last week on a question concerning the report of the special committee appointed to enquire into its uses and abuses. The sooner the Government bring in a Bill to regulate its uses the better for the general health of the community, for there is not the slightest doubt that gas companies are making too free a use of this deadly poisonous gas. There are many reasons for this. The plant required takes up little space and is not very costly as gas plant goes, the gas is easily and quickly made, and the company can use up its own coke, which is a great advantage. Practically the only material required is the oil for the carburetting. It follows, therefore, that the gas is very cheap, and the temptation to gas managers to dilute their coal-gas with water-gas and so save their coal bill is very strong. Now that coal is very dear, and likely to be still dearer, who can doubt that the gas companies will manufacture greater quantities of water-gas to minimise their expenditure? We are not among those who urge the total abolition of this gas, for it has its legitimate uses. It must be remembered that gas is used now for other purposes than lighting—for driving engines, brazing and other work—and the consumption of gas in such ways, depending as it does upon the state of trade, is liable to fluctuations and is difficult to calculate. Consequently a gasworks manager feels the necessity of a water-gas plant which will enable him to eke out his coal-gas supply and quickly meet any urgent or large demands upon his stock by reason of a sudden briskness in the work of the surrounding factories. Only those people who have worked on gasworks know how sudden and urgent such demands may be. Furthermore, it is desirable that gas for motive power should be as cheap as possible, and the dilution of coal-gas with water-gas should go far to aid in a reduction of price. But its cheapness has ensnared the gas companies into making it for ordinary purposes, instead of for extraordinary purposes and emergencies, and some legislation is therefore urgently required to regulate this abuse, and to enforce upon the companies a somewhat stricter attention to the question of public health.

More Water for London.

WE are glad to see that the East London Waterworks Company are coping vigorously with their difficulties. The ill-advised opposition of the London County Council to their Bill last year has not deterred them from bringing in a fresh Bill this year, and, what is more, it has been passed. Under this Bill they will be enabled to bring up their storage capacity to the enormous amount of 7,500,000,000 gallons, and they are also enabled to get additional supplies from the Thames in case of exceptional drought. That this is a step in the right direction no one can deny, and we venture to say that the London County Council could not have propounded a better scheme in connection with these works. We have little doubt that there will be a good deal of anger among the agitators, and no doubt we shall hear the old cry of "No monopoly" and the stock argument that water is the gift of Providence to man and should be free. This is correct so far as it goes, but Providence has not yet assumed the task of laying mains and services, digging

wells and building reservoirs and pumping stations, and these things cost money, whether they are done by a municipality or a private company. Personally we think the water supply should be under the public control, but if the responsible authorities were inert in the past we cannot now blame the private company for taking advantage of their want of foresight. Ill-judged and, to any water-engineer, absurd criticisms were passed on the East London Water Company when their supplies broke down through wanton opposition to their preventative schemes, but of all water companies this has the worst sources of supply—the uncertain and fluctuating River Lea, from which another company has first taken toll, and deep wells. There are no other sources of supply, so that the policy of huge storage reservoirs to take the extra water during rainy weather is highly commendable. There is one other point upon which we would like to insist—and this concerns all the London waterworks—the necessity of strong defensive works or fortifications to guard all approaches to our water supplies. In case of invasion, not quite so improbable as some people might think, the cutting of London's water supply would be followed by results too horrible to contemplate. If London's water supplies were cut the greatest army in the world could not prevent the fall of the city, and three-quarters of her inhabitants would perish from disease. Probably the London County Council never contemplated the superhuman task of defending their Welsh Water Supply from an invading force.

Shop Blinds. THE London County Council sometimes ex-

hibits a propensity for straining at the gnat and swallowing the camel. One can frequently read in the reports of its meetings that permission was refused to some theatre proprietor or entertainment caterer to erect a glass and iron awning outside his premises for the comfort and protection of his patrons. Permission to erect such structures is one of the Council's prerogatives; but while they jealously guard the privilege it does not appear that they exercise any disciplinary influence over the outside shop blind. In the old days it was rare for a shop window to be less than 2ft. above the pavement; but the great object of to-day is to get every inch of window space that is possible, even if the building suffers architecturally. Incidentally this craze for plate glass is an additional source of danger to the pedestrian, because an accidental slip or push may precipitate him through or partially through the window, with dangerous or fatal results. But it directly affects the blinds, for these must project more and hang lower to cast sufficient shadow to cover the glass. When sun blinds were only used as sun blinds no harm came, but some enterprising shopkeeper appears to have left his shop blind down in wet weather and to have been rewarded with additional patronage by the folk sheltered under it. At any rate the majority of them are down now in wet weather, and the result is that no man of average height, say 5ft. 8in., can walk along the pavement with his umbrella up without the umbrella or his hat or both being wrecked by the cross bar of a shop blind. Shop blinds are merely a graceful concession to the shopkeeper to prevent goods being damaged and his shop being converted into an oven. And we doubt not that, if necessary steps were taken, they could be abolished. Such an extreme step, however, is not desirable, because the public also derive some benefit from them in both wet and fine weather. All that is necessary is a by-law which will enable the County Council to regulate their use and erection and prevent them degenerating into a public nuisance.



MR. WALTER H. BRIERLEY.

MEN WHO BUILD.

No. 60

Messrs. DEMAINE and BRIERLEY.

IT is a nice question whether or not it is advantageous to an architect to have his residence and professional practice centred in an ancient cathedral city. Later works are all overshadowed in such places by the grand historic relics of all the architectural periods since Norman times, and your average sightseer resents as an intrusion anything later than (let us say) the early Georgian era. He begrudges the modern growth which inevitably in our populous and still growing country radiates from the mediæval nucleus, and in his mind he resents, although the resentment may find no expression on his tongue, the snug villas that perhaps for a mile or so around enfold the original city that our forbears knew and that by comparison seems now so small. Only when England begins to decay and her population to dwindle will the tourist of that future era find his sense of the romantic and of the eternal fitness of things preserved from outrage. At present he must needs go to the decayed Dutch towns by the Zuyder Zee for his supremest satisfaction, for even in such derelict places as the town of Sandwich modernity is seen and the pulse of life still beats, however feebly. At York the pulsations are steady and strong. Suburbs stretch to every point of the compass, and Roman Eboracum and the mediæval city of York form but a central speck. The Roman city is not evident to the casual glance, for the Middle Ages' walls of York overlie the

works of those sturdy colonists from Italy, and irreverent modern enterprise has destroyed much else, the fine railway station of York standing on the site of the Roman cemetery. But the city yet offers the finest exercise imaginable for the imaginative sojourner within her gates, for it is possible to make its complete circuit on the ancient walls, and to look down from the elevated battlements in a bird's eye view that gives a clear conspectus of ancient and modern alike.

There have been many unworthy buildings erected in York within our time—the products, possibly, of those who have been crushed by the ever-present domination of the overshadowing Minster. This fact brings us again to that nice point with which we started; and in truth it is but rarely that you will find thriving firms of architects in cities of this description. Inspiration lurks more generally in spots barren alike of scenic beauty and of historic buildings. Hence the rise of the Glasgow and Birmingham schools of artists and of decorative illustrators. At York,

ance. Yorkshire villages are, in fact, of the grimmest, and at the same time most uninteresting, kind. There is no excuse for this, for although the scenery is often harsh, wind-swept and barren it should in modern times beget what it did of old, a masculine style characteristic of the surroundings.

In talking with Mr. Brierley, whose work has lain, of course, chiefly in Yorkshire, one finds an ardent advocate of "local style," and his completed works do not belie his principles. Thus we find in his new church at Rufforth, that village set on the windy wolds, a note of stern, four-square strength, a sparing use of enrichment, that render the building at one with its surroundings; and in his design for a church at Goathland, and his Mallyon Spout Inn at the same village, one may seek with success a reflection of the conditions obtaining at that weather-beaten moorland spot.

The firm of Demaine and Brierley, of which Mr. Walter H. Brierley is now the sole representative, has had many incarnations. Taking its origin in John Carr, whose practice began



HOUSE AT FULFORD, YORK.

however, we find an exception to this rule. Messrs. Demaine and Brierley have long carried on their architectural practice, and have greatly helped to leaven the somewhat sordid lump of modern work in both York city and county. From their offices in Lendal, that quiet thoroughfare in the midst of the city, have proceeded plans and designs for halls on Yorkshire wolds and in Yorkshire dales, for villa residences, for banks, schools and churches, that have done a great deal towards redeeming the reputation of the provinces in matters of architectural taste, and have shown that we in London have not the monopoly of distinction in design. It is just this note of distinction, this rare quality of style, which Messrs. Demaine and Brierley have happily imported into the business of a varied country practice. There is plenty of room for it in Yorkshire, as those who have travelled that vast county well know, for by some accursed fate it has generally happened that within the circuit of the Ridings situations of the most delightful character have been bedevilled by houses of the most abject appear-

a hundred and fifty years ago, the business has a history which may best be shown in the following tabulated form:—

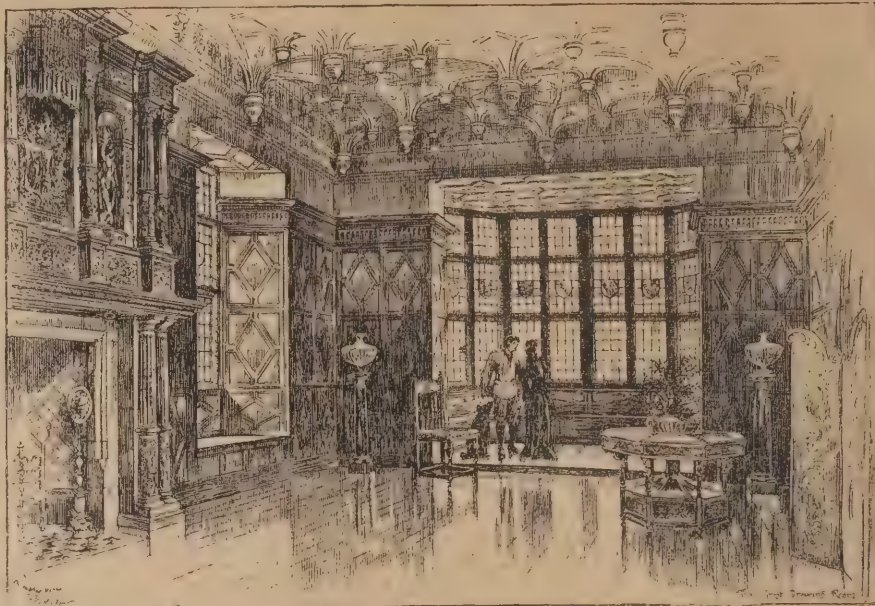
Name.		Began to practise	Retired or died
John Carr ..	The renowned "Carr of York"	about 1750	died 1807
Peter Atkinson, senior	Assistant and successor in part to last	" 1785	" 1805
Peter Atkinson, junior	Son and partner of last, and afterwards successor	" 1801	" 1842
Richard Hey Sharp	Partner with last as Atkinson and Sharp	from 1819	to 1828, when he retired
John Bownas Atkinson	Sons and partners of P. Atkinson, jun., and afterwards successors	1832	died 1875
William Atkinson		1837	retired 1878 died 1887
James Demaine	Partner with last under the title of Atkinson and Demaine, and afterwards successor	1870	retired 1899
Walter H. Brierley	Partner with last as Demaine and Brierley, and now successor	1885	—

Although the old style of the firm during the last partnership is retained, we are here concerned only with Mr. Brierley's personal handiwork. Prominent in this connection is his elaborate and careful restoration of Welburn Hall, a noted Yorkshire mansion built in 1609 and unoccupied for close upon a hundred years



HOUSE AT FULFORD, YORK.

before Mr. Brierley's clients spent £50,000 on its enlargement and restoration. The accompanying illustrations will convey an idea of how pleasing a task this must have been: the restoration and remodeling of so romantic a seat and the planning of the additions east and west of the original building—additions made necessary alike by increased accommodation for the family and by reason of the greater needs of modern households. The "View from the South-west" in particular among the illustrations of Welburn is interesting, for it shows at a glance the characteristics of the old work and the new, and the modern embellishments upon the original severity of the style which Mr. Brierley has permitted himself. To the right is the original building, high-shouldered, and, truth to tell, not a little grim of aspect, especially if we imagine the addition of the oriel away. This, then, is how they built in the first years of the seventeenth century—not without some suspicion of the semi-fortified mansions of earlier periods still lingering in the sheer walls and simple outlines of the old building. Very different are the tendencies of these times, as instanced in Mr. Brierley's new wing, seen stretching out to the left. Lines have a tendency toward the horizontal, rather than to the perpendicular; a cheerful domesticity, rather than a gaunt reserve, seems the dominant note, and the many and large windows argue that sense of security which, almost more than anything else, has changed the aspect of domestic work of late years. Our two plans show the interesting

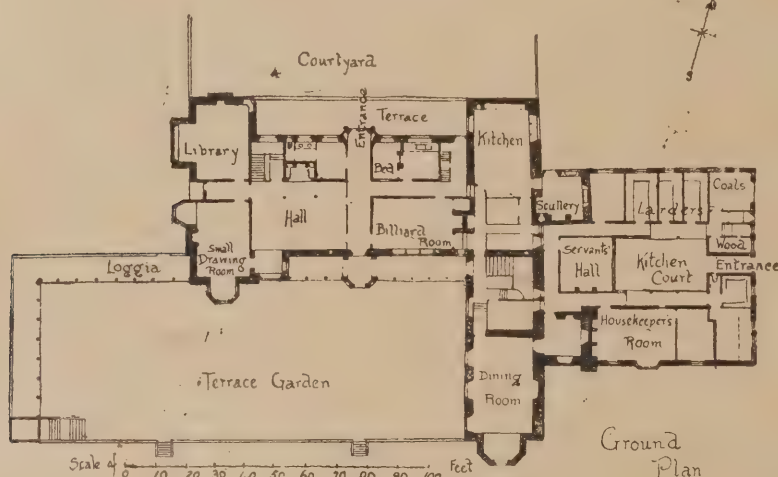


WELBURN HALL, YORKSHIRE.

—is seen in the growing series of elementary and higher grade schools that he has designed and built in the last few years—those in and about the city at Scarcroft, Park Grove, Fishergate and Shipton Street—involving an

—demands which have not yet, unfortunately, been properly satisfied in London. This "central hall" system, with its class-rooms and offices grouped round, is bound to be a coming feature in Board School designing in general. One of Mr. Brierley's recent works is the Jubilee Children's Ward for the County Hospital at York, while to his domestic work must be added the new and imposing buildings of "North Cliff" Filey, overlooking the Yorkshire coast at that picturesque spot; addition to Burtonfields, Stamford Bridge; new wing at "The King's Manor," York; Nurses' Home and other additions at The Retreat, York.

Sufficient has already been said to show the variety of Mr. Brierley's practice, but we have as yet made no mention of the very numerous banking premises erected by him, chiefly for the York City and County Bank, comprising branch establishments at Doncaster, Rotherham, Horsforth, Bridlington, Bishop Auckland, and Whitby, together with two in progress at Selby and Shildon. They all partake of the same character, simple or elaborated, according to the relative importance of the towns in which they are situated. Stone built, with that air of dignity and reserve which seems to be an essential feature to banking business, they all have a strong Renaissance feeling, and are characterised by broad wall-spaces, judiciously left plain and free from the vicious modern practice of breaking up surfaces in needless and distracting alleged decoration. The design for the Selby branch in particular, shows this just sense of reserve, and will afford a new feature in the market-place of that little town, whose street architecture has hitherto had nothing to show the stranger. If



WELBURN HALL, YORKSHIRE.

disposition of the house and its garden, with the pretty feature of the loggia; and the illustrations of the great hall and the great drawing-room serve to indicate the scale upon which this interesting work was done.

Centred in a city like York, with a vigorously pulsing life of its own, the firm of Demaine and Brierley is responsible for a great deal of recent work within and without the encompassing walls. From the numerous modern residences in the suburbs built at an average cost of from £1,500 to £3,000 apiece we may turn to the more imposing residence at Fulford designed by Mr. Brierley, illustrated here in two views. It is a brick house, cast chiefly in the early eighteenth century convention. The two gables of generous width, breaking up what would otherwise be a somewhat severe formality in the front elevation, give a fine air of dignity to the mass. As Diocesan Surveyors the firm have acquired a widespread and intimate acquaintance with this great Yorkshire diocese, and, besides the building of some thirty parsonage houses and churches, as well as numerous restorations, have carried out the building, restoration, or enlargement of Welham Hall, Malton; Rawcliffe Hall, near Goole; Rufforth Hall, formerly a farm house; Hawbarrow, Heversham, for Canon Argles; and houses at Brompton, near Northallerton, and Easingwold. Another and important side to Mr. Brierley's activity—especially important from the public and educational points of view

outlay of £60,000. These are characterised by a feature first introduced into Board School planning by Mr. Brierley, viz., the arrangement of the "central hall," which makes at once for collective instruction and good administration and for thorough sanitation and athletic exercise



WELBURN HALL, YORKSHIRE.

banking companies and corporations in general are thus to be found embarking upon buildings of real architectural character, they will deserve our gratitude for leavening the dull and heavy lump of undistinguished buildings in our small towns. The Doncaster building for the York City and County Bank is naturally on a more elaborate scale than that of most of the others. It is a very real and welcome addition to the architectural amenities of that horse-racing town, which indeed is not greatly distinguished for the beauty or the imposing nature of its buildings. The Mansion House of Doncaster is perhaps the only other secular structure in Doncaster which would arrest the eye of the passing stranger; but that is a classic design of much beauty and strength, executed considerably over a century ago. Situated almost directly opposite the site for the new building of the York City and County Bank its commanding character naturally suggested to Mr. Brierley the advisability of designing something, if not exactly on the same lines, at least with the same feeling. Accordingly, here we have a double elevation in Portland stone, with a refined rusticated ground floor, and Corinthian pilasters of bold projection dividing the windows of the first floor and supporting a massive frieze and cornice. The interior of the banking premises is a very pleasing and original design, being vaulted instead of treated with the usual type of ceiling found in banks. The result is peculiarly dainty. Mr. Brierley is not one of those architects who try to obtain the credit for all the work which proceeds from their offices. On the contrary, he gladly recognises the part played by his assistants, and declares that such success as he has achieved is owing in no small degree to the exertions of an able and loyal staff.

EARLY CHRISTIAN CHURCHES IN IRELAND.

INISCLOTHRAN is a haunt for the antiquary and the architect; it was the island home of Queen Maeva in the fourth century and of St. Diarmid in the sixth century. From Athlone you take a steamer up the Shannon, passing through charming scenery, and it is not long before you reach the island of Inisclothran in Lough Rea, for it is only twelve miles by water from Athlone.

Limestone is easily procured, so that the

church builders had not far to go for their principal building materials. With one exception—that of the Tower Church—the buildings cluster together at the south end, forming a little colony of their own round the parent church of St. Diarmid. It would appear from the number of ruined and half-covered stone walls, which seem to run in every direction, that these buildings were enclosed, as well for the protection of cattle as for defences in the time of war. Teampull Diarmid was the first work of the saint when he selected this island as his home, and dates from the middle of the sixth century. Here we have one of the diminutive buildings of the early Christian Church still retaining in what is left of it some of the peculiar features of that remote, shadowy, but interesting period. The ends of the side walls project a foot and a half beyond the face of the gables, thus unintentionally forming buttresses, a faint foreshadowing of what ultimately became an important

and magnificent architectural conception. The measurement from one outer extreme to the other is only 14ft. Internally it measures 8ft. by 7ft., being thus one of the smallest churches in Ireland. It is duly orientated a few points north of east, thus showing that its foundation was laid in the first portion of the year. The doorway in the centre of the west end bears evidence of having been slightly disturbed, being 1in. wider at the lintel than in the centre of the ope, owing no doubt to an inward movement of the jambs. The remnant of the gable over this door rises to a height of 15ft. from the present ground line. The east window has disappeared. There appears to be no doubt that this church once possessed a stone roof, although no vestige of it now remains. In fact, the wonder is that any portion of it, walls or gable, has survived through the long roll of storm-swept centuries and the ruthless devastation of barbaric warfare.

Between the walls of this church and Teampull More stands a little stone with crosses carved on both sides of it. They are rudely cut on a natural slab, and are of very early date.

The church of Teampull More stands within 12ft. of Teampull Diarmid. In point of size and development this monastery is by far the most important ruin on the island. The church consists of a single nave 47ft. 7in. long by 21ft. 5in. wide, the masonry walls rising to about 13ft. and being in fairly good preservation.

The two graceful lancet windows in the east end are long, narrow, and well recessed, to all intents similar on the inside, but strangely unlike each other outside—one being severely plain and the other elaborately moulded. These windows are much later than the church, and their insertion has evidently been at the expense of what at one time must have been a beautiful double-chambered piscina, with an octagonal column dividing it in the centre—the base of which alone remains, crushed over as it was by the intrusion of the window jambs. Possibly this church, like more of its neighbours, had only one window to light it from the east. The windows on the south side have also the appearance of later additions and are unequal in every respect. All traces of doors have vanished, but the ope, which have been arched and protected by the Board of Works, seem to indicate the position of a west door and an entrance on the north side of the cloister.

The subsequent additions consist of a vaulted sacristy (sometimes called a penitential prison) and a chapter room, which form a range on the north side and were connected with a cloister. The outline of the three remaining cloisters is still traceable; the walks are only 35 ft. long



BANK AT DONCASTER. DEMAINÉ AND BRIERLEY, ARCHITECTS.



INTERIOR OF BANK AT DONCASTER.

Most of the arches opening to the garth are gone, but judging from the springers that are left they must have been rudely constructed. The door into the sacristy from the church seems to have disturbed a window on the north side, as some of the cut-stone still remains, and at one time the sacristy seems to have had a door into the cloister. This compartment is lighted by a very fine specimen of fifteenth-century single-light window, evidently an insertion of a later date. The south cloister appears to have had a shed or lean-to roof against the church—a very usual mode of covering such walks; but no trace is left to tell the story of the north and west cloisters—of their construction or what they led to. An upper chamber exists, and when perfect it covered the chapter house, sacristy,

"Chancel Church," and here we find the first foundation—or the early church forming the chancel of a more extended house—the nave being a subsequent addition. The entire dressings of the chancel arch are lost, and most of the window dressings have disappeared, but the east window is fairly perfect, and closely follows those of Clogas (Tower Church) and the Church of the Dead. These windows vary in width, seldom being more than 6in. wide at the exterior ope owing to an almost absolute impossibility of procuring glass. The construction of these windows shows the influence of the coming style on its predecessor—in the blending of the two. Underneath the window stand the remains of the ancient altar, rudely built of rubble stones, but minus the altar slab. To the east of the chancel wall is a rough heap

distance to the south of the churches which have been described, and consists of four walls ranging from about two to nine feet high, and entirely devoid of any worked detail.

There is no doubt that this is the most modern church on the island. It may have been the church for the women of the settlement, or for special purposes like the galilees of some of the great English cathedrals—a place where women were allowed to see their relatives who were monks. Near this church, half buried, with its face downwards, was found a stone bearing incised on its surface a Celtic interlaced cross, with an Irish inscription. This cross and the one already mentioned are quite equal to the best at Clonmacnoise, and clearly prove the antiquity and importance of Inisclonmacnoise as a religious establishment.

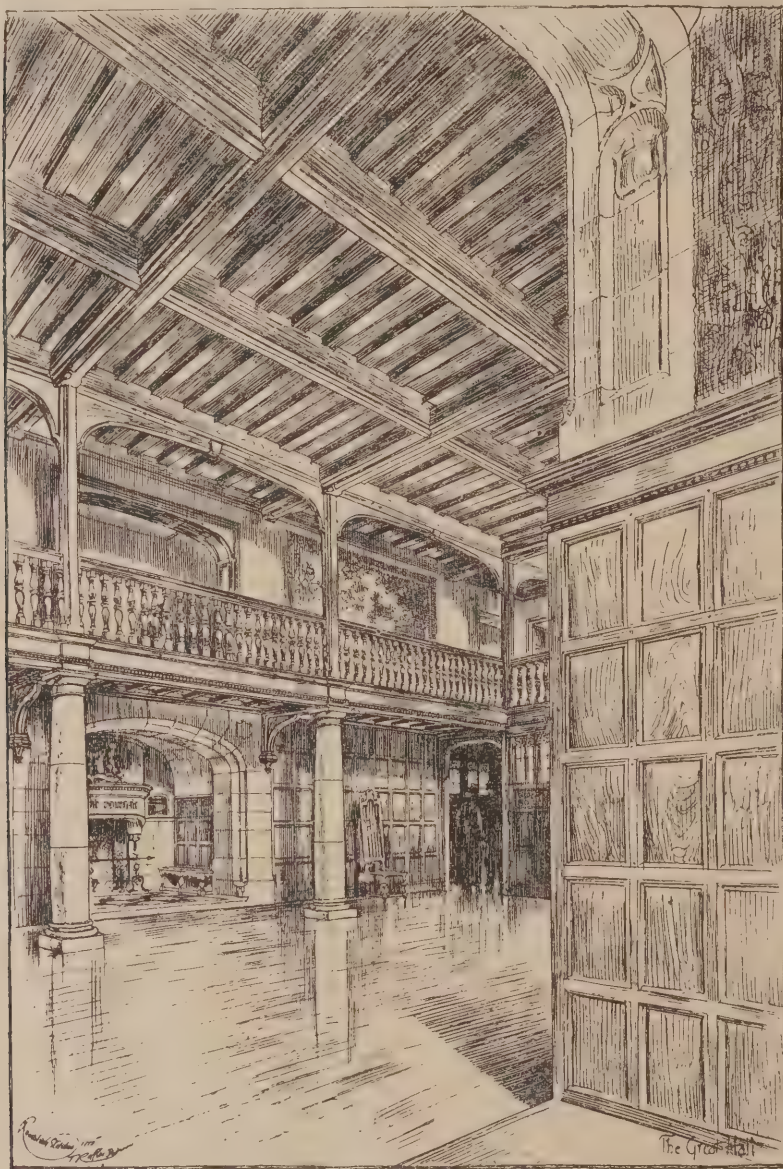
The Teampull Clogas, or the Tower Church, stands isolated and lonely, crowning the highest point of the island. It is remarkable for possessing a square tower at the west end, which gives the church its name. On plan this church is rectangular, being 34ft. 8in. by 16ft. 8in. The east window is Hiberno-Romanesque work, but primitively cut on the outside, being 3ft. 4in. high by 7in. wide, with the arch scooped out of a single stone. This is rather strange, as the interior work of the window is worked with advanced skill. The tower is square on plan, battered in the lower portions, and bonded into the old gable, to which it is added. It was entered on the ground floor from the inside of the church by a square and badly-formed doorway. The arrangement for entering the upper stages of the tower is peculiar in the extreme—a stone staircase leads to a landing, from which some gangway or staging of wood must have extended to the doorway, which entered the upper floor from the centre of the gable end. This stairway is built into the north wall of the church, with a window facing its two doors, and is clearly indicative of not very early work.

At one time—in the last century—a man named Fairbrother, who belonged to the Society of Friends, settled on this island, and from his occupation it became known as the "Quaker's Island." This good man had no love for the past, and regarded this church in particular as a sort of fairland quarry—one which yielded ready-made squared stones—and he used them lavishly to build his residence. The south side of the tower painfully reminds us of this, as it has been denuded from top to toe of its covering, and stands a melancholy monument to the Quaker's devastation. In the remains of his house can be seen many fine, old-worked stones built in as ordinary rubble work. Close to the east end of Clogas, in the corner of a field, a small circular fort or dwelling can be traced, and beside it some huge slabs like a tumbled cromlech, evidently the remains of Queen Maeva's royal residence.

To those who care to investigate the conditions of life which existed in remote times—in the dawn of Christianity—and its evolution as it advanced and prospered through the middle ages down to the Dissolution—these crumbling walls reveal many phases, and act as a veritable link between the past and the present. They seem like chapters through which the story of life has run, in which each special feature forms a picture, an illustration of "the strange, eventful history." Such a story, fragmentary though it be, cannot fail to be of great value as a tangible asset in the records of our country, and therefore worth preserving with far more care and attention than has hitherto been bestowed on it by the well-meant efforts of the Irish Board of Works.

Building Trades' Gift to the Nation.

Her Majesty the Queen has been graciously pleased to endow two beds, their Royal Highnesses the Duke and Duchess of York endow one bed for a soldier or sailor, Her Royal Highness Princess Christian of Schleswig-Holstein one bed for the King's Royal Rifles, and their Highnesses Princess Victoria of Schleswig-Holstein and Princess Aribert of Anhalt a bed for a "Greenjacket."



WELBURN HALL, YORKSHIRE. DEMAINÉ AND BRIERLEY, ARCHITECTS.

and east cloister, the internal walls of the lower apartments forming intermediate supports for the flooring. This chamber, possibly the community room, was spacious and well lighted, and at the north end had a beautifully-traceried window, which, on the inside, had an open back, well recessed, with a stone seat running round it, giving it an unusual air of comfort. This chamber appears to have been entered from the north-east end, possibly by a circular stone stairs rising from the ruined foundation, which still exists. The sacristy contains a number of cut-stone fragments, to which it is impossible to assign a place, but some of them are curiously worked, and all are interesting. It is worthy of note that the interior walls of the church were once plastered.

The next adjoining building is known as the

of broken masonry, conjectured to be a "saint's bed." A tree has forced its way into the north wall, and is slowly but surely working the total destruction of the masonry. Close beside and almost in line with the Chancel Church is the Church of the Dead. The building is a fairly good example of the type of early Christian churches in Ireland. The extreme dimensions are 23ft. 8in. by 15ft. 8in. The walls have crumbled away to only a few feet high, and have lost all distinctive features of detail except the east window, which is similar in most respects to that described above. The little that is left of this church will soon be lost unless the growth of the ivy is speedily checked.

The fifth of the churches forming this cluster is, Teampull Murry. This church—St. Mary's, as it is sometimes called—is situated a short

AMERICAN ARCHITECTURE: AS OPPOSED TO ARCHITECTURE IN AMERICA.*

By ERNEST FLAGG.

AT no time since the Europeans first began to build in America has there been anything which might properly be called an American style of architecture. There have been American ways of building, as, for instance, our high buildings with the skeleton construction, and the cast-iron fronts of thirty or forty years ago; but the decorative features have been used in accordance with passing fashions, supposedly modelled on European usage, with no such modification as would stamp them with what might be called an air of nationality; or else they have been extraordinary attempts by individuals at originality. None of these attempts have met with popular favour.

All the so-called "styles" of the past have been created by a slow system of evolution from what had gone before, accomplished by the combined effort of all the minds engaged, working along the same lines, each one contributing his infinitesimal share to the never-ending process, a process which is precisely similar to that which produces our fashions in dress. No one knows exactly who is responsible for the change, but we can see that change is always in progress; to the uninitiated it may not seem very apparent from year to year, but if we compare the fashions in dress at intervals of ten or fifteen years the change is striking enough for anyone to distinguish. So it is in architecture, though, owing to the nature of the materials used, change occurs more slowly. If we study the

History of Architecture in Europe, we shall find that, from the tenth century, all the great changes in style were simultaneously common to all the countries. Thus we find in practically all European countries at about the same epoch the styles which are classified in a general way as Romanesque, Gothic, Renaissance, Rococo, &c., but in each country or province, soon after their introduction, they assume a distinctive local character. We also find that some one country is in advance of the others, and that every great change spreads rapidly from the place where it was first developed to all the other countries, but that the minor changes do not spread rapidly, and are confined generally to the different localities where they originate, and go to make the local or national distinctions of the general style. It is natural that as communication becomes more rapid between different sections these local differences should disappear, and this is exactly what we find has happened. In France, for instance, during the Gothic epoch, we find distinct local characteristics in the different provinces; thus the Burgundian, Aquitanian, Touranian, those of the Isle de France, &c.; while to-day the style is national, or, we may say, Parisian.

Barriers.

Now, it seems not at all unlikely that the causes which have led to the breaking down of the barriers between the different provinces of one country will in future operate to break down the barriers between the different countries, that local characteristics will become less and less pronounced, and that even the minor changes in the fashion of building will tend to become more world-wide. This is exactly what has occurred in the fashions for dress. Local distinctions are rapidly passing away, and a dress that is fashionable to-day in Paris is also fashionable in New York, Berlin, Rome, St. Petersburg, London, and in every other civilised capital. If France leads in this respect, and the others follow, it must be because there is in the French mind a quality which fits it to lead in such matters, for the bondage of the other nations is entirely voluntary.

Owing to the peculiar situation of America

and to the natural independence and lack of reverence of the American mind, the course of architecture here has presented an anomaly in the development of style, and rules which apply elsewhere do not seem to apply here. Nevertheless it is very certain that the process of development which works everywhere else will in time be found working here; indeed, it becomes more evident daily that this process is already well under way. The foundation for any such development must necessarily begin with the schools. In every European country we find that before the young men begin to build they undergo a long process of training, either in schools or as apprentices, to fit them for the work. In the past we have thought such preparation unnecessary. Almost every young American as soon as he is able to draw a straight line has felt himself competent to undertake any work of architecture, and not only that, but he has found that most people have been ready to agree with him in this way of thinking. People having large sums to invest, if not willing to entrust them to him at the start, have been willing to do so after a few years, when he is supposed to have had the necessary experience. These methods still hold true in many places to-day. Physicians, engineers, lawyers, and other professional men must have been properly trained before being employed; not so with architects. Most employers, indeed, feel that they are very good architects themselves, and few have any distinct notion of what constitutes an architectural training. This is an entirely

Unnatural State of Affairs,

and nobody who understands the American mind can believe that it will last. Indeed, there is at the present time every indication that it will not last. Schools of architecture multiply on every side, young men flock abroad to seek architectural training, and the results of this movement are already beginning to be apparent in our architecture. Fortunately, this force is a unifying one. I say fortunately, though I doubt if it could be otherwise. The great majority of our students are thinking and working in the same style, though this can by no means be said of our practising architects. They are for the most part still borrowing from any epoch of antiquity, or designing in a style of their own invention as the fancy seizes them. They deprecate what they call the "Frenchifying" of American architecture, as if there were any such thing as American architecture in the hedge-podge which we see about us.

In the meantime the French influence is slowly but surely predominating. Our young men go to Paris and become convinced of the wisdom of the French methods. From the great masters of the French school, under whose influence they are brought, they imbibe such logical, reasonable, and convincing instruction that I do not believe it possible for a young man anxious to learn to come away unconvinced. The converts which these men make after their return among the young men who themselves are not able to go abroad are as ten to one.

A Revolution is in Full Progress

among us, and it is beginning just where it ought to begin; that is, with the students. Let no one mistake the introduction of what appears to be modern French architecture as only a passing fancy to go the way of the "Richardsonian Romanesque," "Queen Anne," and "Italian Renaissance." It is an entirely different affair. It means much more than appears on the surface. The French resemblance is only an incident; it may, indeed, soon fall and pass away, but the movement means that the principles which the French use are being introduced here, and these will last, because they are founded on good taste, guided by common-sense. Henceforth American architects are to be properly instructed before they enter upon their duties. American architecture is not to be Frenchified, unless France can dominate the fashions of the world in building by her taste and skill, as she has dominated them in dress. The movement means that our architects of the future will apply to the art in this country the same logical reasoning, and that they will have the

same careful preparation for the work that helps the Frenchman to lead the world in the Fine Arts. It also means that in the future the whole body of American architects are to work together along the same lines, to think in the same style. Thus we are about to enter upon a course which will make possible the evolution of a national style of our own, or perhaps enable us to set the fashion for the world.

Views and Reviews.

SEWAGE PURIFICATION.

One of the most difficult problems in connection with the drainage of large towns is that of providing an efficient method of sewage disposal. Until about thirty years ago the processes involved in the natural destruction or purification of effete organic matter were not definitely understood. From ordinary observation and experience it was evident that sewage properly distributed over the land in suitable quantities became rapidly broken up and resolved into simpler compounds suited for plant life. These changes were largely attributed to the oxidising action of the atmosphere, until Pasteur positively demonstrated that fermentation and putrefaction were directly due to the presence of immense multitudes of micro-organisms. The recognition of this vital principle has resulted in the introduction of various ingenious arrangements to ensure in some convenient manner the rapid purification of sewage by bacterial agency. Within the last few years great strides have been made towards this end, whilst new and interesting developments are being constantly brought forward.

The author of the book under notice is eminently qualified, from his long and varied experience, to write upon this subject, and he has produced an admirable *résumé* of modern ideas and methods relating to bacterial purification. The first portion of the volume deals with the chemical constituents of ordinary sewage and effluents, together with the procedure to be adopted in collecting samples for analysis. The various species and characteristics of sewage bacteria are then described in detail, including the preparation and inoculation of the nutrient media necessary for the examination of bacterial life.

In connection with the cultivation of bacteria for the destruction of organic matter in sewage the author discusses the important question as to the possibility of the survival of pathogenic or disease germs after passing sewage through bacterial tanks or filter beds. The results of the investigations of Laws, Andrews, Houston and others are mentioned here. From the numerous experiments which have been made it is reasonably inferred that a properly designed system of bacterial purification is unfavourable to the life and growth of pathogenic organisms, more especially if the filtrate is subjected to a considerable amount of aeration and nitrification.

A large amount of useful information is given respecting the construction of bacterial filters or contact beds, together with descriptions of different systems which have been introduced, such as the Scott-Moncrieff, Exeter septic tank, Dibdin or Sutton, Lowcock, Ducat, Whittaker-Bryant, Stoddart, Candy-Caink, &c. The sterilisation of sewage by heat, chemicals, and electricity is also brought under consideration. The concluding chapter refers chiefly to the agricultural value of bacterial effluents, and the direct relation of trade effluents as affecting the general efficiency of the bacterial process.

The book is clearly and concisely written, the illustrations are excellent, and we commend the work to all who are in any way interested in this subject.

T. E. C.

"Sewage, and the Bacterial Purification of Sewage." By S. Rideal, D.Sc. London: R. Ingram, Pleydell House, Pleydell Street, Fleet Street, E.C. Price 14s.

New Aberdeen Hotel.—The new Huntly Hotel, which has been built from designs by Mr. R. Duncan, of Huntly, has a frontage to Castle Street and the Square, and has cost about £6,000.

* A paper read at the Second Annual Convention of the Architectural League of America, held at Chicago in June last.

Masters and Men.

The Norwich Bricklayers' strike still continues.

The Taunton Carpenters' and Bricklayers' Strike has been settled, after having lasted fifteen weeks, the men resuming work last Monday. They came out on a demand for a rise of a penny an hour, with a code of working rules, and now they have accepted the masters' terms of a halfpenny an hour rise to take place at once, and a further rise of a halfpenny an hour in the first week of June next. Considerable satisfaction has been felt at the settlement, as the building trade has been almost at a standstill since April 1st.

Strike at West Ham.—A strike occurred last week among the workmen in the employ of Messrs. Gregar and Sons, builders, who have the contract for the restoration of the West Ham Technical Institute and Library. The Corporation inserted a special clause in the contract that only union men were to be employed on the work. A carpenter was challenged to produce his ticket, and then admitted that he did not belong to the union. His discharge was demanded, but this was not acceded to, and about thirty of the carpenters refused to work with him, and left with their tools. They were very soon followed by the bricklayers and labourers, and all work came to a standstill.

Bristol Building Trade Wages.—During the past few months the master builders have been in constant negotiations with the men, who asked for an increase in wages of a halfpenny per hour, to come into operation on June 30th last, together with sundry modifications in the walking time rules. The whole of the branches of the building trade have now signed, together with the master builders, a set of revised rules mutually agreed upon, and these rules have been deposited at the office of the Builders' Association and will now be issued to all members. The plasterers do not receive an increase of wages at present, as they had a rise last year, when there was a little difference of opinion between the Builders' Association and that section of the trade, but satisfactory arrangements have been made with regard to the other claims.

Trade in May.—The Board of Trade states that employment in the building trades has continued to improve during May, and remains good in most branches. The percentage of unemployed union members among carpenters and plumbers at the end of May was 1.9, compared with 2.2 in April and 1.3 per cent. in May, 1899. In the furnishing trades employment has continued to improve, and remains good. The percentage of unemployed union members at the end of May was 1.0, compared with 1.3 in April and 0.9 per cent. in May of last year. Employment in the engineering and metal trades has remained good. The percentage of unemployed union members in this group of trades at the end of May was 2.3, compared with 2.4 in April and also in May, 1899. Forty-four fresh disputes occurred in the month, involving 15,931 workpeople, of whom 10,043 were directly and 5,888 indirectly affected. Of these disputes 25 occurred in the building trades and five in the metal, engineering and ship-building trades. Changes in the rates of wages of about 181,200 workpeople were reported during May, averaging an increase of 1s. 0½d. per head weekly.

A New Bowling Pavilion at Blairgowrie has been built at a cost of £250. Mr. J. A. R. Macdonald is the architect.

Palestine Exploration Fund.—The annual meeting of the general committee was held on Wednesday last in the museum of the fund, 38 Conduit Street, W. Sir Charles Wilson read the report, which explained that the principal researches throughout the year were the excavations within a four-mile radius embracing Tell es Sâfi, Tell Zakariya, Tell Judeideh and Tell Sandahannah, on the eastern border of the Philistine Plain. The finds include a villa dating from Roman times.

R.I.B.A. EXAMINATIONS.

PASS LIST.

THE following gentlemen have passed the midsummer examinations of the Royal Institute of British Architects:—

Preliminary.

David Alexander Adam (Newcastle-on-Tyne), Percy Tidswell Adams (Bournemouth), Ernest Gladstone Allen, Hubert Dennis Aubrey, Gervase Bailey, Christopher Bannister (Crowthorpe), Robert Gerald Barrow (Bideford), Tom Forest Beazley (South Shields), Leslie B. G. Benson (Yeovil), Arthur Gilbert Berry (Norwich), Richard H. P. Bevis (Southsea), Ellis Rawson Birks, Henry Blackadder (Broughty Ferry, N.B.), Fitzroy Frederick Boldero (Penkridge, Staffs.), William Edward Brooks, Baldwin Brown (Bradford), George Ronald Bryce (Glasgow), Albert Edward Bullock, Stephen Burgoine, Geoffrey Burton, Benjamin Harlow Butters (Brighton), William Wellesley James Calthrop (Chelmsford), Archibald Neil Campbell, Cyril Barnabas Chesshire, George Reginald O. Chorlton (Manchester), Henry Francis Clarke (North Shields), Charles Emmerson Clouting (Cambridge), William Henry Collin, Robert Tyers Cooke (Leicester), Joseph Berkeley Cubey (South Shields), Ernest Thomas Cunliffe (Blackburn), Thomas Lawrence Dale, Noel John Dawson (Ipswich), Sidney Reynier Day (Skipton), Charles Willing Denton, Alfred William Douglas (Matlock Bank), Harold J. T. Duncan, Harold Hicks Earnshaw (Manchester), John Joseph Eltringham (Durham), Harold Quentery Farmer (Stalybridge), Henry F. P. Ford, Douglas Alfred Forster, Edward Lawrence Gaunt (Ilkley), Frank Stanton Gildersleeve (Hastings), Charles John Goodwin, Reginald John Goulston, Robert Francis Graham, B.A. Cantab.; Leonard Bishopp Grant, Jordan Green (Birmingham), William Greenwood (Blackburn), Ronald Hamilton Greig, Sydney Robert Griffen (Plymouth), Arthur Bernard Harvey (Canterbury), Arthur Hugh Hasnip (Hastings), Walter William Hitchins (Plymouth), Douglas John Hobgen (Chichester), Arthur Rowland Holman, Percy Aspden Horrocks (Bolton, Lancs.), Walter Arnold Ingledew (Tynemouth), Thomas Frederick Ingram (Wakefield), Charles Henry Jackson, Hugh Parry Jones (Conway, N. Wales), Matthew M. C. Jones (Glasgow), John Norman Keadley, John Harold Kennard, Harold Kershaw (Worthing), William Alexander Kidd (Greenock), James Henry Lang (Dukinfield), William Henry Lomas (Burnley), Charles Ernest Lovell, Percy Wells Lovell, Percy Luker, John Bernard Lund (Chorley, Lancs.), William Mackintosh (Inverness), Herbert Pemberton MacNalty (Winchester), John Hatton Markham, Hugh J. C. Marshall, Charles Redford Morrison, Vibert Middleton (Newcastle-on-Tyne), Charles William Milburn (Newcastle-on-Tyne), Stanley Charles Miles (Bournemouth), Ewart Gladstone Millar, Christopher John Monson (Newark), Andrew Muir (Edinburgh), Ernest Ranson Mundle (Newcastle-on-Tyne), Harold Franklyn Murrell, Edward Robbins Nixey (Hartlepool), Robert Douglas Ogden (Manchester), Basil Oliver (Sudbury, Suffolk), George Wilfrid Page (Bolton), David Parkhill (Belfast), Claude Paterson (Bowdon, Cheshire), Basil Pendleton (Manchester), Leonard Pierpoint (Warrington), Montague Corry Pile (Newbury), Claud Vincent Ponder (Eastbourne), Albert Reginald Powys (Somerset), Harold Oswald Prestwick (Lancashire), Henry Melancthon Pritchard (Cardiff), Mowbray Procter (Hartlepool), Edgar Quiggin (Liverpool), Thomas Herdman Rae (Sunderland), Frederick Raine (Newcastle), L. A. G. L. Rawles, G. R. H. Reaney, Thomas Edgar Richards (Cardiff), Thomas Morgan Richards (Penarth), Frederick Gibbon Richer, William Ewart Roberts, Wilfrid Robson (Saltburn), William Herbert Rogers, Percy Havery Ross, Samuel Runcie (Glasgow), Tom Sadler Rushworth, Herbert Ryle (Newcastle), Hayward Lewis Samson, Henry Partridge Sanders (Cardiff), Victor George Santo (Bromsgrove), Lawrence poantlebury (Launceston), Jesse Francis chneider, T. T. G. Donaldson Selby, Christopher Long Sharp (Blackpool), James Hughan

Shearer (Exeter), Isaac Taylor Sifton, Harold Slater (Blackburn), H. R. G. S. Smallman, Neil Campbell Smith, E. T. L. Smith, Robert Ernest Stewardson, George Harrison Stone (Tuxford), H. S. Walcott Stone (Taunton), Charles Stonehouse (Blackburn), Percy Ripley Strong, John Towneley Sugden (Manchester), Harry Cecil Swindells (Manchester), John William Thorpe (Lytham), Maurice Tobias, Alfred Nicholson Tucker (Plymouth), Percy Turner (Bradford), James Irving Tweedie (Annan), James Henry Vaughan (Newport, Mon.), Louis Charles Veale, Francis Guilford Waddell-Dudley (St. Albans), Richard Arthur Waite (Bradford), H. H. J. Walder (Southampton), Marshall Eyre Walker, Samuel Wallis (Kettering), William Ernest Watson (Greenock), Harry West (Newbury), John Charles Whettam (Weymouth), Thomas William Whipp (Scarborough), Herbert Hodges Whittington, William Whymper (Framlingham), Arthur Gilbert Wood (Stoke-on-Trent), Henry Edward Woodsend (Nottingham), Alexander Lionel Woodward, Henry J. Wyeth, Reginald William Yates (Huddersfield), Henry Young (Bedford).

Intermediate.

(In order of merit):—Andrew Rolls, Clement Stretton (Leicester), Charles Thomas Palmer, Leonard William Ensor (Huddersfield), Sidney Hall Goodwin, Reginald Percy Chamberlain (Leicester), Norman Austin Leech, John Swarbrick (Manchester), John Brown (Northampton), Francis Robert Boyd Haward (Great Yarmouth), Leslie Patrick Abercrombie (Manchester), Edwin Osman Payne, Percival William Hawkins, James Miller (Sheffield), Frank Edward Stratton (Salisbury), John Norman Randall Vining, Arthur Tedman (Bristol), Wilfrid Stonehouse Payne, William Steel (Sunderland), Willie Hemingway (Bolton), Henry Makins Tait (Glasgow), Charles Frederick Ward (West Bromwich), Arthur Haynes Johnson (Winchester), Archibald Lawrence Holder, Geoffrey Goodwin Moorhouse (Liverpool), Guy Church, Sir Francis Charles Rupert Ford, Bart. (Ilkley, Yorks), George Lister Thornton Sharpe, George Herbert Jackson (Boscombe), James Morton Lethbridge, Basil Procter (Newcastle-on-Tyne), Fergusson Barclay (Weston-super-Mare), Henry Douglas Crewdson, William Herbert Hobday, John Parlett, George Maurice Roe (St. Leonard's-on-Sea), Godfrey D. B. Shepherd, William Peter Steel (Sidcup), Victor Wilkins, Arthur A. Williamson (Dundee), Robert Gordon Wilson, junior (Glasgow), Archibald Herbert Winterburn.

Final and Special.

Samuel Chesney (Stourbridge), George Edward Clay, Charles Heaton, Fitzgerald Comyn, Harold Cooper (Blackburn), Charles Archibald Daubney, William Ernest Emerson, James Ernest Franck, Arthur Reginald Groome (Manchester), Herbert Haines, Emanuel Vincent Harris, Frederick Milton Harvey (Gorleston), John Stanley Heath, Percy Erskine Nobbs, M.A., Sidney Vincent North, Cyril Wontner Smith, William Herbert Swann, Alexander Symon, Andrew Mitchell Torrance, junior, Robert Percival Sterling Twizell (Newcastle-on-Tyne), Charles Edward Vardell, Clyde Young.

New Workhouse Infirmary at Highgate.—The new Highgate Hill Infirmary, erected for the Islington Guardians at a cost of £273,000 (including the site), was formally opened last week. It stands in the grounds of the former smallpox hospital on Highgate Hill, and will accommodate about 800 patients. The various wards are 100ft. apart, but are connected together with corridors and open iron galleries for use in case of fire. While possessing no claim to architectural beauty, the designer having been rigidly bound down in the matter of expense, the building is excellently well laid out for the purpose to which it is to be devoted, and ample provision has been, or is being, made for the accommodation of the large staff of nurses, surgeons and attendants who will have to be lodged within reach of the patients. Mr. William Smith, of Chancery Lane, is the architect and the builders were Messrs. Kirk and Randall, of Woolwich.

COMPETITION FOR S. SERF'S CHURCH, EDINBURGH.

TOWARDS the close of last year the committee of management invited about ten architects to submit designs for the new building. Eight acceded to the request, and their designs have been on view at S. Cuthbert's Church Hall this week, being well displayed on screens in a good light, but the absence of competitors' reports is to be regretted.

The committee are to be commended on the manner in which the competition has been conducted. Mr. Macvicer Anderson, F.R.I.B.A., was appointed assessor, and his recommendations were adopted, as follows:—"Experientia," 1st; "Cruciform," 2nd; and "Crux," 3rd. The author of designs placed 1st and 2nd is Mr. George Watson, of Hope Street, Edinburgh, Messrs. Sidney Mitchell and Wilson, of Young Street, Edinburgh, taking third place.

On examining the designs one would unhesitatingly endorse the assessor's opinion as to the design placed first, it being unquestionably the best. The building is to consist of a nave 38ft. wide with north and south transepts, the chancel with semi-octagonal end being toward the east, with vestries, &c., on either side. The principal entrance is placed at the west end of the south wall, giving access to a wide lobby and leading also to the gallery stairs, the organ being in the tower, over the ladies' room.

The general appearance of the church externally is very pleasing; the treatment is bold, with just sufficient touches of detail to give it interest. A square tower with presumably a copper-coloured spire is placed at the corner of the two roads, and groups well with the building, though perhaps it would be improved if not of quite such sturdy proportions. The position of the session house, which is almost detached from the church, is hardly satisfactory, as it does not group well and will eventually block the view of the church hall to be erected afterwards.

The internal treatment, though interesting, is not so satisfactory, the barrel-vaulted timber roof over so wide a span and of comparatively short length having rather a bald appearance, and the chancel arch being too small in proportion to the nave does not improve the general effect.

On comparing the plans with the elevations one regrets to see the tower marks nothing more important than a ladies' retiring room and w.c. and the organ works. The method of arriving at the total of 800 seats for the area can hardly be regarded as satisfactory, as 54 of this number are placed behind the choir seats in the chancel, and the remainder are calculated at 2ft. 8in. back to back. Probably the area will not seat more than 700—if that.

As is frequently the case in competitions, the design placed first is incomparably superior to the remainder. One is not so ready to endorse the assessor's opinion as to the design placed second, also by Mr. Watson, which is of the cathedral type, the tower being placed at the crossing—a questionable arrangement for so small a church. The exterior treatment is bold, though the square tower with low-pitched roof is plain, almost coarse, and with lancet windows appears to be out of keeping with the remainder of the design. The plan, however, has its good points, the transepts having an unobstructed view of the pulpit, and only the seats for elders and choir are placed in the chancel. The session house occupies the same unsatisfactory position as in the first design, and the church seats only 2ft. 8in. back to back.

On the whole Mr. Watson is to be congratulated on his designs and for the artistic manner in which they are executed, both being illustrated by well-drawn exterior and interior views.

"Crux," placed third, also sends an artistically-prepared set of drawings. The plan shows a nave 31ft. wide with north and south aisles 11ft. wide. This appears to be the most satisfactory way of seating the congregation owing to the shortness of the site, and the spacing of the seats being 2ft. 9in. back to back is more satisfactory than the first and second designs. The chancel is placed at the west

with the entrances at the east towards the proposed side road, a square tower of lofty proportions marking the principal entrance. Externally the design is full of spirit and would look exceedingly well; the interior, too, is interesting, reminding one of the quaint Cornish churches.

Design D. is a good plan, with chancel at east end and morning chapel to one side. The design is not improved by the excrescence on the tower and the commonplace tracery to windows, and the drawings and perspective are poorly executed. "Wholly Red" submits a design consisting of nave, north and south aisles, chancel to the east, with session house and vestry on either side. The tower and spire mark the principal entrance to the west. The remaining designs by "Tyde What May," "15th Century," "Faldstool" and "Iona" are of little interest, and unsuitable for a modern church.

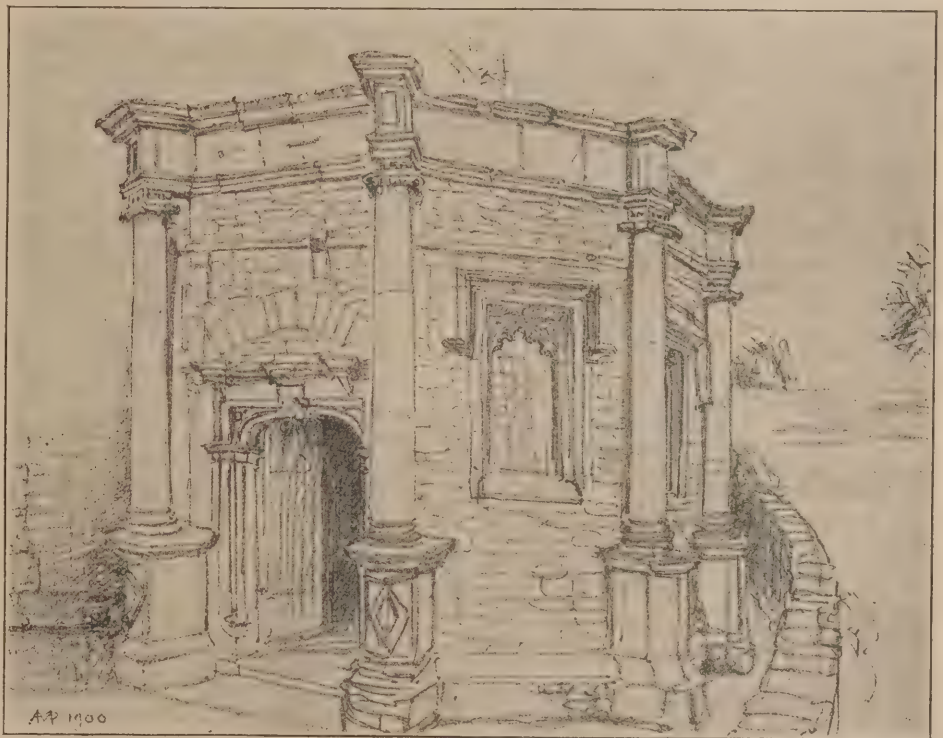
Bishop Jewel's Porch at Sunningwell, near Oxford.

OUR illustration shows the porch of the village church of Sunningwell, which, though actually situated in Berkshire, is within five miles of Oxford. It is particularly interesting, from more than one point of view. It was built by John Jewel (a celebrated divine and

its needs for many years to come—a couple of centuries, roughly speaking. The porch is, besides, a very picturesque structure, and worthy of preservation on every ground which can plead for a building—artistic, archaeological, or historic.

A brief examination of the porch is enough to show the damage it has suffered in the course of time. The wall, on two of its faces, is cracked right through the middle of the windows. The angles are bulged out; the arch of the door has spread, loosening the keystone, which is ready to drop out; while the door no longer fits the opening. The ceiling, moreover, is starred with cracks; and on the south side the wall of the porch has become altogether detached from the west wall of the church, by some four or five inches. The whole structure, in fact, is in imminent danger of collapse.

The cause of this dangerous state of affairs is twofold. It is to be found, firstly, in the nature of the soil on which it stands; and, secondly, in the heavy, modern, concrete roof which covers it. The whole church stands on soft earth, with no really solid foundation nearer the surface than six or seven feet. The northern angle of the west wall has subsided considerably, producing a deep fissure in the wall itself, near the west door and through the west window; and this movement has undoubtedly affected the porch itself. Then, again, the foundations of the porch are very



BISHOP JEWEL'S PORCH AT SUNNINGWELL, NEAR OXFORD.

controversialist, who in his later years became the official champion of Anglicanism) between the years 1550 and 1552, unless, indeed, Jewel had the porch built after his consecration as Bishop of Salisbury—that is, between 1560-1571. Its appearance, at any rate, with the mixture of Gothic and Tudor Renaissance detail, points to its erection during the period of Jewel's lifetime.

The porch stands at the west end of the church, covering the original west door, and it is in plan a heptagon—a figure very rare, if not unique, as the motive for the plan of a building. It is by no means improbable that a seven-sided form may have been given it for symbolical reasons; on the other hand, the shape may have had its origin in some question of practical convenience. The point is, in any case, one which can hardly be determined now. It derives additional interest from the fact that it was built at a time when church building, or structural addition to churches, had practically ceased to be undertaken. The Reformation found the Established Church in possession of buildings more than sufficient for

shallow, and do not spread out to any width; the walls, also, are built of small, irregular rubble, the mortar employed being of poor character. The fact of the foundation being poor, and unequal to the load upon it, has occasioned a considerable sinking, and helped to crack the walls.

The second factor is the heavy concrete slab with which the porch was ceiled in recent times. This slab, which is somewhat higher in the centre than at the sides, can hardly be less than six or eight inches thick, and must therefore weigh about three tons; besides, now that it has begun to crack, its shape must cause it to exert a great outward thrust on the walls. This is borne witness to by the fact that at some time or another it has been found necessary to put a kind of rim round the porch at the ceiling level, with an iron tie connecting the band from side to side. It is evident that in order to put this interesting building into a permanent state of repair the foundation must be made secure, and the ceiling removed.

To make the foundation secure, not only

should the porch itself be underpinned, and piers carried down to a solid foundation, but the north-west angle of the church should be underpinned at the same time. The concrete ceiling should also be removed, and replaced by a lighter one of wood. To do this a sum of at least £150 will be required. It is not, it may be added, intended to "restore" the porch in any way; all that is necessary is to make it secure against further decay.

The above particulars are taken from the report of the architect, Mr. Ambrose Poynter.

A small sum has been collected in the parish, which, however, is a very poor one, and it is hopeless to look for further help locally. In these circumstances the rector and churchwardens have issued an appeal, which has our hearty sympathy, in the hope that those living outside the parish may be induced to help in the preservation of a structure of more than local interest.

All contributions should be sent to the Rev. B. G. Collett Whittington, Sunningwell Rectory, Abingdon, Berks.

Engineering Notes.

A New Pier at Cromer has been constructed at a cost of £12,000.

Electric Trams at Southend-on-Sea are about to be introduced. Seven and a half miles of metals will be laid.

Electricity for Gloucester.—The Corporation electricity works at Gloucester, which have cost nearly £44,000, were formally opened by the civic authorities on Thursday.

Queenborough Pier was practically destroyed by fire last week. It was built to replace the structure destroyed by fire on May 19th, 1882, and cost about £100,000.

The New Central London Railway will not be opened till Monday, July 30th. The delay has been caused by the unforeseen duration of the decorators' work on the superstructure of the stations.

Institute of Sanitary Engineers.—At a meeting of the Election Committee held on July 11th Mr. C. B. Burnett (Sandhurst) and Mr. A. Timberlake (Kings Langley) were elected members, and Mr. W. J. D. Rudman (Bristol) was elected an associate.

The Electrical Standardising, Testing and Training Institution have made the following awards as a result of the recent scholarship examinations:—To Mr. F. E. Berry, Wellingborough School, Maxwell Scholarship, value 50 guineas, tenable for two years; to Mr. A. W. Scrooby, Dunheved College, a prize value 20 guineas.

Electricity in East London.—A Select Committee of the House of Lords have found proven a Bill to empower the authorities of Limehouse, St. George's-in-the-East, and Mile End Old Town to supply electricity in these districts, which will in due course become, with Whitechapel, the borough of Stepney. It was stated that the existing generating stations in Whitechapel will be able to supply at 1s. per unit cheaper, approximately, than the present company.

New Pier Pavilion for Bournemouth.—The Bournemouth Town Council decided last week to erect a pavilion at the shore end of the pier at a cost of £37,000. In addition to a central hall and galleries, which will hold large audiences, the scheme provides for a supply of shelters below, on the beach, with refreshment rooms. The chief ground of opposition was that the new building would probably result in the closing of the Winter Gardens.

High Speed Electric Railways.—Last Friday at a meeting of the Association of Municipal and County Engineers Sir W. H. Preece gave an address on the proposed electric railway between Manchester and Liverpool, which was rejected by a committee of the House of Commons this session. Sir William explained the details of the scheme, which was to run a service of trains on the mono-rail

principle between Liverpool and Manchester, a distance of 34 miles, at a speed of 110 miles an hour. There would be no risk in such a speed, and as a matter of fact some of the trains on the present English railways ran at times at a speed of 80 miles an hour. Anyone could travel in absolute comfort at a speed of 200 miles an hour, and the only risk would be that of a sudden stoppage. There were two reasons why electric traction was superior to steam traction, the first being that they could apply at once to the driving wheel the whole power at their disposal; and the second being that the application of power was continuous, whereas in a steam locomotive the application of power was variable. There were, of course, dangers in all railways, but in this railway they would be reduced to a minimum. There would be no risk of collision, for no train would leave Liverpool until the one before had passed Warrington. Then under the system derailing was practically impossible, and, further, there would be no junctions and no points. When the Bill was before the Parliamentary Committee the question of the power of braking the speed exercised the minds of the committee, and unfortunately at that time they had not sufficient knowledge from the experience gained to answer the questions put. They had since found out that with the Westinghouse air brake the train could be stopped within 900 yards; but in addition to that they had on the coaches two motors, each of which could be reversed, and the result would be that the motor would be converted into a dynamo—it would generate electricity itself and would act as a check and become an electric brake, and would without doubt stop a train going at 110 miles an hour at 500 yards.

Ludgate Hill Station.—The Court of Referees of the House of Commons had last week under consideration the Bill of the South-Eastern and Chatham and Dover Railway Companies, on an objection by the promoters to the Corporation of London being heard in opposition. Sir Prior Goldney (City Remembrancer), representing the City Corporation, said the Bill was to authorise the two amalgamated companies to make certain widenings of the London part of their system, three upon the South-Eastern Company's and three upon the Chatham Company's lines. The object of the widenings, which he admitted were well outside the City—at Charing Cross and Lambeth—was to make urgently needed improvements in the passenger accommodation for the persons living on the companies' system and travelling to and from London daily. Upon the companies' system and within the City was a purely passenger station—viz., Ludgate Hill—which had been the subject of a great deal of comment, anxiety, and complaint. The matter had on several occasions been brought to the notice of the Board of Trade, and, while not alleging distinct pledges by the company, he said correspondence had passed which led to the belief that the company intended to take action. The President of the Board of Trade, however, in reply to a question in the House, admitted that the companies had not carried out what was hoped at this station, on the ground of cost. The Corporation had been constantly approached, and they had therefore taken steps to oppose the Bill. He agreed that Ludgate Hill was not referred to in the Bill, nor was there reference in it to works or taking of lands in the City. The Bill provided for the bringing from suburban and outlying districts over these companies' lines into London generally a largely increased number of passengers, which must be deposited at, amongst other stations, Ludgate Hill, which confessedly was at present wholly inadequate for the people using it. The Corporation wished to provide that these widenings should not be completed until corresponding widenings and facilities had been made at stations within the City. They therefore sought power to oppose the preamble of the Bill in order to secure protective clauses.—The Court suggested that the objection was one which should have been raised on the second reading of the Bill, and ultimately, without calling on counsel for the Bill, refused to give the Corporation the right to be heard in opposition to it.

Correspondence.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.
BIRMINGHAM.

SIR,—I was very much pleased to find in your last week's issue a complaint about the inadequate salaries paid by architects to their assistants. It hardly seems right that an assistant after from five to eight years' hard work and expensive training should only receive about half the salary that a bricklayer or carpenter gets. I know an assistant who has been in the profession for eight years, and at the present time he receives the splendid sum of 25s. per week; for overtime he is granted tea money, which, if amounting to more than 8d., is followed by a lecture on extravagance. I sincerely trust that before long the Institute or some of the numerous architectural associations will take the matter up.—Yours truly,
HOPEFUL.

HOLBORN, W.C.

SIR,—I am glad to see someone has at last had the courage to broach this important subject, and am only surprised that it has apparently never occurred to anyone to do so before. "Disgusted" simply speaks the truth without exaggeration when he describes the hard lot which usually falls to an architect's assistant. In the majority of cases he who enters the architectural profession with no means of practising for himself when qualified learns to regret his action.

About twelve months ago I was seeking a situation and advertised as usual. One answer I received was most encouraging. The writer wanted to know amongst other things if I could prepare plans and details, and also if I could write shorthand and use a typewriter. For these services he would have given me the astonishing sum of £1 per week! Needless to say, I did not accept the offer.

If assistants would unite as "Disgusted" suggests something might be done towards curbing the rapacity of some members of the profession, but individual effort will not be of much use. However, things cannot go on for ever as they are at present, and I, for one, hail "Disgusted's" letter as a glimmering of the dawn of that day when architects' assistants' salaries will be commensurate with the qualifications required of them by their employers.—Yours faithfully,
NIL DESPERANDUM.

LONDON, N.

SIR,—I am much pleased to see that "Disgusted" has taken up the cudgels on behalf of "underpaid assistants." Perhaps you will permit me to say a few words, as I have had considerable experience amongst architects in town and country.

Let me say at once that the profession is in a far worse condition to-day than it was twenty years ago—so far as architects' assistants are concerned. At the time mentioned I was principally engaged in competition work, accepting engagements in various parts of the country. I had no great reason to complain, as I never accepted a salary below £3 3s. per week and travelling expenses, overtime paid at the rate of time and a half. But the frequent change enabled me to gain a large experience of architects and their ways. I have met some excellent "specimens" and at times some terribly bad ones. Did space permit "I could paint some interesting pictures." I have found architects who almost literally depended for their existence on the premiums paid by their pupils, paying some assistant a beggarly pittance of 30s. a week to look after them, teach them, and pose as "my manager." The pupils were put through the usual course of training in such cases—the five orders *ad lib.*, plain and coloured, enlarged and further enlarged, tracings of rejected designs, and copying drawings of buildings that existed only in the imagination. I have often met so-called architects who could not design a creditable building to save their lives, and who were absolutely dependent upon the ability of the assistant whom they employed, whose salary did not exceed £2 a week. These architects are the "black sheep" of the profession, but the quest on is,

how can we improve these things and better the position of the assistants generally? By combination. The assistants themselves must strike the blow. Let there be a central body having branches in every town throughout the country; let the subscription be moderate, and let all engagements be made through that one central body. Let all the members be classified and the lowest salary commence at 30s. per week. Let there be three classes, A, B and C, as follows:—

Class A should consist of members who are experienced and thoroughly qualified, who have a good knowledge of building construction, fair artistic ability, and are able to design, and who can be relied upon to manage during the absence of the principal. Salary, £3 3s. per week.

Class B should embrace those who have a fair knowledge of detail and construction generally, and are capable of making a set of drawings with a little supervision. Salary, £2 2s. per week.

Class C should take the juniors, who, having diligently completed their articles, should be capable of tracing neatly, have a fair general knowledge, can make themselves useful and prepare drawings from rough sketches. Salary, 30s. per week.

These are merely general ideas upon which to proceed, and of course further discussion will "sow the seed," and, let us fervently hope, produce a healthy crop.—Yours truly,

VIGILANS.

To the Editor of the BUILDERS' JOURNAL.

SIR,—As an architect's assistant, I read with interest the letter by "Disgusted." I think, with that gentleman, that it is time we did unite together, but I cannot help thinking that it is to a great extent our own fault that we receive such paltry remuneration. We have only to scan the advertisements that come out weekly in the several building papers under the heading of Assistants Requiring Situations, and there we can see partly the root of the great evil. Can we wonder that architects give such small salaries when, for a single advertisement, an architect was simply overwhelmed with applications for the vacancy, several gentlemen with experience varying from four to six years offering to engage themselves for the magnificent sum of 25s. per week. I am pleased to be able to say that their valuable services were not accepted. This is only one instance, but it will serve to illustrate what I mean.

I firmly believe that if the standard of salaries could be raised many smart and capable draughtsmen would be content to remain as assistants and not launch out for themselves, and so the tendency would be to improve the outlook both for the architects and their assistants.

I should be pleased to co-operate in a scheme for improvement upon the present system of assistants' salaries.—Yours, &c.,

HOPEFUL.

Strength of Beam.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I am obliged to "J. E. J." (see p. 447 of last week's issue) for pointing out a slip in my working of the formula on p. 411 of your issue for July 4th. It is correct until almost the last line, where 202 lbs. per foot run is stated instead of per inch run. This will make the total safe load over 13ft. = 14 tons.—Yours faithfully,

HENRY ADAMS.

Lindfield Place.

To the Editor of the BUILDERS' JOURNAL.

WALKERN, HERTS.

SIR,—In the interesting account of the visit of the A. A. in your issue for last week it is stated that the large and beautiful screen which stands in the chapel was rejected from the parish church at its restoration. Now this so-called restoration was nothing less than a spoliation. In Mr. Lomer's account of it in Clarke's Local Directory for 1883 he says, on page 119, "Those repairs were carried on without the smallest regard to propriety or respect for antiquity. Some of the most beautiful fragments of fourteenth-century glass I ever

saw were removed from one of the south windows, and a brass-plate to the memory of Richard Chaloner, which I remember *in situ* on a stone on the floor, now lies before me, dated 1501. Beautiful wood carvings were also removed from the church. In short, there was a general spoliation of nearly all that was ancient, a Perpendicular altar tomb has been removed, and the brasses of a slab representing a man, woman, and their seven children taken away. There was at the same time discovered on the east wall of the south transept a painting about 12ft. high, representing SS. Michael and Margaret, a many-headed monster below their feet. S. Margaret appeared with long, flowing hair, and a crown with the nimbus, a small human figure kneeling at her feet to obtain intercession on behalf of the soul then weighing in the scales. The colours used were red, black, and ochre. S. Michael had wings composed of peacocks' feathers." An engraving may be seen in Vol. II., "Sussex Archaeological Collections." According to parish accounts the rood loft was taken down 1583-6. The hour glass was in the church in 1601.

The bells, five in number, date from 1573 to 1682. Some few years ago it was proposed to recast the tenor (1600) and to make it a heavier bell, at the expense of Mr. W. Sturdy, of Pax Hill Park. At that time, knowing Mr. Sturdy, I suggested to him to give an entirely new bell and preserve the old one, which was cast about the time his house was built (1599-1601). When next I saw him, he told me he had fallen into my views, which to his honour he at once carried out, and the old bell now does duty at the cemetery.

Now why cannot this old screen be again restored to the Parish Church?

Pugin, in his "Screens and Rood Lofts," amongst others mentions Burgh in Lincolnshire as possessing some fine work. On going there some years ago I found but little left—a Jacobean font cover and a pulpit. On asking where all the carved work was I was told, in Mr. —'s sawpit. Happily on the appointment of the present rector he recovered a considerable amount of it and placed it once more in the church. Again, the present Vicar of St. Giles's Church, Camberwell, hearing that some of his parishioners had several brasses belonging to the old church, obtained them without much trouble and placed them on the back of the present stalls in the chancel.—Yours, &c.,

S. B. CHITTENDEN.

Stripping Varnished Wallpaper.

To the Editor of THE BUILDERS' JOURNAL.

BALHAM, S.W.

SIR,—The reply given by your expert on page 428 of your issue for July 11th to an enquiry by "A.R.I.B.A." is a little unsatisfactory. If a contractor undertakes to "strip all wallpaper," the architect is legally justified in insisting upon the performance of the contract, although some of the paper referred to may be varnished and the plastering rather shaky withal. In this, therefore, your expert has rightly advised, for if the contractor is so careless as to sign an impracticable or undesirable undertaking without reservation he must not afterwards complain if he is required to carry it out.

But your expert states that he has never before heard of difficulties with plaster, and he does not answer "A.R.I.B.A.'s" question as to the custom of the trade in this matter. Sir, the plastering difficulty is one of the commonest troubles of the decorator's business, and whatever solvent is used the operation of stripping varnished paper will try the strength of the soundest lime plastering, and involve an enormous amount of stopping, making-good, and facing-up. A really practical architect would not require varnished paper to be stripped, nor would a cautious contractor consent to do it without a very ample addition to his estimate. The custom of the trade is not to strip varnished paper if and where sound, but any curled edges and loose parts should be stripped off, and the joints and stripped edges, if any, thoroughly glass-papered down, so that they may not show through the new paper. The commoner custom is to clear the surface, but where a better job is needed a brush over

with strong soda water will remove all dirt and bite into the surface of the old varnish, giving a key for the new paper. If the proposed new paper be thick, the wall should be lined with brown paper.

There are circumstances under which I should advise stripping varnished paper, but they are very exceptional, and when the caustic solution referred to is used it is almost impossible to keep it from damaging skirtings and other decorative work. I have in such cases successfully spread a thick caustic paste over the paper to be removed, which answers admirably and saves the surroundings; but even then there is still the damage to the plastering and the expense of facing-up.

It is common enough for architects and dilapidation surveyors to specify old varnished paper to be stripped, but the requirement is more often honoured by the breach than the performance, and where done it is nearly always a case of the architect unwisely insisting upon it. It is, of course, important for sanitary reasons to strip the ordinary absorbent paper, but these obligations scarcely obtain on good varnished work with the above treatment. There is, however, no reason why the surface should not be washed over with a disinfecting fluid to meet any scruples in that direction.

Yours faithfully, J. D.

Memorials of Greater London.

To the Editor of THE BUILDERS' JOURNAL.

ESSEX HOUSE, MILE END ROAD, E.

SIR,—You have been good enough from time to time to take note of the work of the Committee for the Survey of the Memorials of London. May I ask you to give publicity to the enclosed report (see p. 464) of its work, presented by Lord Monckswell at the recent meeting, at which Mr. Leonard Courtney presided. Will you permit me to invite on behalf of the Committee that assistance which a direct appeal through your columns makes possible?

In extending the work of the survey of the memorials of London from the East to the West-end, it is necessary for us to have the assistance not only of such as are the guardians of those amenities which we wish to see preserved but of all who are interested in doing this, of all those who would prefer to see the city they live in a beautiful rather than an ugly city—a city great for its history rather than its modernity.

The appeal we make is therefore not so much an antiquarian appeal as an appeal on the ground of good citizenship for help in the maintenance of the things that are beautiful and the things that have historic interest in the Greater London of our own time. Our work is to record these, with a view to making it easier to preserve them, and to this end we ask for help of two kinds:—(1) An increased honorary membership, a minimum payment of £1 ls. annually entitling to all the Committee's publications. (2) The active help of young architects, draughtsmen, painters and amateur photographers who would give their labour in lieu of subscription.

If any such would put themselves into communication with me I shall be happy to give them full particulars.—Yours obediently,

C. R. ASHBEE,

Chairman of the Committee.

The second of the new blocks of Admiralty Buildings is now finished. It has not yet been settled whereabouts the next outgrowth of the department is to take place. The fourth side of the quadrangle was at one time talked about as the site for the third new block, and it is still uncertain whether it may not be set up there instead of the low ornamental screen and covered way originally intended. But there is considerable opposition to thus shutting in and spoiling this square, which, with the dome surmounting the new edifice at the back of it, makes rather an effective show from the Horse Guards' Parade. To fill in this fourth side with another high building will materially affect the backs of the other three piles, and there is great reluctance to do it if it can be avoided.

MEMORIALS OF GREATER LONDON.

IN placing before the public the fourth report of the Committee for the Survey of the Memorials of Greater London some recapitulation of its objects may be of use as well as some statement of the work it has accomplished.

The object of the Committee has been to take up certain areas in London, and in them to register and record with drawings, photographs, and other records, whatever may be deemed to be of historic or æsthetic interest. The work is not confined to buildings only; any valuable open space, any remnant of an old village green, any beautiful tree, any object of local life or custom that may have a definite external embodiment, or any interesting piece of handicraft, even if it be but a signboard or a wrought iron gate, comes within the Committee's survey.

The aim is to draw attention to these things; if they are in private hands to get the owner's consent towards their registration; if under the guardianship of any representative public or semi-public authority, to encourage their maintenance, for public purposes, as national trusts.

The method upon which the work has been carried out has been simple. The area undertaken (about 30 parishes in the eastern side of London, together with the portions of Essex adjoining and included in the area of Greater London) has been divided up among the active members the Committee, and they either independently, or in conjunction with the secretary of the Committee, have filled up certain forms upon a definite classification.

A very large and beautiful collection of drawings, photographs, sketches, measured work, &c., has now been compiled by the members of the Committee, and is mounted and arranged in great albums according to the parishes of London. This portion of the work is similar to the famous Crace collection in the British Museum, and the Committee believes that when completed it will form a unique collection of what the Great London, at the close of the present century, still retained of historic interest or beauty. The Committee calculates that about 200 forms have been filled up, and about 2,000 drawings, photographs and sketches made. It has further to be added that in cases where a building within the survey has already been written about or illustrated, such as Waltham Abbey, Eastbury House, Barking, or Brooke House, Clapton, the Committee confines itself to giving a bibliographical survey, and noting its actual condition at the time of registration.

If, again, any piece of work appears to deserve special attention, such as the Trinity Hospital, in Mile End; the Church of St. Mary, Stratford-atte-Bow; Hill Hall, near Epping, the work of John of Padua; and the Great House, Leyton; the Committee seeks among its members to arrange for the preparation of a monograph upon the building in question. Two of these monographs have already appeared, and are in the hands of members of the Committee. They are supplied to all subscribers to the Committee's work of one guinea or more during the year of publication.

The most important portion of the Committee's historical, as distinct from what may be called its "watch" work, is the compilation of the register or survey of London buildings (see page 406 of issue for July 4th last).

It will be remembered that by the resolution of the London County Council in 1897 the Council recognised the work of this Committee as already in progress, and agreed to print such of its records, from time to time, as went to the making of the body of the register, provided those records could be brought within the administrative County of London, and provided the printed books were reserved only to subscribers and members of the Committee. After some delay it was arranged that the work should be done in parishes, beginning in the eastern districts of London, and taking up a western district as soon as possible. The original intention had been to take about six or eight parishes in a volume; closer examination, however, showed that the material the Committee had

already got together was so great, and it seemed so advisable to print *in extenso* a work that was to rank as monumental in the history of London, that it got narrowed down into the doing of one parish only, and one at a time, thus practically giving to each parish a separate volume.

The first of these volumes, dealing with the parish of Bromley, is now printed, and will be in the hands of members of the Committee shortly. The second, which is partly in type, deals with the parish of Bow.

The third volume of the register, it is hoped, will be an even more important one, and will deal with the parish of Chelsea. The Committee has already started forming its Chelsea collection, and a series of beautiful drawings of the houses on Cheyne Walk has been partly made. The completeness or full value of this volume of the register will much depend on the response made by residents in Chelsea to the appeal for permission to make notes and drawings of its many fine interiors, and otherwise assist the Committee to further the ends it has in view.

Westminster Abbey, Somerset House, St. Paul's, Waterloo Bridge—even the city churches—have many advocates, and there are many to defend them if they are injured. But not so the little things, the beautiful private houses of London, the noble pieces of old workmanship, the little pieces of local history that still exist in many parts, and that go to make up the interest or beauty of the great city. If every gentleman who inhabited a house that was built, say, before the year 1800, and took a pride in it, would have it photographed inside and out, its ceilings, its cornices, or any interesting thing in it, and would send plates to the secretary of the Committee, and would fill up the Committee's forms, it would add greatly to the completeness of the work to be done.

THE WESTMINSTER IMPROVEMENT.

SOME important evidence on the æsthetic aspect of the London County Council's Westminster improvement scheme was given at a meeting of the House of Lords Committee held last week to consider the Bill promoted by the Council for the purpose of carrying out various metropolitan improvements. Canon Duckworth, Sub-Dean of Westminster, said the Abbey garden, at the rear of the Abingdon Street houses, was the ancient garden of the infirmary of the Benedictine Abbey, and was the only open space which the Abbey body had for their use. The amenities of that garden would, in his opinion, be much injured if high buildings were erected in Abingdon Street. The Dean and Chapter had for the same reason opposed the previous syndicate scheme for dealing with this area. Very high houses on this site would detract from the beauty of the garden, and many of the best views of the Abbey would be destroyed. The Dean and Chapter considered themselves to be national trustees of the Abbey. He thought Abingdon Street ought to be continued in a straight line from Old Palace Yard, and not slanted towards the river as now proposed, which would entail the destruction of trees in the Victoria Tower Gardens some 20 years old.

Sir Alexander Binnie, chief engineer of the London County Council, said he had prepared the plans for the Westminster improvement. Under the scheme Millbank Street would be made 70ft. wide throughout and straightened out towards the river. The embankment wall would be extended to Lambeth Bridge, together with the Victoria Tower Gardens. The estimate for the work was £80,000, and for the land £235,000. At the Lambeth Bridge the new road would not end in a line with the Grosvenor Road, but with the foreshore; there was a scheme, however, in preparation for rebuilding Lambeth Bridge and its approaches, under which the Grosvenor Road would be widened to 60ft. by the taking in of the foreshore.

Mr. Young, F.S.I., valuer to the London County Council, in giving particulars of the property to be acquired by the Council for the carrying out of the works proposed, said the

cost of the acquisition of the property required for the whole of the Westminster improvement would be £1,189,000, with an addition of £50,000 for a portion of the site of Millbank Prison upon which to re-house the 1,854 people of the working classes who would be disposed of. The houses put up on the Abingdon Street site would be of the same height and character and architecture, so as to harmonise with the surroundings. In regard to the objections of the Abbey authorities, he thought it would be a great safeguard that any plan of rebuilding Abingdon Street would require the consent of the First Commissioner of Works and the County Council. Any postponement of the scheme would add to the cost of the property to be acquired. A committee of the Institute of British Architects was watching London improvements, and they were satisfied with the Westminster scheme, and when the question of rebuilding came no doubt the Council would do as they had done in the Strand case—submit the plans to the consideration of eminent architects.

Mr. T. G. Jackson, R.A., said he thought the line of the proposed street would destroy the surroundings of the Houses of Parliament and the Abbey. At present the line of Abingdon Street was parallel to the Houses of Parliament, and the street formed a fine approach from the south and had evidently been considered by Sir Charles Barry, who had placed St. Stephen's Porch of the Houses of Parliament to harmonise with it. The line of the proposed street would be awry with that of the Houses of Parliament, and would defeat Sir Charles Barry's intention, as the vista would miss St. Stephen's Porch and part of the Houses of Parliament. It was quite possible to keep the line of the Houses of Parliament in making the new street.

Mr. Alex. R. Stenning, F.R.I.B.A., M.S.I., agreed with what had been said by Mr. Jackson. The new approach should be worthy of the Houses of Parliament. He agreed that it would be better to keep the existing line of Abingdon Street and by means of a slight turn reach Lambeth Bridge. If that were done about one-and-a-quarter acres of land would be thrown into the gardens, but the low-level sewer would not need to be touched. The extra cost, he should say, would amount to about £50,000.

Mr. Freeman said the Council desired to make the improvement in the best possible way, and did not take up a rigid position in the matter. Mr. Stenning had estimated the additional cost at £50,000, and as the matter had widened by the introduction of æsthetic considerations the promoters would consider the matter. He asked that the Westminster improvement should stand over and the remainder of the Bill be taken. An estimate had been made of the increased cost of adopting the amended plan for the Westminster improvement, and it was found that it would entail an extra expenditure of £150,000, and there would also be an extra cost of £100,000 entailed in widening the Grosvenor Road. If the line of Abingdon Street were left and the improvement commenced at the end of the Victoria Tower Gardens and the road curved from there to the foreshore at Lambeth, the total extra cost would be £60,000, and only a minute fraction of the gardens would be touched.

Eventually the committee gave their decision as follows:—The committee find the preamble of the Bill is proved, but they are unanimously of opinion that the present Westminster scheme and that for the proposed approaches to the new Lambeth Bridge, together with the widening and necessary alterations to the Grosvenor Road, should have been presented to Parliament as one measure. The committee cannot approve of the proposed thoroughfare from Old Palace Yard to Lambeth Bridge as contained in the Bill, but are willing to agree to an alternative plan suggested, that the improvement should start with a straight road from the Houses of Parliament to the end of the Victoria Tower Gardens, and from thence by a curve to join the proposed widened Grosvenor Road, so as not to take any appreciable part of the Tower Gardens.

The clauses were postponed to allow amended plans to be prepared.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Book on Bank Fittings.

HAMPSTEAD, N.W.—HAMPSTEAD writes: "Could you inform me whether there are any books published on banks and their fittings? Also, the names and addresses of any firms supplying bank fittings?"

No book has been published on bank fittings. We would recommend your correspondent to write to Mr. Fawkes, Anchor Works, Chelmsford, and to Messrs. Lascelles and Co., Bunhill Row, E.C.

Cost of Building Lunatic Asylums.

WOKINGHAM, BERKS.—CUBE writes: "Can you inform me the average price per foot cube (net cubical capacity) of large modern lunatic asylums? Would 9d. or 10d. be the correct price for South Wales? I take 'net cubical capacity' to mean cubed from measurements taken internally, i.e., measurement of breathing space; and the term net is used thus in comparison to the usual method of cubing, including walls, &c."

Lunatic asylums cost from £120 to £160 per inmate, or about 9d. per cube foot on the ordinary method of cubing. If breathing space is intended by net cube measurements the price might rise to 10½d. per foot cube.

HENRY ADAMS.

Bandstand Roofs.

ULVERSTON.—FURNESS writes: "Which is the best form of ceiling for a bandstand in the open air? Should it be flat or otherwise, not taking into account the form or shape of the roof itself?"

All the bandstands we have ever seen have had flat, hollow ceilings acting as a sounding board. But if our correspondent will refer to the particulars of new patents this week on this page he will find a few particulars of a bandstand with a ceiling and floor of parabolic section.

Architects' Remuneration.

HALIFAX.—FAIRATION writes: "When the terms are arranged on the basis of a percentage on the outlay, is not the architect entitled to reckon his commission upon the total cost of the works, valued as if executed by a builder, and of new materials, as per the schedule for 'Professional Practice and Charges of Architects' published under the sanction of the Royal Institute of British Architects. The legal adviser to my clients says that the value of old materials re-used arising from the taking down of buildings required to be cleared off the site, to give place for new work, must not be reckoned, being of no cost to the clients, and if the whole works had been carried out in this way would not be chargeable for commission by architect, and he ignores the other clauses in above 'professional charges' as to measuring off work and getting out builders' accounts, and other items stated as chargeable, by advising the clients that they are not liable for any so-called extra services rendered in carrying out the work or caused by stopping contractor or the bankruptcy of same, &c., although not anticipated in arranging terms by either architect or clients. As the terms state in this case that the commission is to be chargeable upon the outlay, and the legal adviser states that as the old materials were of no cost to the clients they must not be reckoned or added to cost of work for commission purposes. H. P. B. in his reply evidently does not see the point raised in the way I should like, as he says old materials should be taken into account at the price of old materials in calculating the commission

due to architects. This to me is not fair at all, seeing there is more trouble involved in getting measurements and particulars of old work, and specifying where the same is to be used. It is also contrary to Clause 5 in schedule of 'Professional Practice and Charges of Architects,' and comes hard upon the architect where the whole erection is carried out in old materials, as in the taking down of old work and rebuilding same on adjoining site."

We adhere to the answer already given to "Fairation" in our issue for July 11th, if we understand his question. It is quite possible, however, that we do not. The note which he has appended to his original query increases the confusion. It would seem from it that the old materials or some of them consist of work not taken down at all, but allowed to remain so as to form part of the completed building. This would introduce an entirely new factor into the problem. The extract sent from "The Schedule for Professional Practice and Charges of Architects" does not touch the question, because, as has been frequently held, the scale charges do not bind the client unless there has been a special agreement with him that they shall do so. In the present case the one fact that seems clear is that the terms were arranged on the basis of a percentage on the outlay, and the only question is what was the outlay. We think it was what the new materials cost plus what the old materials used were worth, plus the cost of the labour. What the relevancy of the allusion to the bankruptcy of the builder is, we fail to see.

H. P. B.

Sanitary Institute Examination.

SANITARIAN writes: "Would you be good enough to give me a list of books required to pass the examination for membership of the Sanitary Institute and the prices of same. Is this the best examination dealing with practical sanitary science?"

The Sanitary Institute examination is one of the best of this description. Full particulars may be obtained from the Secretary, Sanitary Institute, Margaret Street, London, W. The following books are recommended: Moore's "Sanitary Engineering" (Batsford), 30s.; Reid's "Practical Sanitation" (Griffin and Co.), 6s.; and Knight's "Annotated Model Bye-laws," 12s. 6d.

T. E. C.

New Patents.

These patents are open to opposition until August 27th.

1899.—Sewage Purification.—10,386, W. M. DUCAT, 13 Devonshire Terrace, Hyde Park, London, W. The filter bed is covered with a double roof so as to conserve the natural heat of the sewage and that given off during the process of purification, thus guarding against the retardation or delay of bacterial action, particularly in cold weather.

Lead Glazes.—13,163, J. NOAD, High Street, East Ham, and T. H. L. BAKE, 20 Gayton Road, Harrow. The object of this invention is to reduce the risk of potters and others contracting plumbism when applying lead glazes. Instead of white or other lead compounds one of fritted lead is used. It consists of refined metallic lead, sulphur and silica fritted together, ground, washed and dried.

Sawing Machines.—13,470. G., A. R., W. R., and J. BULLIVANT, all of Moston Lane, Harpurhey, near Manchester. The usual way to "haunch" parts of doors is to use a single saw, make two parallel cuts, and then cut out the intervening part with a hand chisel. By this invention all this is done at once; a set of circular saws are mounted on a shaft obliquely, so that they have a "wobbling" action and cut a slot in the wood.

Pulley Stiles.—13,472 (Patentees, same as preceding invention). Instead of mortising the pulley stile of a sash frame a slot is cut from the top edge and a plain sash-cord pulley is fitted in on a pin, without the usual plate and fittings.

Rainwater Pipe Caps.—15,690. C. WILLIS and A. BATES, 1 Bond Street, Halifax. These are usually made of wire; according to this invention they are spun out of sheet metal in a lathe or stamped in a mould.

Purifying Sewage.—15,765. C. J. WHITTAKER, Willow House, Blackburn Road, Accrington. The sludge is used to inoculate the crude sewage, supplying it with the necessary micro-organisms. "Sludge" includes the sludge liquor and the scum.

Bandstands.—17,814. H. H. SPITTAL, 93 John Street, Glasgow. The roof and the floor of the bandstand are curved parabolically, so that the sound is directed outwards with more force and volume. The musicians are supported on a kind of false bottom.

The following specifications were published on Saturday last, and are open to opposition until September 4th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—10,832, BALMER, shoring and strutting. 13,348, HERCHENBACH, discharge valve. 13,895, PAYART, portable huts or houses, for military, colonial or other purposes. 13,904, LETHEREN, mortice locks. 14,201, DUDMAN, paving material. 15,989, HOPE, dredging or excavating apparatus. 16,501, ZIENTARSKI, process for the production of artificial stone, cement or plaster from sand, lime and other materials. 16,628, ANDREWS, arc lamps. 17,096, MORGAN, fixing handles to picks, mattocks, and other tools. 17,320, BROWN, portable tables. 17,402, BISHOP AND BURN, measuring tap or device for drawing off given quantities of liquid from vessels. 17,853, THOMPSON (Firm of *Terranova Industrie C. A. Kapferer and Schleuning*), manufacture of cement. 18,623, WAINWRIGHT, manufacture of tubes.

1900.—1,631, HULETT, handling and unloading apparatus. 2,631, HERVIEU, apparatus for generating acetylene. 3,812, CARMAN, rotary kilns. 4,993, ADAMS, water-closet apparatus. 5,572, O'BRIEN (*Wagner*), acetylene lamps. 5,728, ALLEN AND GARY, book-cases, drawers, &c. 6,038, RATHENAU, manufacture of calcium carbide. 6,073, BURGESS, connection for flushing pipes. 6,216, NOPPEL AND NOPPEL, compressing and exhausting pumps suitable for clearing and testing drains. 7,205, CROWE, raising and lowering grates. 7,591, LENG, machine for finishing glass articles. 7,612, KACHELMANN, suction and forcing pumps. 7,613, PETERSEN, locks. 7,695, GRACIE, machines for turning and facing sludge doors. 8,080, LUNDIN, steel castings and their manufacture. 8,081, LUNDIN, steel castings and their manufacture. 8,953, MCCONNELL, pipe and similar non-conducting coverings. 9,218, IMRAY (Firm of *A. F. Smulders*), apparatus for dredging and discharging dredgings from barges. 9,360, SINKOVIC, bob levels. 9,535, THOM, combined spirit level and straight-edge. 9,574, STOCKFISCH, construction of beams or girders of angle, tee, channel or other cross section. 9,646, PITT, gate-operating mechanism. 9,742, LAKE (*Bahls*), devices for locking the nuts of screw fastenings.

A Story of Tinworth.—It is stated that on one occasion a clergyman visiting the studio of George Tinworth, the sculptor, observed a terra-cotta and Doulton ware pulpit—now in Washington—decorated, of course, with panels of scriptural subjects. On the pulpit door Tinworth had put a bird's nest to proclaim "Foxes have holes, and birds of the air have nests, but the Son of Man hath not where to lay His head." "That, you know," he explained to the cleric, "is for the bishops and canons to see when they go up into the pulpit dressed in their fine robes." Ten years afterwards, Tinworth was rather taken aback by the same clergyman turning up at the studio to remind him of the incident, for the clergyman was Dr. Benson, who had in the interval become the Archbishop of Canterbury!

Bricks and Mortar.

APHORISM FOR THE WEEK.

"To the solid ground

*Of nature trusts the mind that builds for aye,
Convinced that there, there only, she can lay
Secure foundations."*—WORDSWORTH

Our Inset Sheets.

THE church of St. Mary Magdalene, Addiscombe, was commenced some years ago by the late Mr. E. B. Lamb, F.R.I.B.A., but was left incomplete at his death, in consequence of some difficulties of an ecclesiastical nature between the minister and his Bishop. Later, the present vicar, the Rev. H. Glover, raised funds for its purchase, and a large amount of money has since been expended upon its completion and internal decoration. The view, taken from the West, shows the church as completed (when it will accommodate over one thousand worshippers), with the proposed extension of the nave and aisles and the addition of an entirely new west end, with a fine west window, a south porch, &c. At the east end, next the chancel, which faces the road, a lofty tower is proposed to be erected, beneath which is the principal entrance to the church. This entrance has lately been completed, including a portion of the tower. The chancel inside has an arcade of polished granite columns and arches above, which gives depth to the traceried windows. The stone pulpit and desk have been enhanced by the addition of some rich traceried panels; and a new Credence table with elaborate canopy has been erected. The new work has been designed and carried out by Mr. E. Beckett Lamb, of Craven Street, Charing Cross, son of the original architect.—Mr. T. Raffles Davison's drawings of Welburn Hall are in illustration of the article on the work of Messrs. Demaine and Brierley, architects, on page 455 of this number.—Seacroft has lately been erected at Milford-on-Sea, near Lympington, Hants. It is on the cliff, and has a fine view over the Isle of Wight, Christchurch, and the open sea. It is close to the New Forest, and is built for occupation during portions of the year as a sort of bungalow. Especial care has been taken to make it weatherproof under exceptional circumstances, hence the treatment of rough-cast on solid walls. The house has been built for the architect, Mr. W. Ravenscroft, of Reading, by Messrs. Collier and Catley, of the same town.

Death of Mr. Martin, of Birmingham.

WE regret to hear of the death of Mr. William Martin, the well-known architect and surveyor of Birmingham, which occurred on Wednesday last at his residence, Lyndhurst, Erdington, in his 72nd year. During his apprenticeship Mr. Martin studied at the Birmingham School of Design, and afterwards became the managing clerk in the office of Mr. D. R. Hill. The connection with Mr. Hill was a very fortunate circumstance for the young architect, since it enabled him to study a branch of the profession which had been specially cultivated by his partner—namely, the designing of gaols and asylums. Mr. Martin showed great aptitude for the work, and the firm of Hill and Martin obtained a great reputation in this particular line. Mr. Martin was interested in the erection of the gaols at Swansea, Cardiff, Worcester, Warwick, Guernsey, St. Albans, Mold, Kirkdale (Liverpool), the county gaols of Surrey, Flint, Carmarthen, Cardigan and Merioneth. He also designed the Wandsworth Prison and the Swansea House of Correction, Weston Reformatory, and the additions to Saltley Reformatory. Mr. Martin's second partnership commenced in 1864, with the late Mr. John Henry Chamberlain, and was continued until the latter's death. Not the least noteworthy of the contributions of Messrs. Martin and Chamberlain to Birmingham architecture is to be found in the Board schools. On the death of Mr. Chamberlain, the

firm was carried on by Mr. Martin himself, and subsequently with the assistance of two of his sons, the title of the firm being changed only last year to that of Martin and Martin. Of their later work mention may be made of the preparation of the designs for the new lunatic asylum at Hollymoor, which were adopted after a competition; also of the erection from their plans of the new telephone exchange. Mr. Martin was also the architect of the reconstruction of the Grand Hotel. He married the daughter of the late Mr. Brown, of Shenstone, and of his family five sons are now living.

Vandalism at Byland Abbey.

MR. W. A. RUSSELL, of Bradford, writes to the "Times" as follows:—"I desire to call public attention to an act of vandalism. Quarrying in the ruins of our abbeys is not, as might have been supposed, a thing of the past. On Monday I visited Byland Abbey, near Coxwold, in the North Riding of Yorkshire (once the home of Tristram Shandy). Byland, which is the largest original Cistercian house in England, is in a very neglected condition; the outside walls, which show some beautiful features of design, are still standing, but the interior is filled with mounds of ruins. These mounds have quite recently been opened, but not for purposes of research. A mason's shed has been erected against the wall of the north transept for the 'dressing' of the stones, which—if any other testimony than the mason's shed were necessary—are, on the authority of the nearest neighbour to the abbey, to be used for building purposes. The excavations have disclosed beautiful and very complete sections of shafts, as well as carved capitals and pillar bases, &c. The idea of these being reduced from beautiful examples of Early English carving to mere square blocks of building stone is too dreadful to contemplate, and it is to be hoped that all societies and others who take an interest in the preservation of our ancient buildings will raise an emphatic protest against this spoliation of a fine old ruin."

New Market Hall for Leeds.

THE question of the erection of a new market hall, to take the place of the present covered market in Kirkgate and Vicar Lane, Leeds, was under the consideration of the Markets Committee of the Corporation last week. It may be recollected that plans of the proposed structure were prepared by Messrs. Leeming and Leeming, architects, of London and Halifax, the cost of which was estimated at £80,000. The matter came before the City Council in January last, and the scheme was approved, but it was decided that no action should be taken with the building at that time, the chairman of the Markets Committee and the chairman of the Finance Committee (the Lord Mayor) being requested to confer together as to the most suitable time for borrowing money, having regard to the rate of interest which would have to be paid. At last week's meeting, the Markets Committee resolved to communicate with the architects with the view of taking the necessary steps to obtain tenders. The new building will contain both shops and stalls. The frontage to Vicar Lane will be put back so as to bring it into line with the improvement carried out in that thoroughfare, from which, as well as from the other streets, the façade will have a very imposing appearance.

An Old Bit of Whitehall.

THE historic landmarks of Whitehall are being gradually "improved" out of existence; for instance, Sir John Vanbrugh's "pill-box" residence in Horse Guards Avenue, the "Olde Red Lion," and the whole of King Street. But it is not quite certain that the old tilt yard at the back of the Horse Guards Parade will be demolished. What is far more likely is that it will be utilised by the War Office for the accommodation of some branch of the establishment, in all probability that relating to fortifications. The tilt yard, which was the delight of Queen Elizabeth, stood somewhat to the south of Horse Guards Yard, adjoining the

north gate of King Street. It was here that, according to Sydney's State Papers, good Queen Bess "commanded the bears, the bull, and the ape to be baited," and on the following day some "solemn dancing." The Tilt Yard Coffee House, which was a famous resort of military officers, stood upon the site of the present office of the Paymaster-General.

A. A. School of Design.

THE designs made by students of the Architectural Association which have been exhibited at the rooms in Marlborough Street are highly commendable, and are a proof of the excellent work which the Association is doing, a work that will have a wide bearing. The school holds monthly meetings under the direction of a visitor, and it speaks well for the tuition that the Committee of Visitors includes the most prominent and capable architects of the day. A stone doorway was the subject set for the elementary class, and the large number of drawings exhibited showed a very fair average merit. The design for a billiard room given in the advanced class proved to be very popular, though there was nothing worthy of special praise. There were better designs shown for a garden house in a nobleman's park; those by Mr. Munro Cautley, Mr. E. B. S. Shepherd and Mr. W. Milner were very good. Mr. Edwin Forbes's design for a forecourt to a town mansion deserves mention, though the gate itself is not pleasing. Other designs were shown of a cottage hospital and an entrance cloister. Taking it as a whole, the exhibition was most satisfactory.

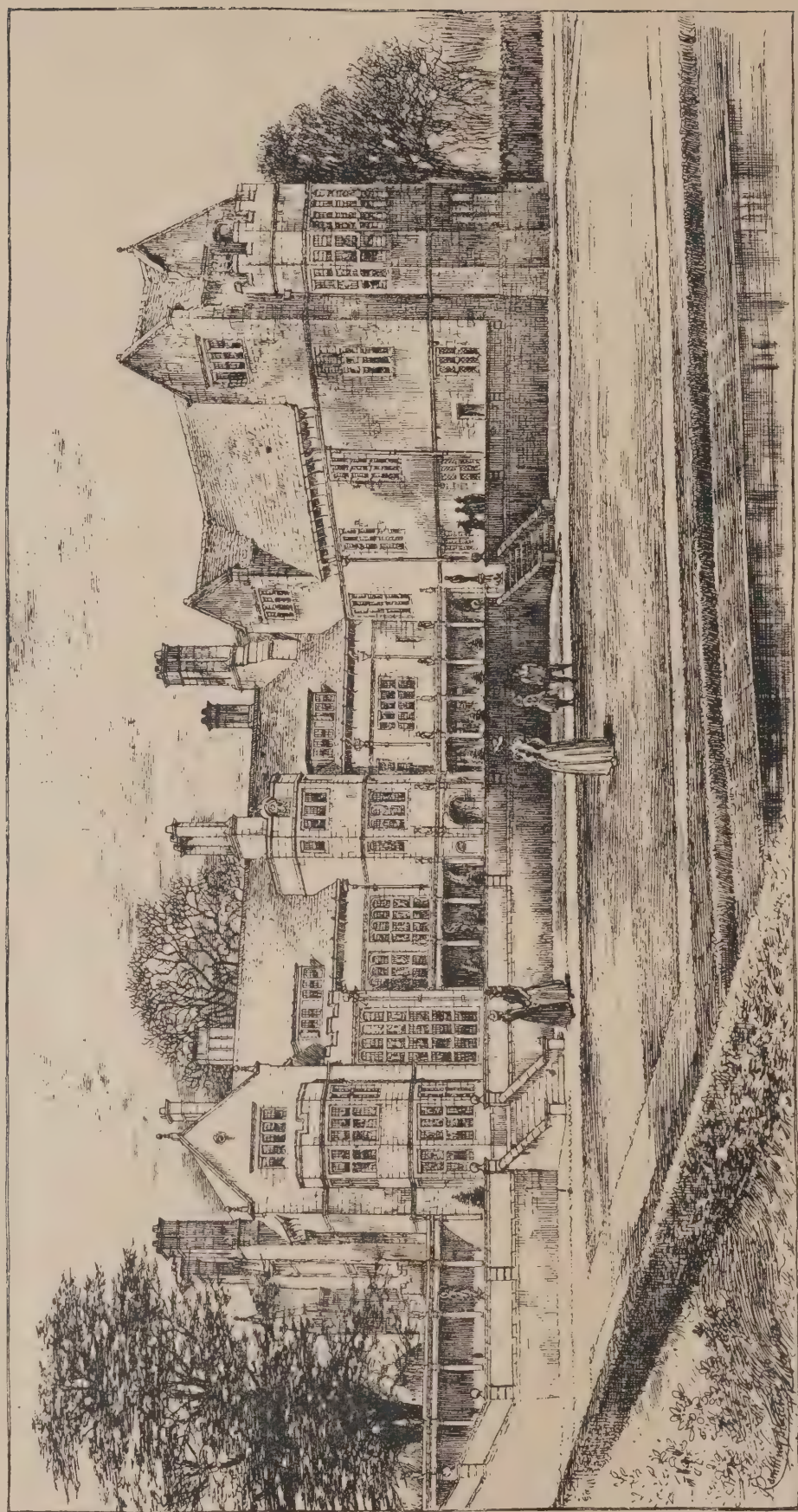
Ayr Town Hall.

THE question of rebuilding the town hall at Ayr was recently discussed by a committee consisting of fourteen councillors. The matter was under discussion for two hours, when the following motion was agreed to:—"That we ask for competitive plans to provide the necessary accommodation required for police purposes, on the ground floor if possible, and to provide a hall capable of accommodating 800 or 1,000 persons, the remaining space to be utilised for rooms *en suite* with the present Municipal Chambers. Any plans the cost of which will exceed £8,000 may be excluded." The amendment provided for the police accommodation being on the ground floor, for the sanitary inspector's and burgh surveyor's offices being on the first floor, and that the remaining space be used for providing a hall *en suite* with the Council Chambers to hold 600 to 900, the scheme not to cost more than £8,000.

Royal Architectural Museum.

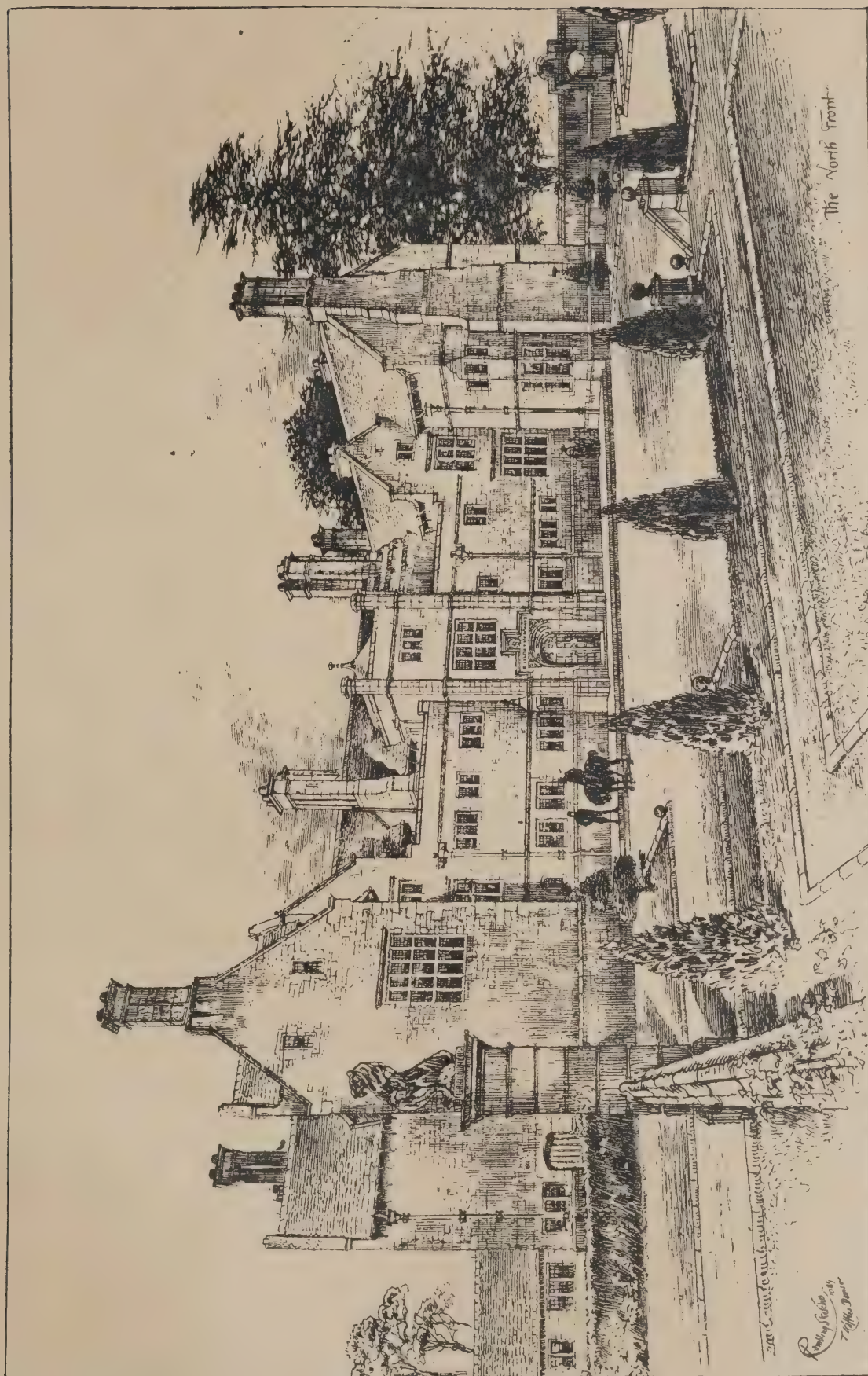
THE annual general meeting of the Royal Architectural Museum and Westminster School of Art was held at the museum in Tufton Street, Westminster, last Friday, Mr. Aston Webb, A.R.A., presiding. Mr. Maurice B. Adams, hon. secretary, moved the adoption of the report, which stated that the Westminster School of Art continued to justify its high reputation as one of the most important schools of art in the kingdom. In the examination held in 1899 64 students of the school sat for examination, with the result that 14 per cent. attained the highest award ("excellent"), against 7.4 per cent. for the whole of the United Kingdom, and only 1.4 per cent. failed, against 27.4 per cent. Two of the students were bracketed third amongst the 1,527 candidates who sat for drawing from the life, and were awarded Queen's prizes. In the National competition, in which all schools of art took part, medals and prizes were awarded to the following Westminster students:—William Batchelor, John Bart Higgin, Henry James Strutt, Edgar G. Peman, and Isabel M. Smith. The subscriptions for the past year only amounted to £69 10s., and it would be quite impossible for them to keep the institution open if it were not for the School of Art, which brought in over £1,000 a year in the way of fees. The institution's impecunious condition was now a thing of the past. He urged that art students should turn their attention to applied art, in

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View from the South West.

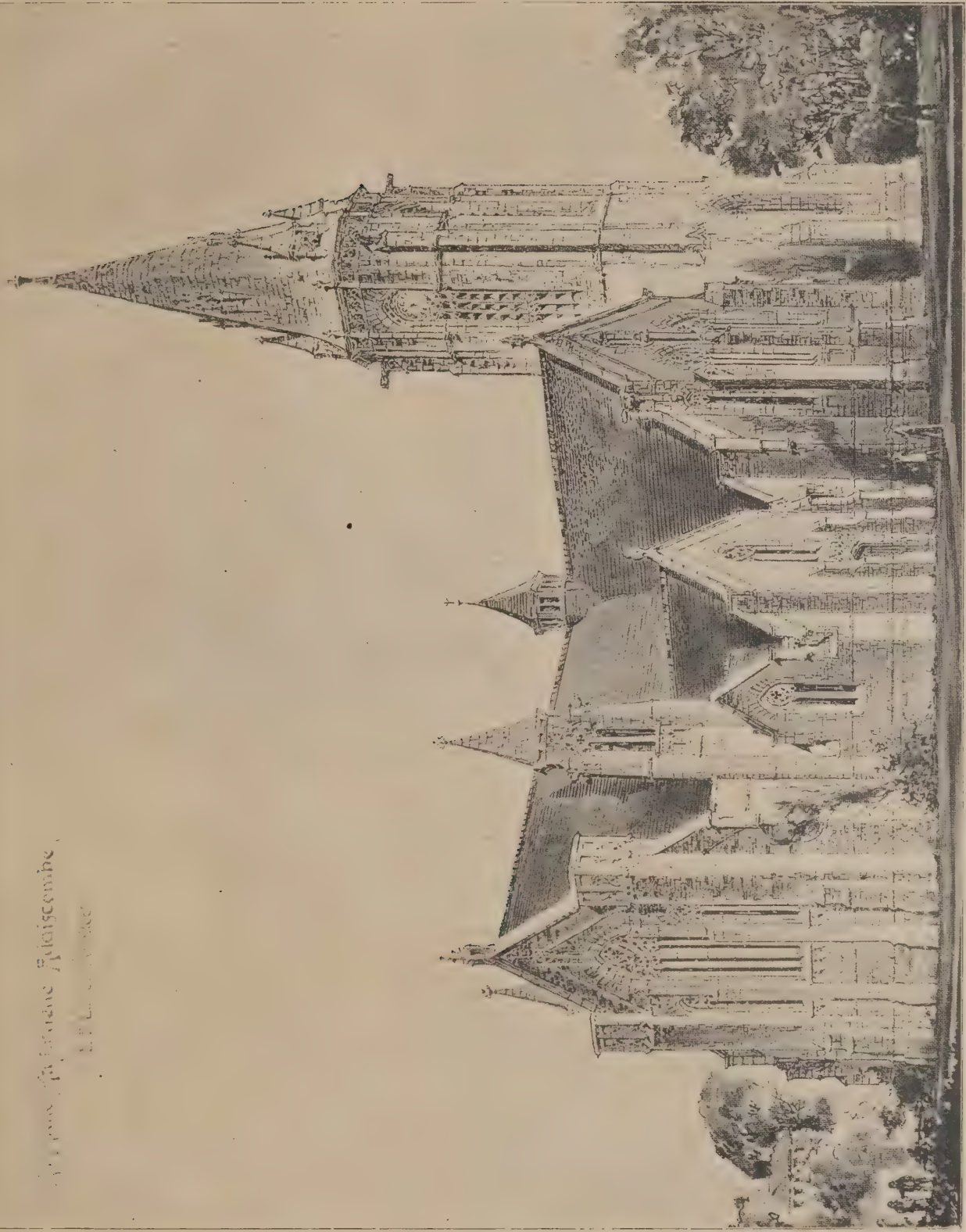
WELBURN HALL, YORKSHIRE. DEMAINÉ AND BRIERLEY, Architects.



WELBURN HALL, YORKSHIRE. DEMAINE AND BRIERLEY, Architects.

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CHURCH OF ST. MARY MAGDALENE,
ADDISCOMBE.



CHURCH OF ST. MARY MAGDALENE, ADDISCOMBE. E. B. LAMB, Architect.

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which they would stand a far better chance of success than as mediocre painters. Mr. W. H. Seth-Smith seconded the motion, and subsequent speakers deplored the cloud under which Gothic art was at present. Mr. Emerson suggesting that the study of both Gothic and classic art would lead to the evolution of a system of architecture suited to the requirements of the new century. The report was adopted. The Chairman nominated Mr. W. Emerson, president of the Royal Institute of British Architects, as president of the institution in place of the late Duke of Westminster. Mr. J. H. Pollen seconded the motion, which was unanimously agreed to.

The Housing Bill.

THE Housing of the Working Classes Act (1890) Amendment Bill was read a second time in the House of Lords last Friday. Earl Carrington, supported the Bill, but thought it a disappointing one. The Housing of the Working Classes Act of 1890 consolidated and amended foregoing Acts on the subject and simplified and cheapened the machinery involved in municipal action. In 1889 the London County Council came into existence. Its predecessor, the Metropolitan Board of Works, used to clear areas and sell land to building companies, and housed 27,000 persons up to 1889. The London County Council began to build themselves in 1892, and in eight years housed 10,000 persons. What the Council had in hand now and had completed in the last sixteen months amounted to accommodation for 25,000 people, at a cost of £1,500,000, and they confidently expected that schemes they were now considering would enable them to house an additional 24,500, making a grand total of 60,000 within the next five years. They could have done better. What was wanted for urban districts was:—

(1) The period within which loans for building purposes must be repaid should be extended to 100 years. (2) Compulsory registration of the real owners of all property should be provided for, so that those benefiting from insanitary slums and illegal overcrowdings could be immediately and drastically dealt with. The Land Transfer Act of 1897 was not compulsory except in a few parts of London. (3) Power to the local authority to have destroyed, without compensation, and at the cost of the owner, insanitary slums injurious to health, where the owners failed to make them really habitable, after being called upon to do so. If then the owner refused to rebuild, the local body to have the power to do so upon equitable terms. (4) Power to local authorities to insist upon a much better transit service to and from the suburbs of the great towns. At present cheap transit followed the peopling of a new district. If overcrowding was to be really prevented cheap transit must be used largely for the development of a new district, and must not be left merely to follow its development. (5) The local governing bodies in our great towns should be empowered to acquire land compulsorily outside their own jurisdiction for the erection of workmen's dwellings. The Bill before the House gave this last concession, but refused to entertain the other points which were considered so essential to the welfare of the community at large.

North Lew's Preaching Cross.

LAST Friday being the Feast of St. Margaret, the Bishop of Bristol unveiled and blessed the venerable preaching cross in the market-place at North Lew—a village situated upon the northern fringe of Dartmoor. The cross, having fallen into a lamentable state of decay, has just been restored by Messrs. Harry Hems and Sons, of Exeter. The cross, which was formerly one of the finest in the West country, was originally erected by the Benedictine Monks of the Abbey of SS. Mary and Runon at Tavistock, and is in the main of 13th century work. The shaft is entirely new, and consists of a splendid monolith of grey Dartmoor granite—London Bridge is built of the same material, probably the best granite in the United Kingdom. North Lew, exposed as it is

to the storms and winds of the neighbouring bleak moor, is locally reputed to have been the place where, in some age remote, "the Devil died of cold," and the remains of his Satanic Majesty are said to have been buried afterwards beneath the now restored preaching cross.

City Church Remains Discovered.

EXCAVATIONS on the site of the Church of All-hallows-the-Great, Upper Thames Street, were recently begun by the City of London Brewery Company, to whom the property belongs. An ancient wall some 20ft. below the surface has now been brought to light. In the three spaces excavated the wall has been cut through after much labour, and the ends are open to view. It is of unusual thickness, and consists chiefly of stone, being of a solidity to almost defy the efforts of the workmen to loosen it. It is of very ancient structure, and is built upon huge oak beams. A difference of opinion seems to exist as to whether it is (1) a part of the old Roman wall which took its course along Upper and Lower Thames Street towards the Tower, or (2) a part of the foundation of the original church of Allhallows-the-Great, which was founded in 1361 by the Dispencer family. Mr. Charles Welch, the Guildhall librarian, expresses the opinion that the wall was that of the original church. The course of the Roman wall, it should be mentioned, could scarcely have gone up so high as the site in question. One point that supports the theory that the discovery is one of the foundations of the old church is that Sir Christopher Wren, when rebuilding churches after the Great Fire of London, always utilised, where practical, the foundations of the churches which had been burnt down. In this case, judging by the formation of the church of Allhallows-the-Great, which was razed to the ground only a few years ago, he probably used part of the foundations.

A Ruskin Exhibition.

A RUSKIN Exhibition was opened last Saturday at Coniston Institute, and will remain open for the ensuing seven weeks. There has been brought together a representative series of drawings, a number of portraits and relics, some rare volumes and manuscripts, and a few examples of—or after—those artists whose names Ruskin has made so familiar to his readers. The relics will appeal to anyone who knows "Præterita"; the manuscripts and drawings, arranged chronologically, and in most instances trustworthily dated, may be useful to students of Ruskiniana, and the drawings are a pictorial biography in themselves. The examples have been lent by Mr. and Mrs. Arthur Severn (the Brantwood Collection), Mr. A. Wedderburn, Q.C., Mrs. George Holt, Mr. and Miss Hilliard, Mr. and Mrs. John Bolding, Mr. James P. Smart, junr., Mr. F. Hollyer, Mr. Baxter, Mr. W. Collingwood, R.W.S., Mr. W. G. Collingwood, and the Trustees of the Ruskin Museum at Sheffield. The exhibits total 462.

The Exhibits.

THE first wall of the hall of the Coniston Institute contains work of Ruskin's juvenile period, aged ten to nineteen, in which, beginning with copies to amuse himself, and lessons from Mr. Runciman, he proceeded to imitate Turner's vignettes. Pencil-work drawings, after copying Prout, are next in order, and then attempts to learn colouring from Copley Fielding. In the 1835 sketches, when he was on the Continent, the progress in his drawing is very marked, and his 1837 picture is a "Cottage in Troutbeck" (applying colour to outline). The 1838 sketches are chiefly done on grey paper after David Roberts, R.A., and on a side wall are hanging a few of the fine series of drawings made in the autumn of 1840 and the spring of 1841. In 1842 his drawings were made in brown pen-and-brush work. The period of "Seven Lamps of Architecture" includes the paintings "Abbeville, 1848," and "Chapel at Reu, near Abbeville." Alongside are studies for "Modern Painters," to illustrate the drawings of mountains, and after this a group for "Stones of Venice" (1851-3). Two pictures entitled

"Capital" and "Sculpture at the Cathedral of Bourges, France," are from "Examples of the Architecture of Venice," and on a screen in the middle of the hall are sketches made in Switzerland in the sixties. An end wall holds a few copies and natural history studies, such as he made for his school at Oxford in 1871, and the remainder of the pictures illustrate Ruskin's drawings during the last ten years of his working life. There are also a few examples, original and copies, of the art work about which Mr. Ruskin has written, and mediæval manuscripts belonging to and framed by him. To Turner much space has been given. After Turner are a few frames representing Bewick, John James Ruskin (a drawing by John Ruskin's father), Samuel Prout, William Hunt, Sir Edward Burne-Jones, Meissonier, Miss Francesca Alexander, Miss Kate Greenaway, R.I., Albert Goodwin, R.W.S., Lawrence Jermyn Hilliard, Mr. Arthur Severn and Mr. and Mrs. W. G. Collingwood. Glass cases contain relics, manuscripts, printed works, photographs, &c.

An Artistic Bequest.

THE great art collection of the late Mr. Constantine Ionides, of Brighton, has been bequeathed to the nation. Two important conditions are attached to the bequest—the first, that the collection shall be kept together in the Victoria and Albert Museum and exhibited in a room or rooms and be termed "The Constantine Ionides Collection;" the second, that every object is to be exhibited and nothing hidden. This seems to involve not only the display in cases of the magnificent collection of engraved gems and similar objects which the late owner always kept in cases, but the framing and hanging of a vast number of fine prints which have hitherto been religiously retained in portfolios. There have been few collectors of taste so catholic as the late Mr. Ionides—everything, in fact, that was fine found in him an appreciative admirer; books, prints, gems, pictures, carvings, carpets, objects of every sort and of every age. Yet the collection does not strike the spectator as in any sense an *olla podrida* like the Soane Museum. It is just such a collection as a man of taste would wish to live with. These things were arranged about the rooms of Mr. Constantine Ionides' house, and no apartment, save the great library, built by Mr. Philip Webb, gave any suggestion of a formal museum.

Memorial to the Rifle Brigade.

A STAINED glass window has just been placed in Winchester Cathedral to commemorate the centenary of the Rifle Brigade and to perpetuate the memory of the officers and men who fell in the Soudan and in Crete. The window, which was designed by Mr. E. Kempe, is intended to convey the lesson of self-sacrifice for the good of others as being the true principle of the soldier's life. At the apex of the window is a crown surmounting a Maltese cross, which is encircled by a wreath tied with bands on which are inscribed the names of the chief battles in which the Rifle Brigade has at various times taken part. In the two top lights of the central division are represented the Crucifixion, with the figure of the centurion saying, "Truly this Man was the Son of God." Below are the figures of S. Stephen, S. Lawrence, S. Edmund, and S. Oswald, and the side lights are filled in with the figures of S. George, S. Maurice, S. Alban, and S. Martin.

New Baths for North London.—A large number of the principal residents of Islington inspected last Wednesday the additions and improvements which have been made to the public baths in the Hornsey Road, one of three sets of buildings which have been erected by the parish of Islington under the Public Baths and Washhouses Act. The additions include a new first-class swimming bath for women, thirty-seven additional private baths, a new establishment laundry, new engines and boilers, and two artesian wells with pumping machinery capable of raising 25,000 gals. of water per hour. The Baths Committee claim for these baths the distinction of being the largest set of baths and washhouses in the world.

Builders' Notes.

London County Council Improvements.—At the consideration of the London County Council (Money) Bill, which has already passed the House of Commons, by the Earl of Morley's Committee in the House of Lords some amendments were made involving the withdrawal of the amount set down in the measure in connection with the acquisition of Spitalfields Market. The sum so struck out was £177,500.

Registration of Plumbers.—The following committee was appointed last week (with power to add to its number) for the purpose of approaching the Government with a view to secure the introduction in the next session of Parliament of legislation dealing with the registration of plumbers:—Lord Hugh Cecil (chairman), Mr. John Aird, Mr. M. Austin, Dr. R. Farquharson, Mr. C. Fenwick, Sir W. Cameron Gull, Sir R. Hanson, Mr. Lees Knowles, Sir L. M'iver, Mr. J. Richardson, Mr. H. S. Samuel and Mr. J. Wilson.

London County Council.—At last week's meeting of the Council Mr. N. Robinson enquired whether it was true that there had been a financial hitch in the purchase of No. 17 Fleet Street, and whether it was true that the owner now wanted £1,300 in addition to the modest sum of £20,000 already agreed on. The chairman of the General Purposes Committee replied in the affirmative, adding that the matter was under consideration. It was recommended by the Asylums Committee that a central station for the supply of electricity and water should be provided at Horton Manor Asylum, Epsom, at a cost of £39,000. The station is intended to supply all the asylums which may be erected on the Horton estate. The tender of Messrs. T. and W. Farmiloe was accepted for the supply of paints from July 18th to December 31st.

Government Building Contracts.—At last week's sitting of the House of Commons Committee on War Office Contracts Mr. H. Wells, of the firm of Martin, Wells and Co., builders and contractors, stated that in 1899 they had a contract for certain buildings and works for the War Office. Certain irregularities arose in the payment of labourers on fraudulent notes. As soon as the irregularities were discovered they were directed not to pay unless the demand was signed by an officer. All the books of the firm were placed at the disposal of the War Office when they sent officers to make inquiries. In reply to the Chairman, Mr. Wells said he had had experience of these building contracts for the War Office for 45 years. In his opinion, it would be good for the War Office, good for the country, and good for the contractors if there were a right of appeal or an arbitration clause in all Government contracts. He challenged anyone to prove his work defective.

An alleged Encroachment of Foundations and a Gable.—The case of *Robinson and another v. Stevenson and another* was recently heard at the Shropshire Assizes. The plaintiffs claimed damages for an alleged encroachment in the course of the erection of a house. The defendants claimed that the land was their own, and, further, that, if it was not their land, what had been done was done with the full knowledge and acquiescence of the plaintiffs. In 1891 the plaintiffs purchased a plot of land. Subsequently the defendants purchased a plot of land next to it, and in May of last year they commenced to build upon it. Soon after it was found that they were building upon the land of the plaintiffs to the extent of 7in. The gable of the house came over it, and the footings under it. The plaintiffs, to oblige the defendants, had consented to the temporary removal of a wooden fence so as to facilitate the erection of the house, but they had objected to the foundations being partly laid on their land. Judgment was given for the defendants.

"Houses" or "Public Buildings": an Interesting Decision.—At Lambeth recently Mr. Priestman Moses, of Old Kent Road, was summoned by Mr. Ellis Marsland,

district surveyor for Camberwell, for failing to comply with a notice of irregularity served upon him under the terms of the London Building Act. In April 1897 the Local Government Board made an order giving the control of children of defective intellect or physical infirmity to the Metropolitan Asylums Board. The Asylums Board came to the conclusion that the most effectual way of dealing with such children would be to locate them in different parts of London in small homes in close proximity to the centres at which the London School Board provide special instruction for such children. In pursuance of that decision the Asylums Board purchased a house in Elm Grove, Peckham, and proposed to make alterations and additions with the view of adapting it for the accommodation of fourteen or fifteen children. In carrying out this work the architect, Mr. Charles Henman, proposed to retain the original wooden staircase and to place an outside iron staircase as a means of escape from fire. Mr. Marsland, the district surveyor, took the view, however, that this was the conversion of a house into a public building, and that consequently the terms of section 68 of the London Building Act, 1894, applied. That section requires that in every public building the floors of the lobbies, corridors, passages and landings, and also the flights of stairs, shall be of fire-resisting material and carried by supports of a fire-resisting material. Mr. Herbert Smith, who had been instructed by the Asylums Board to appear for the defendant, argued that this was not a public building, and that in regard to this dwelling-house the Board were in the same position as a private owner. In the result Mr. Hopkins upheld the district surveyor's contention and made an order requiring the defendant to amend the work in accordance with his (the surveyor's) requirements, but agreed to state a special case for the opinion of the Divisional Court.

Building Covenants on the Portland Estates.—The case of *Baily v. Lewis* came before Mr. Justice Cozens-Hardy in the Chancery Division last week. The plaintiffs, who were trustees of the Portland estates, moved to restrain the defendant, a draper, of Oxford Street, until the trial, from building in breach of a covenant. Counsel for the plaintiff stated that there was a passage called Hollis Passage between the premises occupied by the defendant in Hollis Street and Cavendish Buildings, and the defendant held a lease from the Portland Trustees which contained a covenant that he would not, without the consent of the trustees, erect any building or make any alteration in the premises. The defendant had built a wall which blocked the passage, and it was the desire of the trustees that the passage should be kept open. The defendant had a reversionary lease, giving him the soil of the passage, but it was provided that the passage must not be built on. The plaintiffs asked for an injunction to restrain him from dealing with the passage in any way inconsistent with the provisions of the building agreement. For the defendant, it was contended that it was intended that new buildings should be erected, and there was an understanding between the architect to the trustees and the defendant as to building on the passage. Mr. Justice Cozens-Hardy said it was not even alleged that there was any agreement in writing entitling Mr. Lewis to do what he had done. The defendant might have a good case at the trial, but, in the meantime, he must grant an interlocutory injunction.

Housing and Municipal Trading.—Mr. Sheppard, builder and contractor, Bermondsey, gave evidence against trading by municipal authorities before the Joint Committee of the two Houses on Municipal Trading. His view was that proper supervision, which was necessary for efficient work, did not exist in the case of municipal employment, and that it was unnecessary that local authorities should provide dwellings for the working classes, since private enterprise could compete with anything a county council could do in this direction. Mr. D. S. Waterlow, chairman of the Housing of the Working Classes Committee of the London County Council, and a director of the Improved Industrial Dwellings Com-

pany, gave an account of the operations of the County Council in the matter of the housing of the working classes. Until last year, when the Council adopted Part 3 of the Housing Act and decided to acquire a site containing an area of nearly 40 acres, the Council's operations had been restricted to the provision of new dwellings in lieu of those destroyed by them or their predecessors in carrying out various street improvements and clearances of insanitary areas. Up to March of the present year the Council had erected and finished dwellings to accommodate 10,000 persons, consisting of 48 blocks of dwellings and one common lodging-house. These buildings had been erected for a capital expenditure of £609,000, of which £101,690 was the estimated value of the land, and £507,000 the cost of the buildings. They were producing a gross annual income of £41,300. It was proposed to erect on the estate mentioned, situate at Tooting, 1,100 single and double cottages of various grades to meet the requirements of several classes of workmen. Accommodation would, it was anticipated, be provided for 8,400 persons. By means of tramways to Blackfriars, Westminster, Waterloo, and the Borough, access was given to the busy centres. It was anticipated that the laying out of the estate and erection of the cottages would involve an expenditure of £450,000. After further evidence the committee adjourned.

Workmen's Compensation.—The case of *Timmins v. the Leeds Forge Company, Limited*, came before Lord Justice A. L. Smith, Lord Justice Vaughan Williams, and Lord Justice Romer in the Court of Appeal last week. It was an appeal from the decision of Judge Greenhow, sitting at the Leeds County Court, under the Workmen's Compensation Act, 1897. The applicant for compensation was a labourer in the employment of the Leeds Forge Company. The question was whether the injury to the workman was caused by an "accident." The evidence was shortly as follows:—The applicant's duty was to lift planks of timber. On January 26, 1899, he was engaged in shifting timber from one heap in the yard to another heap. He had been moving the timber the day before and had no difficulty in moving it then. The timber consisted of pine deals 14ft. long, 11in. wide, and 3in. thick. On January 26th the planks were all frozen together, there having been a frost during the night. The applicant began work at 11 a.m. and had a difficulty in moving the planks from the beginning. At about 4.15 p.m. he bent down to lift a plank which was fast to some others with the frost, when he fell down in pain. The lower planks in the heap were more firmly fastened together on account of the rain and frost. He never had any difficulty before that occasion. The applicant was ruptured in consequence, and was injured. The County Court Judge found the above evidence to be true. It appeared that the applicant had been previously ruptured, but the County Court Judge found upon the evidence that he was practically cured of the old rupture, and was as good a man as he was before it, and was entitled to the same remedy as if this had been a rupture for the first time. The Judge also found that the rupture was, in fact, caused by the lifting of the timber and not by some other cause, and that it was, under all the circumstances of the case, an injury by accident arising out of and in the course of the employment, and that the employers were liable to pay compensation. He accordingly made an award in favour of the applicant. Counsel for the employers contended that there was no "accident" in this case. There was nothing fortuitous or unexpected. The workman knew that the planks were frozen together, as he had been working from 11 a.m. to 4.15 p.m., when the accident happened. The work was the man's ordinary work, which was rendered heavier than usual by the frost. The Court dismissed the appeal on the ground that the lower down the workman got in the stack of timber the harder the planks stuck together, owing to the rain and frost, and this was unknown to the workman. Accordingly, when the workman tried to lift one of the lower planks he ruptured himself, owing to the difficulty of lifting it, on account of its being frozen fast to the other planks.

Professional Practice.

Alloa.—The recently-formed Alloa Unionist Club proposes to erect a club-house in Union Street and Coalgate at a cost of about £2,000. Mr. John Melvin, of Alloa, is the architect. The main entrance will be from Union Street, and the ground floor will be reserved for a cloak room and lavatory accommodation. The stair leading to the upper storey will be finished in pitch pine. On this floor there will be a billiard room 32ft. 6in. by 27ft., giving accommodation for two tables. There will be a recess behind, about 23ft. long by 10ft. wide, the floor of which will be raised, and a settee formed all round. The roof will be open, and the room will be provided with all modern requirements. The secretary's room, 17ft. by 14ft., will be entered from a corridor 7ft. wide, and adjacent to it will be a reading room 31ft. by 15ft. 6in., both of which rooms will be lighted with corbelled oriel windows. It is also proposed to have a card room entering off the reading room and shut off by folding doors, so that when occasion requires the two rooms can be thrown into one, giving accommodation for 300 persons. The heating will be by means of open fireplaces, and it is proposed to light the whole premises by means of electric light. The entire surface of the walls will be treated with cement harling. The contractors are:—Mason and brick work, Mr. J. Phillip, Tili-coultry; carpenter and joiner work, Mr. R. Kier, Tili-coultry; slater work, Mr. J. Walker, Alva; plaster work, Mr. J. Grant, Alloa; plumber work, Mr. J. Philp, Alloa; painter work, Mr. J. Robertson, Alloa.

Barby, Rugby.—The church of St. Mary at Barby has been restored under the direction of Messrs. W. and C. A. Bassett Smith, architects. The work has taken two years. The church itself dates from the thirteenth century, although fragments of much earlier work were found buried in the plaster which covered the walls, and in the floor were included a number of Saxon coffins, with handsomely carved lids; one, which was replaced beneath the pavement in the south aisle, upon being opened, was found to contain a perfect skeleton. Fragmentary portions of delicate tracery and several very early frescoes were also found hidden beneath the plaster, and these, where possible, have been preserved by being built into the walls. With respect to the work of restoration, it may be said that all the walls, where not rebuilt, have been cleaned and re-pointed. The majority of the windows have been re-set, and the greater portion of the south wall and the whole of the columns supporting the arches have been re-built. The arches themselves, however, have not been interfered with beyond the cleaning process. New roofs have been erected over both north and south aisles, and also over the chancel aisle and chancel. The ceilings of the aisles are of fir, whilst that of the chancel is of oak. In the course of the work several arches and doorways, giving evidence of a much larger building, were discovered. In the south wall of the chancel a beautiful arch was found filled in with brickwork, and covered with plaster. The brickwork has been removed, the archway opened out, and now forms a side chapel, though it is not intended to utilise the same for such a purpose, the object being to restore the building to something like its former condition. At the west end the tower arch has been opened, giving free access to the belfry. A staircase by the side of the doorway on the north side, which was also discovered whilst the work was in progress, has been cleared, and found to lead to a small chamber over the north porch. The floor of the church has been lowered to its original level, and the doors have been made to open outwards. To attempt to define the character of the various windows would be rather a difficult matter, as no two are of exactly the same design, but in the work of restoration much delicate stone carving, which had been hidden from view, was brought to light, and has been utilised to the best advantage. The floors have been relaid with solid wood, whilst in the aisles the old paving,

as far as possible, has been used, with the addition of a bordering of fancy tiles. The chancel steps have been paved with tiles, made specially for the purpose, from the pattern of one found buried beneath the floor of the church. The pulpit has been retained, whilst the old communion rails have been brought forward to the entrance of the chancel, forming a low screen, and new communion rails have been provided. The old-fashioned high-back pews have been demolished, and, for the present, chairs will be used. Externally, there has also been much done in the way of renovation: the north porch has been restored to its conjectured original state, and an entirely new porch built at the south side of the church. Up to the present time £3,000 have been expended, but much more is still proposed to be done.

Bognor.—The new Duchess of Teck Memorial Home of Rest for Working Women and the Victorian Convalescent Home for Surrey Women—to give them their full titles—occupy a splendid position facing the sea, with a frontage of more than 200ft. The buildings, which have been erected from designs by Messrs. Lainson and Son, architects, of East Street, Brighton, are in the Renaissance style of architecture, and are simple in treatment. They are faced externally with red bricks and terra-cotta dressings, while the roofs are boarded and felted, and covered with red Broseley tiles. The external walls are built in two thicknesses, with a 2in. cavity between, thus avoiding any chance of damp penetrating through the walls. This arrangement will also tend to keep the rooms warm in winter and cool in summer, and will, to a very great extent, prevent the noise of the sea in rough weather from being heard in the home. The use of timber in the exterior of the building has been avoided, as in such a position it would be likely to be much affected by the weather. For the same reason, and as being more weather-tight, wrought-iron casements and frames have been used for the windows. By adopting this plan the periodical expense of external painting will be reduced to a minimum. The buildings have been planned to enable all the principal rooms to face the south, overlooking the sea, while the cloak rooms, staircases, bath rooms, lavatories, servants' bedrooms, &c., face north. The rooms are approached on both floors by a wide, well-lighted central corridor. The floors are of tubular fireproof construction, the ground floors being laid with pitch-pine wood blocks, wax-polished, and the upper with ordinary floor boards. Internally the walls are covered with "Serapite," a specially hard and non-absorbing cement, and the decorations are carried out in Duresco. The ventilation is effected by Boyles' inlet and outlet ventilators, and fanlights will be hung over the ward doors for the free circulation of air. The rooms will be warmed by open fires, which also assist the ventilation, while the corridors and dining-rooms of both institutions will be heated by hot-water radiators, from an independent boiler in the basement of the Victorian Home. The coal and beer cellars and boiler-house will be in a small basement. The drainage is thoroughly up-to-date, with necessary inspection and disconnecting chambers, all well ventilated, and connected with the sewers in the roadways. The two homes are quite similar in design and general arrangement; they are connected by a covered corridor, and will be under the superintendence of one matron.

Blairstown.—At the beginning of last year rumours were current about the instability of Blairstown Free Church, and Mr. William Mackison, F.R.I.B.A., city engineer, Dundee, was asked to report on the matter. In the face of Mr. Mackison's report it was imperative that something must be done, and the Deacons' Court, after fully considering the matter, recommended the congregation to form a building fund with a view to the erection of a new church. Funds were raised and designs by Messrs. MacMillan, Aberdeen, were adopted. These show a church in Early English Gothic style, with transept, aisles, apse, and a small back gallery. The halls are a special item in the scheme, a happy use being made of the present church, the walls of which are to

remain for this purpose. The main feature in the adaptation of the hall plan is a fine central vestibule or reception room, all the other rooms opening off this. The hall building will consist of a hall and class-rooms adjoining; these can be connected for special meetings to form one hall, which will then give sitting accommodation for 550 persons. In addition, there are minister's vestry, class room, cloak room, lavatories, heating chamber, library, waiting room, and, what is a distinct novelty in those parts, a "tea-kitchen," fitted up for providing for soirées, &c. The new church will be situated on the site of the present halls. The aisles are divided from the nave by stone pillars with stone arches, and clearstory windows above. The roof will be of circular form and timber-lined, having principals resting on stone pillars and corbels with intermediate ribs. Much attention has been paid to the heating and ventilation of the building, and the systems employed will be of the most modern and improved description. The sitting accommodation provided will be slightly in excess of that of the present church, and it is estimated that the total cost will be about £6,000.

Douglas.—The new Gaiety Theatre and Opera House, which has been built from designs by Mr. Frank Matcham, of London, has an auditorium roughly calculated to seat 1,750 persons; it comprises stalls, pit, circle, three private boxes on either side of the stage, and a fine amphitheatre, with a large gallery at its rear. The flooring of the basement is of black wooden tiles (dove-tailed), extending from the back of the pit to the orchestra. The gangways are wide, and the exits sufficient to allow the house to be emptied in a few minutes. The private boxes and the fauteuils in the stalls and the circle are upholstered in rich blue Utrecht velvet, and the amphitheatre and pit in repp of a similar shade. The proscenium has an opening of 30ft. by 28ft. There is an asbestos fireproof curtain, and an act-drop by Mr. W. T. Hemsley covers it. The stage, 68ft. deep by 56ft. wide, makes the production of big pieces possible, while the artistes' comfort in well-lighted dressing-rooms has been fully regarded. Mr. Phillips acted as clerk of the works and Mr. Alexander Gill, of Douglas, was the contractor.

Kirkcaldy.—In the new police buildings at Kirkcaldy, the accepted design for which is by Messrs. Williamson and Inglis, architects, of Kirkcaldy and Edinburgh, there will be 30 cells—22 for male prisoners and 8 for female—with matron's and turnkey's rooms, kitchen, doctor's room, &c. The police-constables are provided with large muster and recreation rooms, charge room, with telephone room and room for productions and stolen or found property. Separate rooms are also provided for the chief constable and his clerk, an inspector, a detective, and a sergeant. The court room is placed on the upper floor, as well as a magistrates' room, rooms for the fiscal and the clerk of the court, male and female prisoners, &c. A caretaker's house is also included in the scheme. The main block, containing the court and private rooms, will face St. Brycedale Avenue. The estimated cost of buildings is about £16,000, which sum does not include furnishings, boundary walls, or the laying out of the grounds.

London.—The new Passmore Edwards Boys' Club and Institute in Barking Road, Canning Town, E., has been built by Messrs. James Smith and Sons, of Norwood, from the designs of Mr. H. C. Lander, A.R.I.B.A. The site is irregular. The central part of the ground floor is occupied by the clubroom, which is lighted by two semicircular windows. Near the entrance to this room, and separated from it by a glass screen, is the manager's office, which will also serve the purpose of a general enquiry office. At the opposite end of the room is a counter where tea, coffee and light refreshments can be obtained; this room will be the general meeting-place for members. A fireproof staircase leads from the back of the clubroom to the reading-room immediately overhead; on the same floor are two classrooms and two smaller rooms at the back for chess and draughts. Returning to the same staircase access is given to the top floor, the greater part

of which is occupied by a billiard-room, containing three full-sized tables. Adjoining the billiard-room, and occupying the remainder of the top floor, are the caretaker's apartments. At the back of the main block on the ground floor, and more or less at right angles to the Barking Road, is the large Passmore Edwards Hall. This is entered from the Barking Road by the same doorway as that which serves the club premises. The hall, which will accommodate 280 persons, will be available for concerts, lectures, or as a gymnasium; at one end is a stage. Communicating directly with the stage are three retiring rooms, one of which will be devoted especially to members of the gymnasium and running club and is fitted with a shower-bath. In the half-basement under the stage and retiring rooms are three slipper-baths with hot and cold water, drying and store rooms for linen and towels, and a boiler room. The workshop occupies the top floor of this rear block. In addition to the club premises, and without any means of direct communication, is the public refreshment department, which has its own separate kitchen and larder. Electric light is fitted throughout. The main front is of red pressed bricks with terra-cotta dressings and strings. The foundations rest on gravel. The cost of the buildings is about £7,828, towards which Mr. Passmore Edwards contributed £5,000 and Mr. J. R. Roberts and Mr. W. H. Brown £1,000 each.

London.—The new baths and wash-houses for Bethnal Green were commenced in 1898 and have cost £20,000. Mr. R. Stephen Ayling, A.R.I.B.A., of Westminster, prepared the designs. Water is obtained from an artesian well which has been constructed at a cost of nearly £1,000, and from which a supply of 3,500 gals. an hour may be obtained. There will be no swimming bath, but in other respects the establishment is fully equipped. The machinery and other heavy equipment is naturally arranged in the basement; and there also are the store rooms and other offices for the working staff. The entrances to the baths have been placed in the principal frontage, on Cheshire Street, and are planned so that one attendant can issue the tickets to both sexes. Passing through spacious and well-lighted waiting halls, the baths are reached, namely, 20 men's second class, 10 men's first class; 10 women's second class, and 5 women's first. The large bath-rooms are divided into separate compartments by slate divisions, and painted in enamel. The whole of the baths are in porcelain from the Farnley Iron Company. Adjoining the Board School in Abbey Street is the laundry entrance and pay office. A somewhat unique feature is the long corridor for storing the perambulators in which the washers usually bring their linen; in most of the London baths this has been omitted, with the result that the waiting halls are often almost impassable. The ironing and mangling room contains three box mangles (all under-driven), with the necessary ironing tables, ironing stoves, &c. The public wash-house is at the corner of Abbey and Cheshire Streets, and is fitted with 40 washing compartments, and the same number of drying-horses. At the end of each range of washing compartments is an under-driven hydro-extractor. This apartment is ventilated not only by fanlights made to open, but also by an electrically driven fan in the turret. The appearance of the building is of a simple character, effect being obtained more by the colour of materials than elaboration of design. The materials generally are red bricks, Portland stone dressing and plinth, and Westmorland sea-green slates. The contractors were Messrs. Holloway, of Deptford, for the buildings, and Messrs. Berry for the engineering work.

Lynn.—A school room, the first instalment of the new Union Church buildings to be erected on Wisbech Road, was opened last week. The building was erected by Mr. W. F. Smith, of Lynn, from designs by Mr. J. L. Carnell, A.R.I.B.A., at a cost of just under £400. It is in the modern style of architecture with red brick facings, and all ornament has been avoided, both externally and in the interior, and the windows are large. Inside, the

walls are plastered, with a plain match-board dado in narrow widths, and the roof principals are of plain chamfered wood with iron tie rods. There is room for 160 sittings; the building is heated with an open slow-combustion tiled stove, and lighted with eight 16-candle power electric lamps, and there are the usual offices at the back. The school will for the present be used for public worship as well as for Sunday School work.

Surveying and Sanitary Notes.

The Drainage of Douglas is to be completed at a cost of about £30,000.

Improvements in Soho.—At a Consistory Court at St. Paul's Cathedral last Thursday, Dr. Tristram granted a faculty authorising the sale and conveyance of the fee simple of a portion of the churchyard of St. Anne's, Soho, to the Strand Board of Works for the purpose of widening Wardour Street. The churchyard was closed for burials in 1853, and any bodies disturbed are to be removed to Woking. The price agreed on was about £500, the Strand Board of Works to defray all costs.

City Building Leases still continue to command high prices. At the Mart, Tokenhouse Yard, E.C., Messrs. Farebrother, Ellis and Co. recently let on lease for eighty years the building site on which at present stand the Royal Ophthalmic Hospital, St. Mary's Chapel Schools and Chapter House, possessing a total frontage of 318ft. to Finsbury Circus, Blomfield Street and East Street, and occupying an area of 18,230 superficial feet. The bidding started at £5,000 a year, and after brisk competition the site changed hands for £9,500 per annum, or at the rate of about 10s. per foot annually.

Improvements at Margate.—The Margate Corporation propose to construct a promenade, commencing on the Parade, opposite Duke Street, and extending along the foreshore to Clifton Baths, reclaiming land where necessary from the sea. There will thus be provided a continuous promenade and carriage drive extending for about a mile and a half along the sea front, and having a width of 85ft. A cliff drive will also be made at Westbrook, which, when the new road is laid out in connection with the Bridewell Hospital estate, will form a cliff promenade extending half way to Westgate.

The Enlargement of the Law Courts.—At the fortnightly meeting of the Strand Board of Works last week the Medical Officer, in his report, called attention to the fact that the Government proposed to enlarge the present Law Courts by building on the open space bounded by the Courts and St. Clement's Lane. A short discussion ensued, the members considering that the only open space in the neighbourhood should not be built upon. A resolution was passed suggesting that the Government should build at the back of the Courts, where there was a space which had not been utilised.

Norfolk Bridges.—At the meeting of the Eastern Highways Committee of the Norfolk County Council, estimates were presented for the repair or rebuilding of four bridges—Besthorpe, Sutton (Wymondham), Billingford (near North Elmham) and Great Ryburgh. Mr. G. B. Ketteringham (Attleborough) was given the contract for the Besthorpe bridge at £119 10s.; Mr. Bowden (Wymondham) that for the Sutton bridge for £165 10s.; Mr. T. H. Blyth (Foulsham) the contract for rebuilding the Billingford Bridge for £205; and Mr. O. Tuthill (Fakenham) for the repair of the Great Ryburgh Bridge for £238.

The Widening of London Bridge, which the City authorities have in view, will undoubtedly be a work of great public utility. The precise nature of the scheme of alteration, with other important particulars bearing on the subject, cannot be known until the Bridge House Estates Committee present their report. It is understood that it is proposed to widen

the footpaths of the bridge on each side by means of cantilevers. Some members of the Committee are credited with thinking that the cost will over-ride the benefit, others that the general symmetry of the bridge will be spoiled, while a certain number desire to postpone all alterations for two or three years. The Corporation have also in view the improvement of the approaches to Southwark Bridge, and the establishment of a municipal steamboat service.

Addition to the Postmen's Park.—More than two years have passed since the movement for the extension of the Postmen's Park was commenced at the instance of the vicar and churchwardens of St. Botolph's, Aldersgate. For a while it seemed as if the project was doomed to failure, the sum asked by the Parochial Charity Commissioners—£12,000—being so large that there appeared to be little prospect of its being raised. Many of the City companies, together with the Corporation and the London County Council, have subscribed, however, and the sum has been all but raised, and the purchase completed. The opening of the new portion of the garden and the cloister erected by Mr. G. F. Watts, R.A., for the commemoration of "Heroes in Humble Life," will take place on Monday, 30th instant, when the Lord Mayor and Sheriffs will be in attendance. The memorial is of very simple design, and is attached to the wall of the building which runs at right angles to Little Britain. It consists of a red-tiled roof sloping from the wall, and is supported by seven pillars. The floor is about 7ft. wide, and runs a distance of some 50ft., while a seat stretches the entire length. Above the sloping back of the seat the space is divided into six portions by tiers formed of brown glazed bricks, and in these spaces memorials will be erected from time to time recording heroic deeds by people in lowly walks of life.

The Strand Improvement.—At the Guildhall, Westminster, last week, the case of *Guscombe and Mrs. Fanny A. R. Sandwith v. the London County Council* was decided before Mr. John Troutbeck, sitting as High Bailiff, and a special jury. It was a claim under the Land Clauses Act by the freeholders of the shop and premises 342 Strand, and Nos. 2, 4, and 6 Catherine Street, adjoining, for compensation for the compulsory acquisition of their property for the purposes of the Strand improvement. The property was stated to be owned by several families, and to form one of the finest business sites to be found in London. It was let on lease to Mr. White, a jeweller, who had occupied the shop at the corner of Catherine Street for 35 years. In 1891 Mr. White renewed his lease for 21 years, at a rental of £500 per annum for the first seven years, £600 for the second, and £700 for the third seven years. That by no means represented the value of the premises, but he was an old tenant. Then he sublet to other tenants, who paid £550 a year, Mr. White paying the rates and taxes. The plaintiffs claimed for their freehold interest as trustees under marriage settlements, &c., the sum of £24,319. Mr. F. T. Galsworthy, surveyor, of Waterloo Place, Pall Mall, Mr. Edward Bousfield, of Gresham Street, and Mr. Daniel Watney, of The Poultry, having given evidence in support of these figures, counsel for the L.C.C. said that the London County Council recognised that this was an excellent site and a first-class position, but he contended that the outside value was £16,000. Mr. Samuel Walker, surveyor, of Moorgate Street, and Mr. G. H. Glaisher, of St. James's Street, S.W., said they were of opinion that the property was worth £16,508; and Mr. James Green (Weatherall and Green) put the amount at £16,582. The jury awarded the claimants £21,578, including 10 per cent. for compulsory sale.

"The Architectural Review."—The delay in producing the July number—the Special Summer Number—of this magazine has been largely due to the fact that it contains a beautiful illustration of the well-known picture of "Perseus and Andromeda," by the late Sir Edward Burne-Jones. The "Review," however, was on sale on Saturday, and we feel sure that its contents will fully compensate for the delay experienced in its production.

Keystones.

An Exhibition of Mr. Walter Crane's work is to be held at Budapest in the autumn.

The Oldest Bell in England is stated to be one at Oughton, Lancashire, which dates from 1296.

A New Wing to the Bristol Lunatic Asylum, at Fishponds, has been completed at a cost of about £45,000.

A New Masonic Hall at Leeds is being erected in Great George Street. The foundation-stone was laid last week.

The Right Hon. J. M. Meade, late president of the Dublin Master Builders' Association, died suddenly on July 14th.

A Bust of Hahnemann, the founder of homoeopathy, who died in Paris in 1843, has been put up over his new tomb at Père-la-Chaise.

The Nurses' Home at Kensington Infirmary is to be enlarged. The designs of Mr. Ernest Flint, of 80 Coleman Street, have been adopted.

An Electricity Supply Station at Epsom is to be erected in Church Street, from designs by Mr. A. E. Pridmore, architect, of 2 Broad Street, Buildings, E.C.

Rougham Primitive Methodist Chapel, after being closed for renovation, was re-opened last week. It has been cleaned and decorated by Mr. Mason, of Massingham.

A New Church for Mickleton, Methley.—The Earl of Mexborough has given £1,000 to the fund for the formation of a new parish and the building of a new church.

All Souls' Church, Harlesden.—The east window of this church is to be filled with stained glass at a cost of £250, as a memorial of the late vicar, the Rev. H. E. Carlyon.

Park Chapel, Chelsea.—It is proposed to pull down this quaint old building and to erect in its place a church with a tall spire, designed by Sir Arthur Blomfield and Sons.

The New Buildings of the Dental Hospital of London, now being erected in Leicester Square, are estimated to cost £40,000, and to meet this funds are urgently needed.

A Memorial Tablet of the late Mr. George du Maurier, the celebrated "Punch" artist, has just been placed by Mrs. du Maurier on the front of New Grove House, Hampstead, now a Children's Home.

The Benedictine Church of St. Begh, Whitehaven, was re-opened last Sunday after alterations extending over eight months. This mission was founded 200 years ago, and the present building, by Pugin, dates from 1868.

Gift to Birmingham University.—Lord Calthorpe has given twenty-five acres of land as a site for the new scientific department of teaching and research which it is proposed to establish in connection with Birmingham University.

The Park Hall and Park Hotel, Hanwell, recently opened, has been designed by Mr. G. H. Pargeter. Messrs. Speechley and Smith, of Richmond, were the contractors, and the furnishings were supplied by Mr. J. Sanders, of Ealing.

The Death is announced of Mr. T. M. Lockwood, F.R.I.B.A., of Chester. The deceased was seventy years of age. Among numerous other buildings he designed the Law Courts at Chester Castle and the new buildings at the Chester Cross.

The New Glanadda Mixed Schools, Bangor, North Wales, are being warmed and ventilated by means of Shorland's patent Manchester stoves and patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

The Church Building Society at its meeting on Thursday last, at the Church House, granted a number of sums towards rebuilding, repairs, &c. The amounts included £1,000 for the new Church of St. Silas, Nunhead, and £100 for Christ Church, Kensal Green.

Royal Academy Elections.—Mr. Joseph Farquharson has been elected to fill the place

of Associate rendered vacant by the retirement of Mr. Philip Morris. Mr. Val Prinsep was chosen to fill the post of Professor of Painting, Mr. Herkomer, R.A., having resigned.

A New Wesleyan Chapel at Darley Dale is to be erected shortly from designs by Messrs. C. O. Ellison and Son, of Liverpool. The building will be close to the Whitworth Institute, and will seat 350 worshippers; the estimated cost is £2,600, exclusive of the land.

Bishop Heber's Church.—A movement is on foot at Malpas, Cheshire, for the restoration of the church with which the name of Bishop Heber will ever be associated. The Bishop's father, Reginald Heber, was the builder of the Rectory, and his mother was the architect.

Fire occurred at Messrs. Doulton and Co.'s factory in the basement of the terra-cotta department at Lambeth. With several fire-engines and three river floats the fire was got out before it did very serious damage. Immediately above the basement were 400 tons of partly manufactured pottery.

The Ruskin Memorial.—Mr. Onslow Ford, R.A., has accepted a commission to execute the memorial which, with the consent of the Dean, Mr. Ruskin's friends and admirers propose to place in Westminster Abbey. An appropriate site in Poets' Corner has been allotted by the Dean. It is above the bust of Sir Walter Scott.

Workmen's Cottages for Warwick. Warwick is feeling the need of workmen's cottages and has decided to borrow £3,500 for the purchase of common land known as the Pigwells for building purposes. It is proposed to improve a road, make another road through the new property and sell the remainder for building cottages.

Mr. Taubman, the author of the statue of Sir Sydney Waterlow which will be unveiled at Waterlow Park, Highgate, by Princess Louise, Duchess of Argyll, on Saturday next, has not long settled down to work in London, after studying and working on the Continent. A model of the statue occupies a prominent position at the Royal Academy Exhibition.

A New Dancing Hall for St. Pancras is being erected in Tavistock Place. Mr. F. W. Foster is the architect and Mr. J. Carmichael the builder. The hall will be 90ft. from front to back, and 36ft. wide. The ballroom will be on the ground floor. The lower portion of the building will be faced with stone, and the upper storey will be in red brick.

New Welsh College.—The Bangor City Council has decided to purchase the whole of the Bishop's Park for the city, at a cost of £15,500, and to offer six acres of it, valued at about £3,000, to the authorities of the North Wales University College, for the purpose of erecting a new college. The park is situated in the centre of the city, adjoining the cathedral.

New Hotel at Harrogate.—The Hôtel Majestic, the property of the Fredericks Hotels Company, Ltd., is the latest addition to the hotels of Harrogate. It stands in its own grounds of ten acres and overlooks the Valley Gardens and Spa concert-room. It is built of red brick and yellow sandstone, and has been furnished and decorated by Messrs. Maple and Company.

A New Institute at Hessle, Hull, is being erected from designs by Mr. Bilson, architect, at an estimated cost of £1,500. Mr. Marsden is the contractor. The new building will comprise on the ground floor a large room to contain three billiard tables, a bagatelle room to contain two tables, a games room, and, above, a Board and committee room, caretaker's rooms and the usual out-offices and conveniences.

London Board Schools.—At a meeting of the London School Board held last Thursday the report for the year ending March last was received. The total price of the sites purchased was £3,577,187 5s. 7d., and costs were £473,633 18s. 7d. The total number of permanent schools which had been erected and opened to Lady Day, 1899, was 439. During the year under review ten additional schools and six enlargements were opened, providing a total accommodation for 10,616 children.

The Building Trade, St. Andrews.—For several years back the building trade in the city has been exceptionally brisk, but all the big jobs have now been finished. There is practically no building going on now, and there seems no immediate prospect of any new houses being erected. At one time, not so long ago, houses could not be got, but the wants of the city in this respect seem for the present to be pretty well supplied. Many tradesmen have, in consequence, had to seek employment in other towns.

Cardiff's New Asylum.—On Monday last week Councillor Veall presided over a special meeting of the Cardiff Asylum Committee to consider applications from a large number of architects for an extension of time for sending in competitive drawings for the proposed new buildings. It was decided to grant 21 days' extension. The effect of this decision is that the designs in the preliminary stage of the competition are to be delivered not later than 12 o'clock noon on Saturday, September 15th.

The Organ in York Minster.—Respecting the condition of the organ in York Minster it was some time ago found necessary to consult Sir Walter Parratt, who pronounced it to be in "a thoroughly unsound condition," and deprecated any money being laid out in partial repair. The organ, indeed, has so rapidly deteriorated during the last few weeks that it has been found necessary to expend £50 to render it available for the daily services. The Very Rev. Dr. Arthur P. Purey-Cust, Dean of York, appeals for assistance to raise the sum of £4,000 necessary for its restoration.

New Underground Railway in Paris. Paris, after waiting nearly 30 years, has at last a section of its underground railway, and will be repaid for the inconvenience of months of upheaval of some of the principal thoroughfares. The Metropolitan or Underground Electric Railway from Vincennes to the Porte Maillot was opened on Thursday last. The intermediate stations are at the Place de la Nation, Lyons Terminus, Bastille, Hôtel de Ville, Palais Royal, Champs Élysées and Place d'Etoile. The line will thus give easy access to the Champs Élysées entrance of the Exhibition.

Church Bells Rung by Electricity.—In the parish of Runwell, Essex, an apparatus has been lately invented by the rector, the Rev. H. K. Harris, for ringing the church bells by electricity. The origin of the invention is rather curious. The rector finding a difficulty in obtaining bell-ringers rang the bells for three months himself. In order to save the labour involved in performing this task, he invented the "automatic ringer," and erected the apparatus in the church tower. By connecting the machine with the electric current already in use for lighting the church and rectory the bells are now rung with perfect order and precision. The "automatic ringer," for which a patent has been obtained, can be supplied to churches and buildings whenever required. The profits will be devoted by the rector to the fund for restoring his ancient church of Runwell.

The late Signor Segantini.—The wife of the famous Italian painter Segantini, who died unexpectedly of pneumonia last year in the Engadine, has written to the editor of the "Rivista di Studi Pschei" an account of a curious incident which occurred at their home on the Maleja 13 days before her husband's death. Segantini was then perfectly well, and had just finished his important painting entitled "Death," in which a mountain scene was represented, with the figure of a woman weeping over a bier. Segantini was resting in the studio when his wife entered, thinking him asleep. He then told her that, while quite awake, he had seen his own body on the bier, and had seen her weeping over it amid the scenery represented in the picture. Thirteen days later Segantini died in the small mountain cottage on the Schaffberg above Pontresina where he stayed while painting. The scene as his body was carried down the mountain was identical with that of which he had had so clear a vision 13 days before.

New Companies.

Foreign Lands Company, Limited.

This company was registered on July 10th with a capital of £24,000 in £1 shares (12,000 "A" and 12,000 "B") to acquire and deal with real and personal property, and to carry on the business of contractors, builders, miners, engineers, timber merchants, financiers, &c.

South-Eastern Brick and Terra Cotta Company, Ltd.

This company was registered on July 12th with a capital of £15,000 in £1 shares to acquire the business of a company of the same name (now in liquidation). The first directors (to number not less than three nor more than five) are G. H. Trollope, H. W. Trollope, J. R. Trollope and J. S. Brown.

Mill, Palmer and Co., Limited.

This company was registered on July 14th with a capital of £5,000 in £1 shares (2,000 five per cent. cumulative preference) to acquire the business of varnish, japan, colour, and oil manufacturers, chemists, &c., now carried on by G. M. O. Rogner, at 19 High Street, Wapping, E., as Mill, Palmer and Co. G. M. O. Rogner is sole managing director.

Ewesley Quarry Company, Limited.

This company was registered on July 12th with a capital of £10,000 in £10 shares to carry on at Ewesley, Northumberland, or elsewhere, the business of quarry and colliery owners and workers, coal and iron masters, brick and coke manufacturers, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers.

S. Blewitt and Co., Limited.

This company was registered on July 6th with a capital of £4,000 in £1 shares to carry on the business of colliery proprietors, ironstone dealers, coalmasters, coke manufacturers and merchants, brick, tile, terra-cotta and earthenware manufacturers, patent fuel makers, &c. The number of directors is to be two; the first are S. Blewitt and F. Minton, jun. (both permanent).

James Davie and Co., Limited.

This company was registered on July 6th with a capital of £1,500 in £1 shares to acquire the business taken over from the Domestic Appliances, Limited, by W. McIlroy, and to carry on the business of timber merchants, sawmill proprietors and manufacturers of and dealers in wooden articles of all kinds. The first directors (to number not less than two nor more than five) are to be appointed by the subscribers.

South Coast Improvement Company, Limited.

This company was registered on July 13th with a capital of £5,000 in £1 shares to acquire land and property, and to carry on the business of builders, contractors, decorators, hotel proprietors, licensed victuallers, club proprietors, merchants, &c. The first directors (to number not less than two nor more than ten) are to be appointed by the subscribers. Registered office: Hatherton Chambers, Old Square, Birmingham.

Escolme Sanitary Pottery Co., Ltd.

This company was registered on July 6th with a capital of £10,000 in £1 shares to acquire the business carried on by F. W. Ison at Woodville, Derby, as the Midland Sanitary Pottery Company, and to carry on the business of potters, makers of sanitary and other earthenware, &c. The first directors (to number not less than two nor more than four) are T. E. Storey (chairman), Frederick W. Ison and T. C. Foster. Registered office: Woodville, Derby.

John Stenning and Son, Limited.

This company was registered on July 11th with a capital of £36,000 in £10 shares to acquire the business carried on at London, East Grinstead and Robertsbridge as John Stenning

and Son, to adopt an agreement with W. V. K. Stenning and A. H. Stenning, and to carry on the business of timber merchants, sawmill proprietors, iron and steel merchants, &c. The first directors (to number not less than three nor more than five) are W. V. K. Stenning (chairman), A. H. Stenning and W. J. Stenning.

Arklow Terra-cotta, Brick and Tile Company, Limited.

This company was registered in Ireland on July 16th, with a capital of £12,000 in £1 shares, to acquire lands in the townland of Ticknock, Arklow, held under lease dated April 5th, 1900, from the Earl of Wicklow, by Joseph C. Macraith and Thomas J. Troy, and their interest therein, and to carry on the business or trade of brick, tile, and terra-cotta manufacturers and potters. The first directors (to number not less than three nor more than five) are Vere Ward Brown, Arthur E. Mills, David L. Craig and Thomas J. Troy. Registered office: 1 College Street, Dublin.

R. and J. Creighton, Limited.

This company was registered on July 7th with a capital of £50,000 in £1 shares (25,000 preference) to acquire the business of timber merchants carried on at the Alexandra Sawmills, Carlisle, under the firm of R. and J. R. Creighton, and, generally, to carry on in all or any of their respective branches the businesses of timber and slate merchants, sawmill proprietors, builders and contractors, engineers and metal founders, &c.; and, further, to carry on in all or any of their respective branches the businesses of electrical engineers, electro-platers, brick and tile, pipe and terra-cotta makers, wood workers, cabinet makers, painters and varnishers. The first directors (of whom there shall be not less than three nor more than six) are R. Creighton, B. Scott, J. C. Dove, and J. Maxwell. Registered office: Alexandra Sawmills, Carlisle.

Taylor, Tunnicliffe and Co. (1900), Ltd.

This company was registered on July 9 with a capital of £100,000 in £1 shares (40,000 preference) to acquire, upon the terms of a certain agreement, the business of potters, &c., carried on under the firm of Taylor, Tunnicliffe and Co., Limited (incorporated in 1896), and generally to carry on in all or any of their respective branches the businesses of potters, earthenware manufacturers, colour grinders, &c.; also as manufacturers of and dealers in every description of appliances for electrical work; as general engineers and metal founders, boiler makers, wire and tube drawers, brassfounders and finishers, machinists, builders and contractors. The first directors (of whom there shall be not less than three nor more than seven) are to be elected by the signatories to the memorandum of association—T. Taylor, J. Grocott, F. Mountford, F. H. Pepper, A. L. Tangye, H. R. Winterton, J. W. Harvey. Registered office: Eastwood, Hanley, Staffordshire.

Guest, Keen and Co., Limited.

This company was registered on July 9th, with a capital of £2,000,000 in 200,000 shares of £5 each and 1,000,000 shares of £1 each primarily to adopt and carry into effect an agreement made between A. Keen and E. W. Richards and this company, to acquire by purchase or otherwise, as a going concern, the business, undertaking, assets, and liabilities of the Patent Nut and Bolt Company, Limited (in liquidation), and the ironworks and collieries carried on by Lord Wimborne under the style or firm of the Dowlais Iron Company, and as Guest and Co. in South Wales and London, to acquire a certain interest in hematite iron ore mines in North Spain, and, generally, to carry on in all or any of their respective branches the businesses of iron and coal masters, railway, general, and electrical engineers, bridge builders, coal merchants, brick, tile, and terra-cotta manufacturers, &c. The first directors (of whom there shall be not less than six nor more than eight) are F. W. Keen (and managing director), A. Keen, E. P. Martin, Viscount Duncannon, F. Gordon, E. W. Richards, J. W. Steevens, and A. T. Keen.

CURRENT PRICES.

OILS AND PAINTS.

		£ s. d.	£ s. d.
Castor Oil, French ..	per cwt.	1 8 0	1 11 6
Colza Oil, English ..	do.	1 10 6	—
Copperas ..	per ton	2 0 0	—
Lard Oil ..	per cwt.	1 17 0	—
Lead, white, ground, carbonate ..	do.	1 2 10	—
Do. red ..	do.	1 0 4 1/2	—
Linseed Oil ..	do.	1 14 0	—
Petroleum, American ..	per gal.	0 0 6 1/2	—
Do. Russian ..	do.	0 0 6	—
Pitch ..	per barrel	0 8 6	0 9 0
Shellac, orange ..	per cwt.	3 0 0	—
Soda crystals ..	per ton	2 17 6	3 0 0
Tallow, Town ..	per cwt.	1 5 6	1 8 0
Tar, Stockholm ..	per barrel	1 6 0	—
Turpentine ..	per cwt.	1 12 6	—

METALS.

Copper, sheet, strong ..	per ton	83 10 0	—
Iron, Staffs., bar ..	do.	9 10 0	11 10 0
Do. Galvanised Corrugated sheet ..	do.	13 10 0	14 0 0
Lead, pig, Spanish ..	do.	17 2 6	—
Do. do. English common brands ..	do.	17 17 6	—
Do. sheet, English, 3lb. per sq. ft. and upwards ..	do.	20 0 0	21 0 0
Do. pipe ..	do.	22 0 0	—
Nails, cut clasp, 3in. to 6in. ..	do.	12 0 0	13 0 0
Do. floor brads ..	do.	11 15 0	12 15 0
Steel, Staffs., Girders and Angles ..	do.	8 10 0	9 0 0
Do. Mild Bars ..	do.	9 7 6	9 15 0
Tin, Foreign ..	do.	143 10 0	144 0 0
Do. English Ingots ..	do.	146 10 0	—
Zinc, sheets, Silesian ..	do.	23 10 0	—
Do. do. Veille Montaigne ..	do.	24 5 0	—
Do. Spelter ..	do.	19 2 6	—

TIMBER.

SOFT WOODS.			
Fir, Dantzic and Memel ..	per load	3 0 0	4 0 0
Pine, Quebec Yellow ..	do.	4 7 6	6 0 0
Do. Pitch ..	do.	3 15 0	—
Laths, log, Dantzic ..	per fath.	4 10 0	5 10 0
Do. Petersburg ..	per bundle	0 1 2	0 1 3
Deals, Archangel 2nd & 1st per P. Std.	do.	12 15 0	15 0 0
Do. do. 4th & 3rd ..	do.	13 6 0	—
Do. do. unsorted ..	do.	12 5 0	12 10 0
Do. Riga ..	do.	6 15 0	8 10 0
Do. Petersburg 1st Yellow ..	do.	16 10 0	19 0 0
Do. do. 2nd ..	do.	10 15 0	13 15 0
Do. do. Unsorted ..	do.	8 15 0	13 0 0
Do. do. White ..	do.	11 5 0	—
Do. Swedish ..	do.	13 10 0	18 0 0
Do. White Sea ..	do.	15 10 0	20 10 0
Do. Quebec Pine, 1st ..	do.	13 15 0	23 15 0
Do. do. 2nd ..	do.	18 15 0	—
Do. do. 3rd &c. ..	do.	9 0 0	9 15 0
Do. Canadian Spruce, 1st ..	do.	10 10 0	11 15 0
Do. do. 3rd & 2nd ..	do.	7 5 0	9 10 0
Do. New Brunswick ..	do.	7 5 0	8 0 0
Battens, all kinds ..	do.	8 5 0	10 10 0
Flooring Boards, lin. prepared, 1st ..	per square	0 12 0	—
Do. 2nd ..	do.	0 8 0	0 13 0
Do. 3rd &c. ..	do.	0 6 6	0 10 0

HARD WOODS.

Ash, Quebec ..	per load	3 17 6	4 10 0
Birch, Quebec ..	do.	3 12 6	3 17 6
Box, Turkey ..	per ton	7 0 0	15 0 0
Cedar, lin., Cuba ..	per ft. sup.	0 0 3	0 0 3 1/2
Do. Honduras ..	do.	0 0 3 1/2	—
Do. Tobasco ..	do.	0 0 3 1/2	—
Elm, Quebec ..	per load	0 12 6	5 10 0
Mahogany, Average Price for Cargo, Honduras ..			
Do. African ..	per ft. sup.	0 0 4 1/2	—
Do. St. Domingo ..	do.	0 0 6 1/2	—
Do. Tobasco ..	do.	0 0 4 1/2	—
Do. Cuba ..	do.	0 0 6 1/2	—
Oak, Dantzic and Memel ..	per load	3 15 0	5 7 6
Do. Quebec ..	do.	4 12 6	5 0 0
Teak, Rangoon, planks ..	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk) ..	do.	3 15 0	5 15 0
Do. Odessa Crown ..	do.	3 15 0	5 15 0
Walnut, American ..	per cub. ft.	0 1 8	0 3 2

COMING EVENTS.

Wednesday, July 25.

NATIONAL COMPETITION OF SCHOOLS OF ART.—Exhibition of Students' Works at South Kensington, until August 31st.

Friday, July 27.

SOCIETY OF ARCHITECTS.—Meeting at the Mosley Hotel, Piccadilly, Manchester, to ascertain the attitude of Provincial architects on the Architects' Registration Bill. 6 p.m.

INSTITUTE OF JUNIOR ENGINEERS.—Visit to the Generating Station and Depot of the Central London Railway, Shepherd's Bush. 6.30 p.m.

Saturday, July 28.

ARCHITECTURAL ASSOCIATION.—Fourth Summer Visit to Stowe Park and to Buckingham Church. Assemble at Euston at 10.45 a.m.

Monday, July 30.

SANITARY INSTITUTE.—Conference on Housing of the Working Classes (first day). 10 a.m.

Tuesday, July 31.

SANITARY INSTITUTE.—Conference on Housing of the Working Classes. 10 a.m.

ROYAL SOCIETY OF ANTIQUARIES OF IRELAND.—Quarterly Meeting and Excursions at Lisdoonvarna, for North Clare.

COMPLETE LIST OF CONTRACTS OPEN.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING.			
July 27	Lichfield—Casual Wards	Guardians	W. H. Woodroffe, 24 Great Dover Street, London, S.E.
" 27	Leicester—Chimney Shaft	Sanitary Committee	E. G. Mawbey, Town Hall, Leicester.
" 27	Pontardulais—Chapel .. .. .	.. .. .	Rev. G. Jones, Maesderwen House, Pontardulais.
" 27	Branderburgh, Scotland—House .. .. .	.. .. .	Sutherland and Jamieson, Architects, Branderburgh.
" 27	Purston, Yorks—Villa .. .. .	.. .. .	E. W. Umpleby, Railway Hotel, Featherstone.
" 27	Willingdon—House .. .. .	.. .. .	J. W. Evans, St. Alban's, Polegate.
" 28	Rugby—Bandstand	Eastbourne Rural District Council	D. G. Macdonald, Council Surveyor, Rugby.
" 28	Wrenbury—Wall	Urban District Council	T. H. Whiteley, 54 Welsh Row, Nantwich.
" 28	Coventry—Additions	School Board	T. F. Tickner, 7 Bishop Street, Coventry.
" 28	Newquay—House	School Board	Estate Surveyor, Commercial Square, Newquay.
" 28	Elcheater—House and Shops .. .. .	.. .. .	Badenoch and Bruce, 55 Pilgrim Street, Newcastle-on-Tyne.
" 28	Haltwhistle, Cumberland—Alterations .. .. .	.. .. .	J. Cresswell, Moot Hall, Newcastle-on-Tyne.
" 28	Lancaster—Drill Hall .. .. .	.. .. .	Harrison, Hall and Moore, Architects, Lancaster.
" 28	Stainland, Yorks—Walls .. .. .	.. .. .	O. F. L. Horsfall and Son, Lord Street Chambers, Halifax.
" 28	Dublin—Stores .. .. .	.. .. .	P. MacNulty, 37 College Green, Dublin.
" 30	Cardiff—Town Hall and Law Courts	Cavan and Leitrim Railway Co., Ltd.	Town Clerk, Town Hall, Cardiff.
" 30	London, E.—Underground Conveniences	Corporation	Engineer, Board of Works Offices, 15 Great Alie Street, Whitechapel, E.
" 30	Rawtenstall—Laying Out Park	Whitechapel District Board of Works	D. Bird, Atlantic Chambers, 7 Brazenose Street, Manchester.
" 30	Burton-upon-Trent—Cottages .. .. .	.. .. .	G. T. Lynam, Town Hall, Burton-upon-Trent.
" 30	Distington, Cumberland—House	Corporation	W. Birkett, Clerk, Distington.
" 30	Dublin—Dwellings	School Board	C. J. MacCarthy, Municipal Buildings, Cork Hill, Dublin.
" 30	Halifax—Houses	Artisans' Dwellings Committee	T. H. Tyson, 11 Fountain Street, Halifax.
" 30	Longtown, Cumberland—Bridge .. .. .	.. .. .	C. B. Hodgson, Clerk, The Courts, Carlisle.
" 30	Salford, Oxon—School Buildings .. .. .	.. .. .	A. E. Mace, Clerk, Salford, Oxon.
" 31	Bury—Hospital	Health Committee	Borough Engineer, Bank Street, Bury.
" 31	Darlington—Hotel	S. Allsopp and Sons, Ltd.	G. G. Hoskins, Architect, Darlington.
" 31	Mountain Ash, Wales—Police Court	T. M. Williams, Esq.	Cook and Edwards, Masonic Buildings, Bridgend, Glam.
Aug. 1	Lurgan—Schools	Presbyterian Church Committee	H. Hobart, Architect, Dromore, County Down.
" 1	Cardiff—Office	Great Western Railway Co.	Resident Engineer, Theatre Royal Chambers, Cardiff.
" 1	Llantrisant, Wales—Alterations	School Board	J. C. Jones, St. Catherine Street, Pontyp. Idd.
" 1	Shipston-on-Stour—School Buildings	Stow-on-the-Wold Guardians	Clerk, Workhouse, Stow-on-the-Wold.
" 2	Bridgend—Additions	Great Western Railway Co.	G. K. Mills, Paddington Station, W.
" 2	Canterbury—Asylum Buildings	Visiting Committee	W. J. Jennings, 4 St. Margaret's Street, Canterbury.
" 2	Barry—Hospital	Urban District Council	J. C. Pardoe, Council Office, Holton Road, Barry, Glam.
" 2	Gravesend—Alterations	Town Council	Borough Surveyor, Town Hall, Gravesend.
" 2	Ilkley—Café	G. H. Isitt & Sons	Adkin and Hill, Prudential Buildings, Bradford.
" 2	Storrington—Repairs	School Board	E. Hammond, Rose Cottage, Storrington.
" 3	Glasgow—Offices	Parish Council	J. R. Motion, Council Chambers, 38 Cechrane Street, Glasgow.
" 4	Markethill, Ireland—Renovation .. .. .	.. .. .	J. Brown, 41 Kilmorey Street, Newry.
" 4	Bury St. Edmunds—Cottages	Electricity Supply Committee	J. O. Smith, Town Hall, Bury St. Edmunds.
" 4	Radcliffe, Lancashire—Chimney	Urban District Council	Engineer, Council Offices, Radcliffe.
" 4	Ashby-de-la-Zouch—Girls' School	Grammar School	Barrowcliff and Alcock, Architects, Loughborough.
" 8	London, E.—Boiler House, &c.	Poplar Union	Clarkson, 136 High Street, Poplar, E.
" 11	London, W.—Additions	St. Marylebone Guardians	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
" 13	London, E.—Public Library	Vestry of St. Mary, Stratford	S. B. Russell, 11 Gray's Inn Square, W.C.
" 15	Irvinestown, Ireland—Shooting Lodge .. .. .	.. .. .	T. Elliott, 37 Darling Street, Enniskillen.
ENGINEERING.			
July 27	Belper—Water Supply Works	Rural District Council	Engineer, Council Offices, Belper.
" 27	Chessington—Water Supply	Epsom Rural District Council	Council's Surveyor, Waterloo Road, Epsom.
" 27	Gartmore, Scotland—Water Supply Works	Perthshire County Council	W. R. Copland, 146 West Regent Street, Glasgow.
" 27	Sunderland—Coal Conveying Plant	Corporation	J. F. C. Snell, Dunning Street, Sunderland.
" 27	Whitby—Reservoir	Rural District Council	J. Rickinson, The Grange, Robin Hood's Bay.
" 30	Newcastle Emlyn—Reservoir	Urban District Council	T. Thomas, Terra Cotta Buildings, Newcastle Emlyn.
" 30	Redditch—Well	Urban District Council	B. Perrins, Council Offices, Redditch.
" 31	Hapton—Electric Lighting .. .. .	.. .. .	E. O'Shaughnessy, 16 Hammond Terrace, Padiham.
" 31	Melverley—Pump	School Board	The Rectory, Meverley.
Aug. 1	Aylesbury—Girder Bridges	Urban District Council	J. H. Bradford, 2 Rickford's Hill, Aylesbury.
" 1	Cowdenbeath, Scotland—Waterworks	Police Commissioners	Buchanan & Bennett, 12 Hill Street, Edinburgh.
" 1	Shipston-on-Stour—Reservoir	Rural District Council	J. E. Wilcox, Union Chambers, 63 Temple Row, Birmingham.
" 2	Southend-on-Sea—Seawater Scheme	Corporation	A. Fidler, Borough Engineer, Southend-on-Sea.
" 4	Manchester—Machinery	Sanitary Committee	City Surveyor, Town Hall, Manchester.
" 6	Plympton St. Maurice, Devon—Lighting	Parish Council	A. Folley, Clerk, Plympton St. Maurice, Devon.
" 6	Tiverton—Purification Works	Rural District Council	Cameron, Commin & Martin, 7 Bedford Circus, Exeter.
" 7	Blean, Canterbury—Waterworks	Rural District Council	H. T. Sidwell, Herne Street, near Canterbury.
" 9	Douglas—Embankment	Corporation	G. H. Hill & Sons, 3 Victoria Street, Westminster.
" 9	Grays, Essex—Electric Lighting Work	Urban District Council	Preece and Cardew, 13 Queen Anne's Gate, Westminster, S.W.
" 11	Leamington—Refuse Destructor	Corporation	W. de Normandie, Town Hall, Leamington Spa.
" 13	Salford—Cables	Corporation	Lacey, Ollreugh and Sillar, 2 Queen Anne's Gate, Westminster, S.W.
" 14	London, E.C.—Cable .. .. .	.. .. .	Clarke, Forde and Taylor, 4 Great Winchester Street, E.C.
" 18	Madrid—Electric Tramway Lines	Spanish Government	Commercial Department, Foreign Office, S.W.
" 21	Newport Pagnell, Bucks—Sewerage Works	Rural District Council	D. Balfour and Sons, 1 Victoria Street, Westminster, S.W.
" 31	Stockport—Tramcars	Tramways Committee	J. Atkinson, Borough Surveyor, Stockport.
" 28	Warsaw—Telephone Service	Russian Government	Commercial Department, Foreign Office, S.W.
Sept. 5	Lisbon—Iron Bridge .. .. .	.. .. .	Public Works Department, Lisbon.
" 8	Bradford—Refuse Destructors	Corporation	Mr. McTaggart, Corporation Depot, Hammerton Street, Bradford.
IRON AND STEEL.			
July 27	Epsom—Water Pipes	Rural District Council	W. O. Reader, Lonsdale, Epsom.
" 28	Bradford—Rails	Corporation	J. H. Cox, Town Hall, Bradford.
" 28	Darlington—Lamp Posts	Corporation	H. G. Stevenson, Town Clerk, Darlington.
Aug. 2	Valetta—Pipes .. .. .	.. .. .	Crown Agents for the Colonies, Downing Street, S.W.
Sept. 26	The Hague, Holland—Socket Pipes .. .. .	.. .. .	M. Nydoff, Nobelstreet 18, The Hague, Holland.
PAINTING AND PLUMBING.			
July 27	Devonport—Painting	School Board	Clerk, School Board Office, Ker Street, Devonport.
" 28	Glass Houghton, Yorks—Colour Washing	School Board	V. Hulme, Carlton Street, Casteleford.
" 30	Uxbridge—Painting	Urban District Council	W. L. Eves, 54 High Street, Uxbridge.
" 30	Berwick-on-Tweed—Painting	Corporation	A. Smith, Borough Treasurer, Berwick-on-Tweed.
" 30	Selby—Painting	Urban District Council	B. McG. Gray, Town Hall, Selby.
Aug. 1	Staines—Painting	Urban District Council	E. J. Barrett, Town Hall, Staines.
" 2	Stockport—Painting	General Purposes Committee	J. Atkinson, St. Petersgate, Stockport.
" 2	London, N.W.—Painting	St. Pancras Guardians	W. T. Farthing, 46 Strand, W.C.
ROADS.			
July 27	Walthamstow—Kerb	Urban District Council	E. Morley, Surveyor, Town Hall, Walthamstow.
" 28	Swinton—Tar Paving	Urban District Council	H. Entwisle, Council Offices, Swinton, near Manchester.
" 28	Dewsbury—Paving	Corporation	Borough Surveyor, Town Hall, Dewsbury.
" 28	Dewsbury—Material	Corporation	H. Dearden, Town Hall, Dewsbury.
" 30	Paul—Granite	Urban District Council	P. White, Surveyor, Council Offices, Paul.
" 31	Brockley—Kerbing and Tar Paving	Lewisham Board of Works	Surveyor, Town Hall, Catford, S.E.
" 31	Catford—Kerbing and Tar Paving	Lewisham Board of Works	Surveyor, Town Hall, Catford, S.E.
" 31	Lewisham—Kerbing and Tar Paving	Board of Works	Surveyor, Town Hall, Catford, S.E.
Aug. 1	Winchester—Granite	Rural District Council	W. D. Statham, 2 St. James' Street, Winchester.
" 2	Croydon—Making Up	Rural District Council	J. Wilson, Council Offices, Fell Road, Croydon.
" 7	Harrow—Draining and Path Work	Roxeth Burial Board	Cowell and Shaw, 49 Finsbury Pavement, E.C.
" 7	Dartmouth—Sidewalks	Urban District Council	T. O. Veale, Castle View House, Dartmouth.
" 10	Brighton—Wood Paving .. .. .	.. .. .	F. J. O. May, Town Hall, Brighton.
SANITARY.			
July 28	Beaconsfield—Sewerage Works	Urban District Council	G. H. Charsley, 11 Mackenzie Street, Slough.
" 28	Marple—Sewer	Urban District Council	Engineer, 2 Ridgfield, Manchester.
" 28	Swinton—Draining	Urban District Council	H. Entwisle, Council Offices, Swinton, near Manchester.
" 30	Whittingham, near Preston—Drainage, &c.	Lancashire Asylums Board	North-Eastern Sanitary Inspection Association, 2 Neville Street, Newcastle-on-Tyne.
July 30	Frimley—Sewerage Works	Urban District Council	W. J. Hodgson, Surveyor, High Street, Camberley.
" 30	London, N.—Sewers	Hornsey Urban District Council	E. J. Lovegrove, Council Offices, Hornsey, N.

COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
July 31	Sanitary.—Continued.		
Aug. 2	Bolton-upon-Deane, Yorks—Sewer	Urban District Council	Surveyor, Council Offices, Bolton-upon-Deane.
" 4	Leamington—Sewers	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 6	Devonport—Sewers		J. Diggle, Heywood, Lancashire.
" 4	Romford—Sewers	Urban District Council	W. Smith, 24 North Street, Romford.
" 8	Blaby—Sewerage Works	Rural District Council	J. B. Everard, 6 Millstone Lane, Leicester.
" 8	Wrexham—Sewers	Rural District Council	J. Price Evans, Engineer, Argyle Chambers, Wrexham.
Aug. 2	TIMBER.		
" 2	Harrow—Fencing	Roxeth Burial Board	Cowell and Shaw, 49 Finsbury Pavement, E.C.
" 7	London, S.E.—Deal and Batten Ends	Guardians of Greenwich Union	S. Saw, Union Offices, Greenwich, S.E.
" 7	London, S.W.—Oak Fence	Wandsworth Burial Board	T. Clouting, Town Hall, Wandsworth, S.W.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
July 31	Oheadle—Cemetery		J. H. Duckworth, Public Offices, Oheadle, Cheshire.
Aug. 1	Sunderland—Church		William Wilson, 7 Azalea Terrace, South Sunderland.
" 18	Machynlleth—Schools	£30	D. D. Williams, School Board Clerk, Machynlleth.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
" 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
" 30	Musselburgh—Town Hall	£25 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
No date.	Riviera—Villa for Sir William Ingram	£75 15s., £26 5s., £5 5s.	"Architectural Review."

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

ACREFAIR, near RUABON.—For the erection of an English Presbyterian Chapel at Acrefair, near Ruabon, North Wales. Messrs. Dalgleish & Dickens-Lewis, architects, 19 Talbot Chambers, Shrewsbury. Quantities by the architects:—
R. Hopley, Cefn .. £811 3 0 | R. Price & Son, Shrewsbury .. £770
J. Gethin, Shrewsbury .. 795 0 0 | J. T. Jones, Cefn* .. 755
* Accepted. [Architects' estimate, £750.]

FROME.—For the erection of science and art school buildings, Park Road, for the Urban District Council. Messrs. Silcock & Reay, architects, Milson Street, Bath:—
Wills & Son .. £2,895 0 0 | Long & Sons .. £2,187 0 0
Hayward & Wooster .. 2,867 0 0 | Cook & MacLean .. 2,109 18 6
Hodder & Son .. 1,727 0 0

HARPENDEN.—For the erection of a villa on Tennyson Road. Mr. Percival C. Blow, A.R.I.B.A., architect, St. Albans and Harpenden:—
Philips & Blake .. £593 | Hall .. £482
Bushell .. 520

LLANDEWLI.—For the erection of a vicarage house at Llandewli for the Rev. J. Hughes. Mr. Geo. E. Halliday, architect, Cardiff. Quantities by Mr. J. W. Rodger, 14 High Street, Cardiff:—
H. Billings .. £1,925 10 6 | W. T. Lewis .. £1,445 0 0
D. Jenkins .. 1,748 10 0 | E. A. Thomas .. 1,230 0 0
Bennett Bros. .. 1,700 0 0 | F. Gibbs, Rey-noldston* .. 1,164 7 4
Goodridge & Son .. 1,648 0 0 | * Accepted.
J. Williams .. 1,690 0 0

LLANGOLLEN (Wales).—For the erection of house and shop, for Mr. Ellis Evans. Mr. R. T. Jones, architect, Llangollen:—
T. A. Jones .. £1,096 0 0
Evans & Sons .. 1,020 0 0
J. & D. Roberts, Aberadda, Llangollen* .. 995 0 0
* Accepted.

LONDON.—For the erection of Coroner's Court, Mortuary, &c., White Hart Lane, Plumstead, for the Vestry. Mr. Frank Sumner, Engineer, Vestry Offices, Maxey Road, Plumstead:—

Coroner's Court.	Mortuary.	Disinfecting Station.	Total.
£ s. d.	£ s. d.	£ s. d.	£ s. d.
W. J. Hart, Plumstead*	2,411 15 1	1,177 9 8	6,162 11 1
E. Proctor, Woolwich	2,473 0 0	1,830 0 0	6,699 0 0
Martin, Wells & Co., Vauxhall	2,837 0 0	1,579 0 0	7,028 0 0
Thomas & Edge, Woolwich	3,100 0 0	1,900 0 0	7,900 0 0

* Patman & Fotheringham, Islington (Coroner's Court only), £2,821.
* Accepted, except for Coroner's Court, which is held in abeyance.

LONDON.—For alterations and additions to the Lager Brewery and Cannon Brewery, Tottenham. Mr. G. Banyard, architect and quantity surveyor, Gydder Street, Cambridge:—

Cold Storage.	Insulation.
Downs .. £4,160 | Taylor & Kensitt, London* .. £5,606	Dove Bros. .. 3,775 | Banyard .. £1,000
P. Banyard .. 3,630 | Taylor & Kensitt* .. 1,823	

Boundary Wall.
Downs .. £457 | Taylor & Kensitt .. £468
Dove Bros. .. 415 | Banyard, Cambridge* .. 978
* Accepted subject to reduction if old glass bottles may be used in the concrete foundations.

LUDLOW (Salop).—For Ludlow sewerage and sewage disposal. Messrs. Pollard & Tingle, engineers, 31 Old Queen Street, Westminster, S.W.:—

Sewers.	Contract No. 1.	Contract No. 2.
Ballard, Ltd.	£7,300 0 0	£3,000 0 0
Killingback & Co.	6,200 0 0	4,867 0 0
Thomas Adams	5,300 19 5	5,233 5 6
H. Williams	5,766 17 0	4,119 12 2
Thomas Harris	4,450 0 0	4,400 0 0
J. A. Ewart, Warrington	3,950 0 0	3,880 0 0
H. Roberts	4,047 6 6	5,610 0 0
[Engineers' estimate	£7,324.]	

Machinery.	Contract No. 2.	Contract No. 3.
Andrew & Co.	£1,040	Forward Engineering Co., Ltd. .. 694
Crosley Bros.	866	Campbell Gas Engine Co., Ltd., Halifax* .. 620
Flelding & Platt	852	Bird & Co. .. 605
Dunbridge Iron Works, Ltd.	846	Pollock, Whyte & Wad-dell 598
Glenfield & Kennedy, Ltd.	772	
[Engineers' estimate	£800.]	

* Accepted.

NEWMARKET.—For carrying out work in connection with the sewerage and surface-water drainage of the district of Exning, for the Newmarket Urban District Council. Messrs.

Bessley, Son & Nichols, engineers, 11 Victoria Street, Westminster, S.W.:—

G. R. Mann .. £15,749 0 0	T. Smart .. 18,769 7 2
F. W. Trimm .. 15,636 0 0	E. Powell .. 18,567 6 0
Johnson Bros. .. 15,300 0 0	J. & T. Binns .. 18,307 0 0
J. Jackson .. 14,564 0 0	Bower Bros. .. 12,999 0 0
G. Osenton .. 14,448 0 0	H. J. Linzell .. 12,937 0 0
Saunders & Co. .. 14,434 0 0	Wilkinson Bros. .. 12,500 0 0
Underwood & Bros. .. 14,210 0 0	W. Manders, Ley-ton* .. 11,882 0 0

* Accepted.

THORP PERROW (Yorkshire).—For electric light installation at Thorp Perrow, Yorkshire, for Mr. H. C. Allfrey. Mr. Morgan Williams, consulting engineer, 89 Victoria Street, Westminster, S.W.:—
J. C. Holmes & Co. .. £2,575
Ernest Scott and Mountain .. 2,501
Cox-Walkers .. (1) 2,400
(2) 2,380
Bland Bros. .. 2,380
Walker & Hutton .. 2,250
Mayor & Coulson, Glasgow .. (1) 2,031
(2) 2,030
(3) 1,935*

* Accepted.

ST. ALBANS.—For the erection of four residences on London Road, St. Albans. Mr. Percival C. Blow, A.R.I.B.A., architect, St. Albans and Harpenden:—
C. Mickin & Son .. £3,976 | E. Dunham .. £3,810
ST. ALBANS. —For the erection of two pairs of villas on Clarence Road. Mr. Percival C. Blow, A.R.I.B.A., architect, St. Albans and Harpenden:—
Whibley & Jervis .. £3,730 | Dunham .. £3,590
Bushell .. 3,644

CONTRACTS OPEN.

RUGBY URBAN DISTRICT COUNCIL.

TO IRONFOUNDERS.
The Urban District Council of Rugby invite TENDERS for SUPPLYING about 280 yards of 5in. and 860 yards of 4in. CAST-IRON WATER MAINS, together with SPECIAL CASTINGS, &c.

Specification, Form of Tender, and any other information may be obtained on application to the undersigned.

Tenders, endorsed "Water Mains," to be sent to Mr. T. M. WRATISLAW, Clerk to the Council, Windmill Lane, Rugby, on or before 1st day of AUGUST next.

The Council do not bind themselves to accept the lowest or any Tender.

By order,
D. G. MACDONALD, Assoc. M.Inst.C.E.,
Surveyor and Water Works Engineer.
Rugby, July 19th, 1900.

AWARDED 3 MEDALS

AWARDED 3 MEDALS

AWARDED 3 MEDALS

SANITARY INST. SOUTHAMPTON EXHIB. 1899

MEDAL FOR THE "CLENCHER" WASH-DOWN PEDESTAL CLOSET.

MEDAL FOR ISOLATED LATRINES. CATALOGUE FREE

MEDAL FOR THE "RAPID" SLOP-WATER CLOSET

J. DUCKETT & SON LTD. SANITARY WARE WORKS BURNLEY, LANC.

STAINES URBAN DISTRICT COUNCIL.
TO PAINTERS AND DECORATORS.

The above Council invite TENDERS for PAINTING and DECORATING the TOWN HALL. Designs and specification may be seen and further information obtained upon application to the Surveyor, at his Office, any day between the hours of ELEVEN a.m. and ONE p.m.

Tenders, under cover, endorsed "Decoration of Town Hall," to be sent to the undersigned on or before TWELVE o'clock Noon of WEDNESDAY, the 1st AUGUST, 1900.

The Council do not bind themselves to accept the lowest or any Tender.

E. J. BARRETT.

Assoc. M.Inst.C.E.,
Surveyor to the Council.

Town Hall, Staines,
July 12th, 1900.

LEYTON URBAN DISTRICT COUNCIL.
TO CONTRACTORS AND OTHERS.
PUBLIC STREET WORKS.

The Leyton Urban District Council invite TENDERS for PAVING, KERBING, &c., portions of Lea Bridge Road and Ruckholt Road. The paths are to be paved with Patent Indurated and Patent Adamant Stone.

Specification, quantities, and form of Tender may be obtained on application to Mr. WILLIAM DAWSON, M.Inst.C.E., the Council's Surveyor, at his Offices, Town Hall, Leyton, between the hours of TEN and FOUR (Saturdays, TEN and TWELVE), upon payment of One Guinea, to be returned on receipt of a bona-fide Tender.

Sealed Tenders, in special endorsed envelopes supplied with the forms, accompanied by a £10 Bank of England note to be enclosed with the Tender, and forfeited if the Tender is withdrawn before the contract is signed, must be delivered at the meeting of the Council to be held on Tuesday, the 31st day of July 1900, at the Town Hall, Leyton, at SEVEN o'clock p.m.

The Council does not bind itself to accept the lowest or any Tender.

Sureties will be required for the due performance of the contract.

R. VINCENT,

Clerk to the Council.

Town Hall, Leyton,
July 1900.

LEYTON URBAN DISTRICT COUNCIL.
TO CONTRACTORS AND OTHERS.
PRIVATE STREET WORKS.

The Leyton Urban District Council invite TENDERS for MAKING-UP, PAVING, and KERBING, certain PRIVATE STREETS within their district. The paths are to be paved with Patent Indurated and Patent Adamant Stone.

Specification, quantities, and form of Tender may be obtained on application to Mr. WILLIAM DAWSON, M.Inst.C.E., the Council's Surveyor, at his Offices, Town Hall, Leyton, between the hours of TEN and FOUR (Saturdays, TEN and TWELVE), upon payment of One Guinea, to be returned on receipt of bona-fide Tender.

Sealed Tenders, in special endorsed envelopes supplied with the forms, accompanied by a £10 Bank of England note to be enclosed with the Tender, and forfeited if the Tender is withdrawn before the contract is signed, must be delivered at the meeting of the Council to be held on TUESDAY, the 31st day of JULY 1900, at the Town Hall, Leyton, at SEVEN o'clock p.m.

The Council does not bind itself to accept the lowest or any Tender.

Sureties will be required for the due performance of the contract.

R. VINCENT,

Clerk to the Council.

Town Hall, Leyton,
July 1900.

TO BUILDERS.

The Governors of the Ashby-de-la-Zouch Grammar School invite TENDERS for the ERECTION of GIRLS' SCHOOL for 200 pupils, with Head Mistress's House to accommodate 50 boarders.

Plans and specification may be seen, and lithographed copy of quantities obtained, upon application to Messrs. BARROWCLIFFE and ALLCOCK, Architects, Loughborough, up to SATURDAY, JULY 28th, accompanied by a deposit of Two Guineas, which will be returned upon receipt of a bona-fide Tender.

Tenders, endorsed "Tender for New Girls' School," must be delivered at our Office not later than TWO p.m. on SATURDAY, AUGUST 4th next.

JOHN GERMAN and SON,

Clerks to the Governors.

Ashby-de-la-Zouch,
July 17th, 1900.

PARISH of ST. PANCRAS, LONDON.

LEAVESDEN SCHOOLS, near WATFORD, HERTS.

The Guardians of the Poor of the Parish of St. Pancras invite TENDERS for proposed PAINTING, DISTEMPERING, and other REPAIRS at the above Schools.

The specification and form of Tender can be obtained at the Offices of the Surveyor, Mr. W. T. FARTHING, 46 Strand, W.C., between the hours of TEN and FOUR, upon depositing the sum of Two Guineas, which will be returned to the depositor if he sends in a bona-fide Tender in accordance with the terms of this advertisement.

The Tender must be accompanied by the summary fully priced, and no Tender will be considered unless so accompanied.

Tenders, which will be received and considered only on the printed form, which must not be varied, must be sealed and endorsed "Tender for Painting, &c., Leavesden Schools," and are to be addressed to the undersigned and delivered at the Vestry Hall, Pancras Road, N.W., not later than TWELVE o'clock on THURSDAY, the 2nd AUGUST 1900.

The Guardians do not bind themselves to accept the lowest or any Tender.

ALFRED A. MILLWARD,

Clerk to the Guardians.

Vestry Hall,
Pancras Road, N.W.,
July 1900.

TO PLASTERERS.

The Commissioners of H.M. Works and Public Buildings are prepared to receive TENDERS for the PLASTERING WORK at the Patent Office Extension (Library Block).

(1) On the basis of the specification.

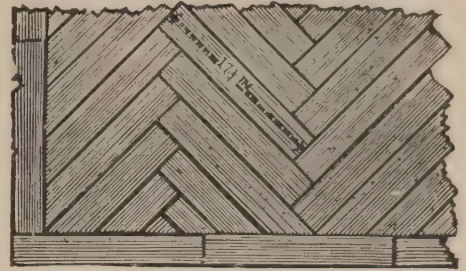
(2) Alternatively—substituting Granite Silicon Plaster. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to Mr. HENRY TANNER, at this Office.

Bills of quantities have been prepared for the use of plasterers by Messrs. WELCH and ATKINSON, of 10 Lancaster Place, Strand, and Messrs. FRANKLIN and ANDREWS, of 25 Ludgate Hill, and together with forms of Tender may be obtained at this office on payment of One Guinea. The sums so paid will be returned to those persons who send in Tenders in conformity with the conditions specified below.

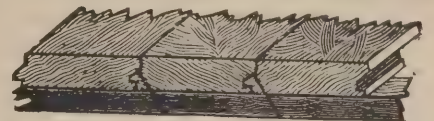
The Commissioners do not hold themselves responsible for the accuracy of the quantities, nor do they bind themselves to accept the lowest or any Tender.

Tenders are to be delivered before TWELVE o'clock noon on FRIDAY, the 3rd of AUGUST, addressed to the Secretary, H.M. Office of Works, &c., London, S.W., and endorsed "Tenders for Plasterers' Work, Patent Office."

H.M. Office of Works, &c.,
Storey's Gate, S.W.,
July 1900.

FLOORING BLOCKS.

Per 100 Blocks out of sizes.	YELLOW		PITCH PINE
	At Wharf.	ex Ship within one month.	At Wharf.
17½ × 3 × 3	13 8	12 9	20 0
17½ × 3 × 2	8 11	8 2	14 6
17½ × 3 × 1½	6 10	6 3	10 9

**PRIME DRY OAK & PITCH PINE FLOORING,**

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1½ × 4½ Oak, 56/9 Pitch Pine, 29/- per square
1 × 4½ " 45/6 " 25/6 "

These prices include desiccation.

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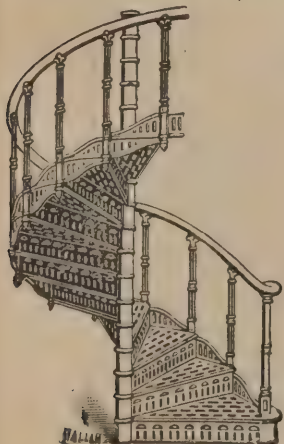
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General Wrought & Cast Iron Work

LARGE SHOWROOMS AT

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PARISH of ST. MARY, STRATFORD, BOW, LONDON, E.

TENDERS FOR PUBLIC LIBRARY.

The Vestry of the above-named Parish is prepared to receive TENDERS for the ERECTION of a PUBLIC LIBRARY in Roman Road, Bow, E.

Persons desirous of Tendering are requested to send their names to the undersigned not later than 31st JULY next, together with a deposit of a Bank of England note for £10, which will be returned after the Tenders have been considered by the Vestry, and provided the Tender is bona-fide and has not been withdrawn.

To each person making such deposit will be sent a copy of the bills of quantities and form of Tender prepared by Messrs. YOUNG and BROWN, Quantity Surveyors, 7 Southampton Street, Bloomsbury Square, W.C.

The plans, specifications, and conditions of contract may be seen at the offices of the "Architect," Mr. S. B. RUSSELL, 11 Gray's Inn Square, London, W.C., between the hours of TEN a.m. and FOUR p.m. on any week-day.

Sealed Tenders to be enclosed in endorsed envelopes supplied with the forms and to be delivered at my Office not later than TWELVE noon on the 13th AUGUST, 1900.

The contractor whose Tender is accepted, and with whom a contract is entered into, will be required to enter into a bond with sureties for the due performance of the contract, and he will also be required to pay the whole of his workmen such rates of wages and observe such hours of labour as are recognised by the workmen's trades-unions and in force at the signing of the contract.

In the event of any breach of such agreement the Vestry will enforce the penalty clause.

The Vestry do not bind themselves to accept the lowest or any Tender.

By order of the Vestry,
FRANCIS KNIBBS,
Vestry Clerk.

Bow Vestry Hall, Bow, E.
July 1900.

SLATES.

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M. E. MORRIS, SLATE MERCHANT,
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Apply for Prices Delivered at Destination.

POPLAR UNION.

TO CONTRACTORS.

The Guardians of the Poor of the Poplar Union are prepared to receive TENDERS for the ERECTION of a BOILER HOUSE and CHIMNEY SHAFT, PUMP and ENGINE ROOMS, and other buildings, at the Workhouse, High Street, Poplar, E.

The drawings can be seen and a copy of the bills of quantities obtained on and after THURSDAY, the 26th inst., between the hours of TEN a.m. and FOUR p.m., at the Offices of the Architects, Messrs. CLARKSON, 136 High Street, Poplar, on payment of Five Guineas, which will be returned on receipt of a bona-fide Tender.

Tenders, upon forms which will be supplied, must be delivered at the Union Offices, 45 Upper North Street, Poplar, before SIX p.m. on WEDNESDAY, the 8th day of AUGUST next, when they will be opened at a meeting of the Guardians.

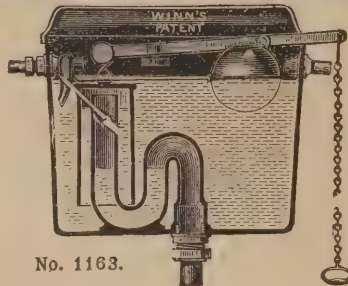
The Guardians do not bind themselves to accept the lowest or any tender.

G. HERBERT LOUGH,

Clerk to the Guardians.

Union Offices,
No. 45 Upper North Street,
Poplar, E.
July 1900.

WINN'S PATENT "ACME" SYPHON CISTERN.



No. 1163.

100,000 SOLD.

PRICE LIST—As drawn, 18s.; Galvanised, 26s.

CHARLES WINN & CO., BIRMINGHAM.

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TO BUILDERS.

The Guardians of the Parish of St. Marylebone desire to receive TENDERS for the ERECTION of a NEW MALE ABLE-BODIED BLOCK at their Workhouse, Northumberland Street, W.

Persons desiring to Tender may obtain bills of quantities and form of Tender, and inspect the specification and drawings, up to July 28th, between the hours of TEN a.m. and FOUR p.m. (SATURDAY till ONE p.m.), upon application to the Guardians' Architect, Mr. A. SAXON SNELL, F.R.I.B.A., of 22 Southampton Buildings, Chancery Lane, W.C., and depositing with him a £10 Bank of England Note, which will be returned to persons sending bona-fide Tenders in the manner and at the time stipulated.

Quantities by Messrs. NORTHCROFT, SON & NEIGHBOUR.

Tenders must be signed, sealed, and endorsed "Tender for Male Able-Bodied Block," and addressed and delivered to me at my Offices not later than ONE o'clock p.m. on SATURDAY, AUGUST 11th, 1900.

The Guardians do not bind themselves to accept the lowest or any Tender.

By order,

HENRY T. DUDMAN,

Clerk to the Board of Guardians.

Guardians' Offices,
Northumberland Street, W.
July 1900.

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GLAZED BRICKS,
SANITARY PIPES.

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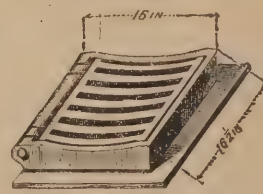
CAST IRON COLUMN.

No. 35C.

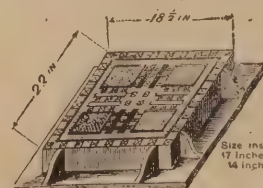


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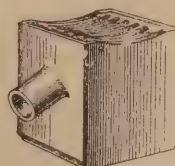
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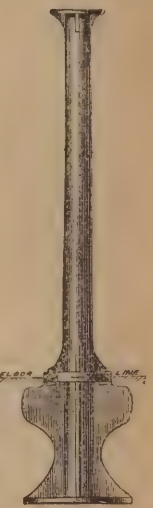


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AUGUST 1, 1900.
No. CCLXXXV

EFFINGHAM HOUSE,
ARUNDEL STREET,
STRAND, W.C.

An Architectural Causerie.

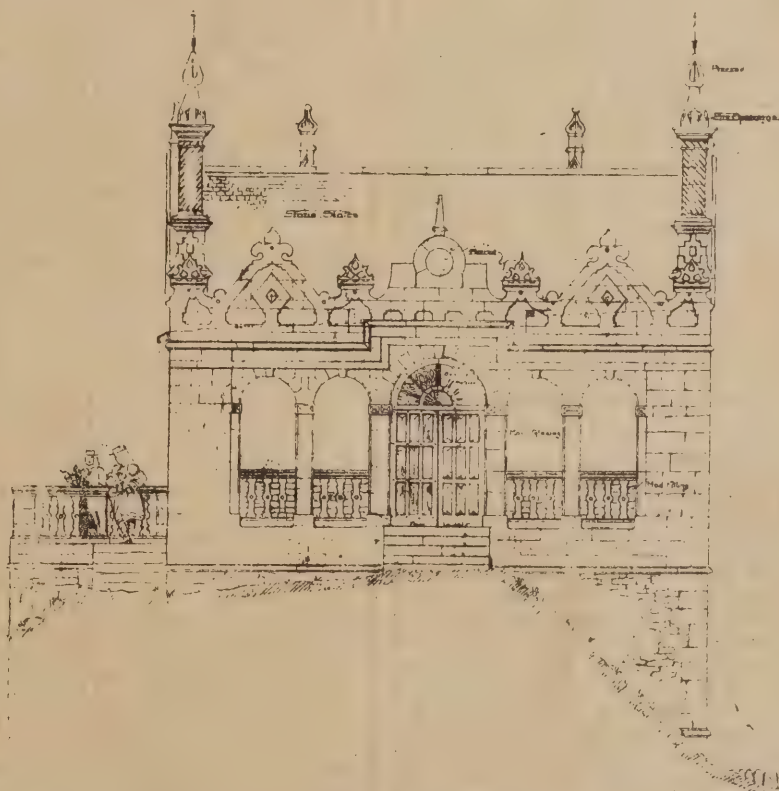
Students' Work at South Kensington.

THE National Competition this year appears to be about on the level of the last few years. In a few

classes the works are of considerable excellence, but for the most part the designs are marked by the same mannerism which has now been common for several years, a mannerism which exaggerates the value of quaintness of line with a resultant thinness, and almost ignores the equally important consideration of design in mass, without the use of which dignity cannot be obtained. Another general defect is the fondness for perpendicular and horizontal lines or divisions in the designs, a device which is occasionally effective, but which soon palls. The colour is as often good and sometimes even striking, as should be the case in the work of a nation which certainly possesses the gift of colour, whatever its shortcomings may be. The effect of a repeat from a little distance has rarely been realised by the students, and many fillings are quite useless from a commercial point of view because of the distracting and unexpected general forms which appear as one retires from them. Several in which human figures are very prominent are naturally failures, the repetition of a figure with the same gesture at intervals over a surface being unpleasant and even sometimes appearing foolish. Among the architectural designs there is but one which is satisfactory, though there are several very ambitious things, crammed with elaborate ornamental design. The proportions are generally unsatisfactory, a failing which is not confined to the architectural designs. See, for instance, the metal work, where again the determination to introduce the figure leads sometimes to rather surprising results. In this class, however, there are some very tolerable designs, especially among the modelled work and the designs for jewellery, in which the mingling of enamels, metal and precious stones is often very well managed. Some of the designs sent from Birmingham, with worked out specimens attached, give hope that the commercial jewellery to which we are accustomed may in time give place to something better worth buying. The leather work also is pleasant and effective. The strong tendency towards "L'Art Nouveau," which is often offensive in design for other materials, is not so objectionable in this, nor in lace and damask, in which, indeed, the long thready lines are often really effective. In lace the process of reproduction is so abstract that great range of subject as suggestion lies open for the choice of the designer, and the designs shown are for the most part good. The same remark applies in a less degree to white damask, and in this class also many of the designs are good. The embroidery is occa-

sionally good in colour, but almost always over-fantastic in design. A few of the printed hangings are good, but most of them err in the directions indicated already. The tiles are tolerable, and so are a few of the pottery designs. The stained glass is pictorial in composition for the most part, though the latest fads in the way of cutting and leaving out painting have been caught up, and in several cases the mullions cut across figures quite in the bad old way. This imitation of modernity is indeed characteristic of most of the designs shown in every class, and one would like to suggest to both students and masters that imitation is equally bad whether the thing imitated be new or old fashioned, and that what is wanted is really original thought. The posters are particularly open to this objection, though several of them are clever. The designs for book illustration are also very mannered and restricted in scope, though often clever, but one set at least is not admirable even on the accepted lines. An instance of unsuitable application of material

and well balanced, and no doubt, when the cartoons are drawn full size, these defects will be remedied. The section of architectural drawing from measurements, a very useful section, contains some good and interesting drawings, and the drawings of birds treated for design are good, while those of plants vary in excellence, some being mere labour without intelligence: the work from the figure, both antique and life, is about up to the usual level, but what good purpose can be served by the elaborately shaded drawings of arrangements of drapery? These would be more useful painted or drawn in a more rapid way, special studies being made of details not well understood. The modelled work is much of it very tolerable, particularly the designs in flat relief, while the figures executed under M. Lanteri are many of them beautiful in pose and rendered with feeling and intelligence. The Examples of Local Personal Examinations are not encouraging. In the "Glass for a Library Window" one design is prettily arranged. The sign "The Robin Hood" is the best of the set, where



EAST PAVILION, CAMPDEN HOUSE, CHIPPING CAMPDEN,
GLOUCESTERSHIRE. DRAWN BY PERCY D. SMITH.

is afforded by some book covers ornamented with gesso—a purpose to which it is quite inapplicable, inasmuch as a book is an object which would be continually handled. One is glad to see pieces of woven stuffs and squared drawings for textiles, but it is noticeable that the highest award to such practical exhibits consists of a silver medal, while gold medals have been awarded to eccentric drawings which can scarcely be considered equally practical, and which are not always better from the point of view of design. Of nine gold medals awarded in general competition four are given to printed or stencilled fabric and one to embroidery, which seems unduly favouring design of this sort at the expense of other forms not less important. One may congratulate the winner of the gold medal on the thoughtful scheme of decoration for the entrance hall of the Polytechnic, Regent Street, especially if the design is to be carried out, as is suggested. The background is rather dark for any place not exceptionally well lighted, and even on the present scale the surfaces of drapery, &c., are rather empty, but the grouping is pleasing

three out of four designs are fairly good in one way or another; but the modelling for honours, "A Chimney-piece and Overmantel," shows faulty proportion and misunderstanding of structural requirements in every design, though the figure panels are pretty. An examination of the list of prize-winners reveals some curious facts. Of the gold medallists four take national book prizes for similar forms of design to those so highly premiated. Nine of the silver medallists take bronze medals also, and two take book prizes in addition, while nine others take book prizes. Among the bronze medallists fifty book prizes are awarded. Out of eight bronze medals awarded to one school five are gained by one student, and in the same school five book prizes are gained by two other young ladies of the same name. In another school one student takes two bronze medals and three book prizes, and another one silver medal and three book prizes; while no less than 315 prizes of different sorts are distributed between eight schools, not counting South Kensington, which naturally comes in for a shower of honours amounting to 258. S. S. G.

"Tin Tabernacles" and the Brick-makers.

THE letting by the War Office of contracts to the amount of over a hundred and sixty thousand pounds, for galvanised iron barracks to be erected on Salisbury Plain, is a sign of the times which, taken in conjunction with many other similar contracts for public and private work, may well give the brickmakers food for reflection. For the last few years the brickmaker has been regarded as the spoiled child of fortune among the building trade's manufacturers, and not without reason. Great railway and other engineering works have been in progress, and house-building in these latter days of unexampled prosperity has proceeded in wholesale fashion, to the end that bricks of every kind, from the hard "blue Staffordshire," greatly in vogue for engineering works, to the soft "red rubbers" for delicate enrichments, have sold at greatly enhanced prices; while "stock" and "place" bricks, although turned out in these times in such enormous quantities by keenly competitive firms, have not infrequently been practically unobtainable, even at twice or almost three times their normal value. Happy have been those builders who have had contracts with brickmakers and doleful the condition of the small speculative man who, working on a small margin of profit at the best of times and always with insufficient capital, has had to endure long waits for his bricks and then to pay extravagantly for them. The brickmakers who had not contracted to supply for long periods at current prices before the boom set in have been for some time past engaged in reaping a very fine harvest. Others have embarked on still larger enterprises; while the rumour of fortunes to be made in brickmaking has induced outsiders to sink much money in the industry. Indeed, there has been something very much like a gamble in bricks, and it is an apposite question whether, after all, the boom has meant prosperity at large to brickmaking firms. We know that it has been the last straw that has broken the heavily-burdened back of many a small speculative builder of suburban villas, whose career is not at the best of times a rose-strewn path; but is it not likely that in the over-production and over-much competition of late the long-suffering man is going to get his own back, in the shape of stock-bricks at very low prices? Of course, not even so large a contract as that just entered upon for iron barracks really means much to the brick-making industry at large; but when we come to consider that this is only one of many similar contracts, large and small, and when we find local authorities strongly in favour of corrugated galvanised iron for hospitals and other public uses, the conclusion cannot but be arrived at that the pinch must needs be felt somewhere before very long. Then the reverse side of the boom will be revealed and the folly of arguing a continued from a temporary inflation will be made manifest alike to those who have enormously increased their responsibilities and to those who have entered upon brickmaking at the top of the demand and cannot start their output until prices begin to be on the down grade. Whether we like it or not, the iron building has evidently come to stay, just as the temporary "tin tabernacles" of the various religious bodies have proved more permanent than one could wish. Perhaps, though, in any great slump in bricks, the position will be again reversed and brick buildings prove cheaper than iron. They will, however, naturally enough, never be so readily put together or taken apart as iron buildings, and not alone for barrack-huts or for hospitals (where doctors believe in them for obvious sanitary reasons), but also for temporary holiday cottages and numerous other uses, light iron structures have an assured and constant use.

C. G. H.

On Reflection.

The "Methodist Times" and Restoration.

WE commented recently upon a remarkable proposal by the Rev. Hugh Price Hughes that a certain millionaire acquaintance of his should relieve himself of some of his embarrassing wealth by restoring the Acropolis at Athens. Mr. Hughes invited criticism upon his scheme, and, taking him at his word, we pointed out its uselessness from an artistic and educational point of view, its bad taste, and its obvious absurdity if carried to a logical extreme. The "Methodist Times," Mr. Price Hughes' organ, is not pleased with our criticism, in which it detects the vices of ignorance, prejudice, and anonymity; and the anonymous writer of its note on the subject specially objects to our saying that the rebuilding from the original materials of a small temple on the Acropolis, which took place some years ago, is a very different matter from the restoration which Mr. Hughes contemplates. "As a matter of fact," says our contemporary, "it is not a very different matter, but precisely the same matter." Now, no one who reads Mr. Hughes' article could doubt that the restoration he contemplates is something much more thorough and drastic than the re-erection of the broken pieces that are lying about the Acropolis. It is to be a rebuilding with new material, it is to cost a million pounds, and is to result in as close a replica of the Acropolis in the days of its first splendour as can possibly be obtained. We have no objection to the preservation of a building which is falling into decay; on the contrary, we welcome it, and we are not pedantic enough to object to the modicum of new work absolutely necessary to arrest the process of destruction. It is to the restoration of that which the ravages of Time or War have destroyed that we take exception. And the inability of the writer in the "Methodist Times" to see any difference between the two processes does not alter the fact that they are as different as truth and falsehood, reverence and contempt. There is another point which those who talk lightly of restoring the Acropolis do not perhaps appreciate. Do they really know what the buildings on the Acropolis were like? There is much disagreement among the best authorities on many points, and much of the new work would be purely conjectural. Again, do they propose to instruct English workmen in Greek methods of building, or is it proposed to attempt to reach the Greek result by modern English methods? But there are no end to the difficulties that would arise. The only safe plan is to preserve carefully what exists, but not attempt to copy that which belongs to a past age.

The Westminster Improvement.

THE London County Council has accepted the amendments of the Lords to the Westminster Improvement Scheme. True, this desirable result was not accomplished without a display of unreasoning and petulant prejudice on the part of some members against the House of Lords; but that it was accepted at all is a sign of grace for which one should be thankful. There is a disposition on the part of some members to imagine that all opposition to their schemes is the opposition of interested parties with vested interests. It does not seem to occur to them that there is, possibly, a better way of doing the same work, and that suggestions or amendments are brought forward to give effect to a better method. The L.C.C. was very sore over the opposition to its Welsh Water Scheme; but its rejection was due rather to serious faults in the scheme itself than the perfectly

natural opposition of the water companies to extinction without compensation. In the case of the Westminster Scheme one can say that all's well that ends well, and to Mr. John Burns much of the credit is due for this happy result, for he appears to have enlightened some very ignorant members of his following concerning their own property. Consequently we shall have a really artistic improvement where it is much needed, and one which will improve the approach to our national Parliament building, as much as it ever can be improved, for it becomes more and more apparent every year that the building of the Houses of Parliament in their present situation was a gigantic blunder, and though from the river the block may look well enough, the building is in a hole on the land side and the entrance is mean and undignified. Any scheme that will mitigate this great defect is therefore doubly welcome.

London Scavenging.

THE removal of house refuse and the cleansing of the streets are two sanitary matters that occupied a large space in last week's London dailies. Our contemporaries generally complain of the practice of putting out refuse bins, &c., on the pavement for the dustman to collect, on the ground that disease germs are communicated to passers-by and that much of the refuse is decaying and creates a stench. Now it is not so long ago that the L.C.C. adopted this criticised system on sanitary grounds, and the Press hailed the new order of things as a distinct advance in sanitary science. And if refuse can become so offensive in less than 24 hours, it stands to reason that the Council was right in insisting that it should be disposed of daily, and if we revert to the old backyard order of things, not only will a large amount of refuse remain uncollected, but the work of collection will be immeasurably prolonged. We can see nothing wrong with the system, and it is the most sanitary that could be devised. Certainly the Council could and should issue stronger regulations about proper covered metal bins, because the majority of the receptacles are merely wooden boxes in a filthy and insanitary condition. Any defect in the system seems to us to be in the collecting, and in the majority of parishes there are neither sufficient carts nor men for the work. We suggest that each parish should keep a list of the restaurants and eating houses in its jurisdiction and that the proprietors of these places be required to deliver up their refuse two or three times a day, or to put it out when they close at midnight, so that it can be collected in the night. The stench arising when the refuse is collected from the Strand restaurants about 9.30 in the morning is perfectly nauseating. We would also suggest that the bins after being emptied should be dusted inside with some powder disinfectant. When our contemporaries come to the question of street scavenging they are on safer ground, for in the majority of London parishes it is practically neglected. Only one body, the Strand Board, deals with the matter in a proper manner. To see Covent Garden Market and all the streets leading thereto at 9 o'clock in the morning and again at 1 o'clock in the afternoon would be a revelation to some people concerning the work accomplished by this Board. But if other districts are not properly scavenged the public should heckle the authorities and not write to the papers. Every paving material at present in use has one if not two serious drawbacks, and there is no use whining about it. You cannot eat your cake and have it. Until the perfect paving appears every ratepayer should see that his Board or Vestry carries out the principal work which it was elected to deal with, and if he neglects to do so he deserves to suffer.



THE ARCH OF TITUS, ROME.

SOME ANCIENT ROMAN MONUMENTS.

ROME, the Eternal City, is a city of inexhaustible interest. The historian, the antiquary, the man of letters, the artist, the architect alike recognise the fascination of this wonderful city, and even the ordinary tourist—unless he be a very strangely constituted person indeed—can hardly fail to find a visit to Rome a memorable and impressive experience. In the following brief notes no attempt is made at anything like a comprehensive survey of the objects of architectural interest which the visitor encounters on every hand; our object is merely to give a few particulars of the famous and interesting examples of ancient Roman art shown in our illustrations.

The triumphal arches of Rome were at one time very numerous; in the later years of the Empire there were nearly forty, but only about a dozen now remain. First in importance is the Arch of Titus, which stands at the highest point of the Sacra Via. It was erected by the Senate, as we learn from the inscription at the top, to commemorate the taking of Jerusalem in the year 70 A.D. The style is that prevalent in the time of Domitian, with a superabundance of carving in the architectural lines. Only part of the arch as it is seen to-day is the original structure; the rest is a modern restoration, built to hold the arch together. In the twelfth and thirteenth centuries this arch had been made by the powerful family of the Frangipani the nucleus of a hideous castellated fort from which they carried on incessant warfare with their neighbours, while the lofty dwelling-house erected on the arch itself had crushed it down. To ensure its safety after the demolition of the later structures by which it was partly supported Giuseppe Valadier took down the whole structure piece by piece in 1822, strengthened the foundations and reconstructed it in its present form. Travertine was the material employed for the new work, which is thus easily distinguishable from the old, which is in Pentelic marble. This travertine (*lapis Tiburtinus*) was much used as a building material in ancient Rome. It is a pure, hard carbonate of lime, of a creamy white colour, deposited from running or dripping water. It is a good weather-stone, but is soon calcined by fire. The Arch of Titus is interesting architecturally as being the earliest known example of the Composite order.

The bas-reliefs on the side of the arch are of exceptional interest. In the one on the left Titus is shown returning from battle in triumph in a four-horse chariot, the reins borne by a female

figure representing Rome. He is surrounded by his victorious army, while the captive Jewish priests and generals are dragged in chains at his wheels. In the other bas-relief the Jewish captives are seen bearing the spoils from Jerusalem, and among them the famous Golden Candlestick of the Temple. On the right can also be seen the table of Shew Bread and the Sacred Trumpets. The half arch at the extreme right is intended to represent the Temple itself tottering to ruin. Near it is a group of captives. These relics were deposited in the Temple of Peace in A.D. 75, five years after the conquest of Judæa, together with a collection of works of art: but what became of them eventually is unknown.

The Arch of Constantine was erected in A.D. 315 to commemorate the victories of Constantine, the first Christian Emperor. Art in those days was at its lowest ebb, and in the dearth of creative talent recourse was had to stealing from existing monuments. The greater part of the entablature, the eight columns, the eight medallions and the statues of the Dacian kings were taken from a triumphal arch of Trajan which spanned the Via Appia. The inside of the structure is built with a great variety of materials taken from other monuments; the bricks alone are contemporary with Constantine. The arch was restored in 1731 under the direction of Alessandro Capponi, whose restoration seems to have been of a very drastic character, inasmuch as he replaced a missing column and the heads of several statues which had been removed.

Another arch of which we give an illustration was that of Drusus, which was erected by decree of the Senate in honour of the father of the Emperor Claudius. It was built of African marble. Caracalla, at a later date, barbarously took advantage of it to carry across the Appian Way the aqueduct which supplied his palace with water. The remains of this aqueduct can still be seen in the somewhat unsightly mass of brickwork on the top of the arch.

Ancient Rome must have been marvellously rich in statuary, though the great bulk of it

has now disappeared. We illustrate one or two of the more famous examples which still remain. The statue of the dying gladiator is one of the best known. It was this statue which inspired Byron's famous lines beginning:

"I see before me the gladiator lie,
He leans upon his hand, his manly brow
Consents to death, but conquers agony."

The Laocoon statue is another famous group. It stood in the palace of the Emperor Titus and was spoken of by Pliny as superior to all other works both of painting and statuary. The story it depicts is the familiar one related in the Second Book of the "*Æneid*"—of the priest



STATUE OF MARCUS AURELIUS.

of Troy wrestling with the serpent sent by Apollo to devour him and his sons. The whole group—the father, the sons, and the awful folds of the serpent—were hewn out of a single block by three Rhodian sculptors—a father and his two sons—a touching analogy between the authors and their work. This splendid work of art narrowly escaped destruction: it was dug up in 1506 in the Vineyard of Felice de Fredis where it had been buried.

The statue of Marcus Aurelius, who became Emperor in A.D. 161, is one of the most perfect ancient equestrian statues in existence. It is



THE ARCH OF TITUS: THE CHARIOT.



THE ARCH OF TITUS: RELIEF OF THE GOLDEN CANDLESTICK.

the only survival of a great number of bronze statues which once adorned the city; the rest—it is surmised—have been at one time or another melted down into coin by impecunious vandals. It stood in the Lateran during the Middle Ages and was then supposed to represent the first Christian Emperor, Constantine. It is perhaps to this accident that its escape from destruction is due. This statue was greatly admired by Michael Angelo, and Hawthorne remarks that "the aspect of dignity, as it were, clothes the figure with an imperial robe of light. It is the most majestic representation of the kingly character that the world has ever seen. He stretches forth his hand with an air of proud magnificence and unlimited authority, as if uttering a decree from which no appeal was permissible, but in which the obedient subject would find his highest interests consulted—a command that was in itself a benediction." During the rejoicings on the occasion of the elevation to the Tribuneship in 1347 of Rienzi—the last of the Roman Tribunes—one of the nostrils of the statue was made to flow with wine and the other with water.

The statue of St. Cecilia is one of more recent date. It was sculptured in the sixteenth century, when the tomb of the saint, who was martyred in the year 224, was opened. But our concern in these brief notes is mainly with the monuments of ancient Rome. Apart from these there is, of course, a great amount of mediæval art work—paintings, sculpture, and architecture—which is of the greatest possible interest, but the consideration of these would demand a separate article—or rather many articles—and is beyond the scope of our present purpose.

New Premises of the Empress Club.

So great has been the success of the Empress Club, founded in commemoration of the 60th year of the reign of Queen Victoria, that an entirely new and imposing building has been erected two doors from the original premises in Dover Street, Piccadilly, to provide extended accommodation for the 3,000 lady members of which the club consists. This seven-storey building, which has cost £40,000 to erect from the designs of Messrs. T. J. Wimperis and Arber, and many thousands of pounds to furnish, was informally opened last Wednesday. There is a stately reception hall, a Louis XV. drawing-room, a Georgian guests' dining-room, luxurious reading and "At Home" rooms. The club premises, set aside for members only, are on the first floor, where there are three drawing-rooms, one of which is placed at the disposal of those members wishing to give private parties, and a large dining-room. On the same level is a terrace garden. Bed-rooms occupy the upper part of the building, which is well fitted with lifts.

THE PARIS EXHIBITION.

By F. HAMILTON JACKSON.

I.—THE BUILDINGS.

THE EXHIBITION is so vast that it is almost impossible to grasp even the most salient points without a lengthened stay in Paris, and many visits. To merely walk from the Champ-de-Mars entrance up to the Trocadero, turn to the right, through Vieux Paris, and along the Cours la Reine, called the Rue de Paris, to the great and little palaces, across the Pont Alexandre III. to the Invalides entrance, returning on the other side of the Seine through the Rue des Nations, with the pavilions of the various countries and that of the Armies of Land and Sea, entails a journey of several miles, without making any of those détours which can hardly be resisted to see objects which appear a little way off down side openings. It is not a commercial success, owing perhaps partly to the insults which the French caricaturists showered upon Her Majesty and to the sympathy which the French

press showed for the Boers, which have prevented many English and Americans from visiting it and spending their money in Paris; and I am told by those who have carefully examined the exhibits that from the point of view of manufactures it is not a success also; but, thank Heaven, I have nothing to do with that! It is a most interesting Exhibition, however, for anyone who is interested in architecture and decoration. Apart from the intentional decoration of the architectural palaces, one finds everywhere reproductions and reductions of historical buildings. Many of the exhibitors, instead of erecting the sort of stand to which we have been accustomed in England, have housed their exhibits in an architectural framing made to imitate houses, churches, colonnades, cloisters, &c., and they are so ingeniously made to imitate stone by colouring the plaster and imitating its texture that, at first, one is almost deceived into thinking that they are real buildings. The deception reaches its height in the Rue des Nations and Vieux Paris, in which texture and the effects of age are so well imitated that it is only the surroundings which strike a discordant note and make one certain that it is but an imitation—in fact, the imitation of ancient buildings in plaster has become a fine art, and if the reproach may be thrown at it that it is but the art of the theatre *in excelsis*, after all the greater part of the Exhibition is on the same footing, so that it is quite in keeping. Notwithstanding, the general effect of the white buildings, with their modelled decoration recalling the bride cake, is most attractive, lighted by the brilliant sun, which throws such beautiful reflections into the blue shadows, and relieved with touches of pure colour here and there, while against the evening sky the buildings show almost like fairy palaces built of opal or mother-of-pearl; a fairy dream, if one could shut one's ears to the Batel of human sounds and the snorts and groans of the motor-cars, the omnibuses and the steam trams, or rather street railways, for there are often three or four carriages of two storeys in the trains. The most important erections are the Grand Palais, the Petit Palais, and the Pont Alexandre III., which are intended to be permanent. The unsatisfactory thing about the great palace is the appearance of the roof above the colonnade, making it evident that this fine row of columns with its effective angle pavilions and imposing central portico is but a screen to hide the real construction. The interior is exceedingly fine and spacious, and quite simply constructional, the large girders sweeping across the vast space with something



THE ARCH OF CONSTANTINE.

of the grandeur of the curves of the lowest stage of the Eiffel Tower. The colour, too, is exceedingly pleasant, and the lighting of the miles of galleries is on the whole well managed, a few dark places being left in which to hide some of the bogies which seem to always turn up in picture exhibitions. The most successful of the foreign galleries in point of decoration are those of Germany and Austria. The latter country is rather too much bitten by L'Art Nouveau to be quite successful in design, nor is Germany altogether free of the taint, but both in the Court in the right wing of the Invalides Palace and here in the section of Fine Arts this country may be congratulated on the imposing arrangements which she has adopted. The gem of the palace, however, is the oval hall and great stairs which rise from it to right and left at the entrance from the Avenue d'Antin. It gives one an impression of rococo, though a great deal of the modelled detail is supposed to be of natural forms, and the projection of the ornament does not appear too great, as is the case with a great deal of that used in different parts of the Exhibition, which is partly owing to the knowing use of green glass to subdue the light from above. Steps rise from the rotunda to the level from which the stairs start, and a gallery runs round on that level except at the entrance, balustraded in front of the corner recesses, and with grey granite pillars supporting the back wall opposite the entrance and the stairs. Another gallery runs right round above, with a railing painted green and picked out with gold. The pilasters all round are filled in with polished yellow-green marble, upon which are placed ornaments of plaster gilded, the whole effect being very harmonious, whether viewed from the upper floor looking across from one staircase to another, in which case the lower and greener tone contrasts pleasantly with the

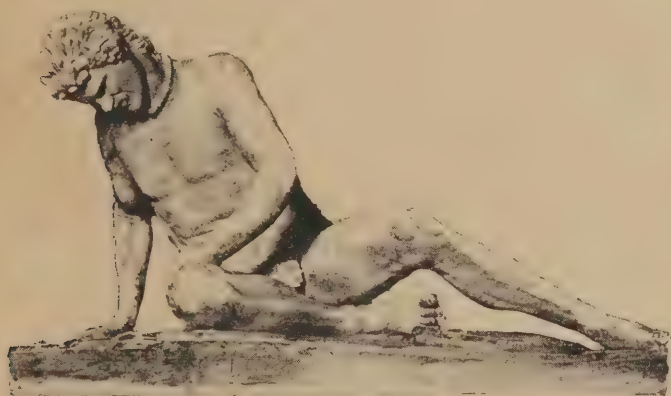
below. The other side has a grand entrance of eight coupled columns, and pavilions at the angles; between stretches a range of fourteen columns and two pilasters on each side, divided by seated figures supposed to represent different styles of art—those on the right are the best, but none are very successful. The grand entrance, however, has four standing figures in front of the coupled columns, only one of which is not positively offensive. Beneath are ovals with masks above them, and to judge from the expressions of disgust and disapproval on some of their faces they or their sculptors are of the same opinion. The larger pyramidal groups on each side are better and really serve to decorate the building. The frieze here is of mosaic representing the great epochs of art, and is not so successful as that on the other side. The columns are fluted and rather frittered with foliage which fills the flutings for a good

part of their length, but on the whole it is a fine building, upon which the architect, M. Deglane, may be congratulated.

The Petit Palais, which faces it at a considerable distance on the other side of the Avenue Nicholas II., is also a good building. It has a colonnade of 10 columns, not fluted, on each side of a projecting central doorway, and pavilions at the angles. Above the door, between it and the curved architrave which terminates the central mass, is sculpture of a flowery kind,

flowers, which overflows the margin with doubtful effect. Another point of treatment is open to criticism. The doors are gilded metal scroll work with glass in the upper part. The lower part of the framing is filled in with a large panel of onyx, a material which is surely quite unsuitable for such a position. The architect, M. Girault, has been criticised for the arrangement of the plan, but he may certainly be congratulated upon his building as a whole, and especially on the clever way in which he has managed the crowning feature of the central dome. Eight gilt caryatid terms support a very projecting roof, slightly recessed between each. A gilt vase stands above each caryatid and another larger one on top of a curved pyramid above.

(To be continued.)



STATUE OF THE DYING GLADIATOR.

other lighter divisions, giving accent and variety to the vista, or looking through the grey columns on the lower floor across the lower level, peopled with statues, to the stairs or the recessed balustraded bays, flanked by the golden and green pilasters on each side. The creator of this beautiful construction is a M. Thomas. Another picturesque effect may be seen from the corners of the picture gallery on the ground floor of the front part of the palace, where the effect of light and shade, and the white statues lighted from above and relieved against green shrubs, combine most attractively.

The façade towards the Avenue d'Antin has a monumental central gateway flanked by bronze equestrian groups. A range of freely treated Ionic columns spreads to each side in couplets, terminating and commencing with a solid space on which is a relief. At each end a figure in the round finishes the composition. Beneath the arcade, above the windows, is a frieze modelled in relief and coloured with pottery glazes representing the history of art. The columns stand upon a surbase pierced with simple windows, and by each side of the great door are reliefs of lions harnessed with flowers and controlled by Amorini. Above the door beneath the great arch is a pretty reclining female figure, and the summit is crowned with a bronze group consisting of various figures with Apollo in the centre, which makes one feel uneasy about its stability when one looks up from

and at the top of the piers which flank it are two groups which fill the corners, and include in each case a flying female figure with disproportionately long legs. Other groups are on pedestals in advance, flanking the steps to the central doorway, and are good, but in them one feels the presence of the model rather too much. Beneath the arcade above the windows are pretty reliefs of Amorini working at various crafts, and reclining female figures, alternately. The interior contains spacious and lofty galleries, arranged round a charming semi-circular court with a very graceful colonnade, ornamented with garlands between the columns of gilded metal. In the garden within are several small basins lined with mosaic of blue and gold, representing water-lily



THE ARCH OF DRUSUS, ROME.



STATUE OF ST. CECILIA.

COLOUR IN ARCHITECTURE.

By A. TROYTE GRIFFITH.

(Concluded from page 441, No. CCLXXXIV.)

III.—The Use and Value of Colour in Modern Architecture.

THE decorative use of colour has now been followed through the most important architectural styles, from the hieroglyphics and picture histories of Egypt and the enamelled friezes of Persia to the balanced unity of all the arts in the Athens of Pericles; the decay of the Roman and Byzantine Em-

sistent styles of decoration independent of the use of natural forms. These nations have, however, had little direct influence on European art, and their works may be admired and studied as examples, but not as precedents. That the religion of the Arab has rejected the human figure as a motive for design is no sufficient reason that the traditions of two thousand years should be relinquished by Christians.

That painting actually does occupy the leading position among the arts at the present day it is impossible to deny. And it must be confessed that this predominance has been legitimately won. Compare the logical progress of painting from the fourteenth century with the

logical equality between the advances of science and art. If, in the same period, improvements in construction have not affected the very foundations of architecture, yet, to give only one example, the alterations in the manufacture and use of iron must be considered of prime importance; and the age that can create such structures as the Forth Bridge or St. Pancras Station has seen no iron building of any artistic importance.

It is not necessary to dwell on this shortcoming of modern architecture, as another reason exists for the predominance of painting. Formerly architecture was the art of the many, painting of the few. Now the position is reversed; in painting the individual artist can more readily express himself, the nation as a whole more easily satisfy its artistic wants. This is the meaning of the numerous picture exhibitions, the overcrowded galleries, the schools of art in every town, the enormous circulation of illustrated newspapers. Formerly the people were the makers of the town-hall and the cathedral, and could appreciate conquered difficulties and ideal beauties. Now architecture is a kind of recondite mystery, no longer the art of the people, but the direct production of the brain of the architect, filtered through the hands of unsympathetic workers.

As painting occupies such an important position in the minds of men, there is the more reason that it should give what help it can to the decoration of buildings. Painting applied to architecture can take two forms—either it is subordinate to architecture and forms part of the general effect, or it disregards architecture and remains merely the easel picture on the walls of a building. Though the futility of decorating a building with modern easel pictures is of course evident, the reason requires investigation. For though we may except the modern paintings that aim mainly at presenting the truths of Nature, we shall find that even the more decorative are really unsuitable for mural decoration on any extensive scale. A picture painted in accordance with the laws of linear and aerial perspective, and with due regard to tones and values, has its own very definite requirements, which are hopelessly antagonistic to those of mural decoration. To see such a picture with comfort, the spectator must place himself opposite the centre of the panel near the horizon line, at the right distance both for the perspective effect and the handling of the paint. He must, in fact, isolate himself at some particular point in the building, for elsewhere the panel will tell simply as a mass of colour, not as a picture. On vaults and ceilings even greater difficulties occur: at some positions the figures will be seen upside down, and the effect becomes ridiculous. Correggio (in the dome of Parma Cathedral) and Tiepolo (at Würzburg and elsewhere) not unfrequently endeavoured to solve the problem by treating the figures as if they were actually on the ceiling itself, floating in clouds, foreshortened from the soles of the feet. This was perhaps successful from the painter's one point of view, but from any other the perspective effect is destroyed. Then again the difficulty arises of the treatment of subsidiary ornaments. If the decorative adjuncts are painted in flat tones they will inevitably prove out of harmony with the panels in light and shade, and the alternative of modelling up the decorations to suit the pictures is equally displeasing. As Viollet le Duc remarks, "In the middle ages, monumental pictures did not look as if surrounded with strips of painted paper. Modern wall paintings are really pictures fastened to walls, and surrounded by a frame which, instead of isolating them like an insignificant band of gilding, nullifies and destroys the effect."

But while modern painting depends on conventions that are inconsistent with architectural decoration, mural painting is based on others no less difficult to reconcile with contemporary ideas of art. In the first place mural painting must be beautiful, for the object of mural painting is mainly to decorate the wall, and decoration without beauty is a contradiction in terms. This may seem an unnecessary condition, but much modern painting is really not beautiful at all, in any ordinary sense of the word, as the work of Degas and



THE LAOCOON STATUE.

pires lead to the everchanging splendours of mediæval architecture, in turn to perish at the sudden outburst of artistic enthusiasm known as the Renaissance. Since this period, the modern developments of painting, and the consequent separation from architecture, have resulted in a certain identification of colour with paint. This is at present probably unavoidable in the highest forms of art, as glass, mosaic and other constructional materials are practically unsuited for the expression of the subtleties of the human form. And though ornamentation of a conventional nature may afford an intellectual and refined system of decoration, yet for Europeans the representation of the human figure will alone impart the highest dignity to architecture. It is true that the Arabs and other Oriental races, hampered by the ordinances of the Koran, evolved con-

development of architecture during the same period. In painting, every advance in science and technique has led directly to new forms of artistic expression. The substitution of fresco for mosaic, by Cimabue and Giotto, was quickly followed by the assertion of the painter's individuality, in place of the traditional use of Byzantine archaisms. The invention of perspective, by Alberti, was soon applied to the foreshortening of the human figure, in the unsurpassable drawing of the Sistine frescoes; the closer observation of light and shade by the Florentines was at once utilised in the perfected chiaroscuro of Correggio. The invention of slow-drying oils by the Van Eycks enabled the accurate study of natural effects by Velasquez and more modern painters. But the warmest admirer of the architecture of modern England can hardly claim such a

other very clever painters clearly shows. Secondly, mural painting must be harmonious, not only in itself but also in relation to its surroundings. For this reason mural painting must not ignore the existence but rather accentuate the construction of the building; that effect of solidity, essential to monumental architecture, must not be destroyed by any appearance of a hole cut in the wall, or by one portion of the painting starting into greater prominence than another. The interest of the design must not be over concentrated, but the painting should tell over the whole surface. From these two main principles of beauty and harmony many deductions may be made, such as the need for simplicity both of general design and of individual modelling, the objection to the use of landscape, or to dark and obscure subjects, and the importance of a dead surface. To such restrictions as these all successful decoration of whatever period has been subject. But that a modern school of painting will again endure the thralldom of such conventions it is impossible to imagine.

The division of painting into two styles, of decorative painting and pictorial painting, is an impossibility. It is an unfortunate fact that much decorative painting is not pictorial, and much pictorial painting is not decorative. But all painting is not art, any more than all building is architecture. Engineering and architecture exist side by side to the detriment of both, and two styles of painting existing simultaneously in the same country can only stultify and injure each other. The truth is that all national schools of painting have been as pictorial as the knowledge of the painters permitted, and as decorative as the circumstance of the case required. Michelangelo may be less pictorial than Rembrandt, but "The Night Watch" is as sufficiently decorative for its purpose as "The Last Judgment." The one had to decorate a panel in a Flemish town-hall, the other the end wall of an Italian church. We can appreciate and enjoy the work of Giotto and his followers, because it represents the attainments and aspirations of the fourteenth century. But work executed on such principles in the nineteenth century will always have a sense of incompleteness, an inability to represent modern ideals and modern knowledge. Occasionally some great painter may subordinate himself to the requirements of architecture, but never again a national school of painters. It is impossible to ignore the art of *Painting*.

We have now arrived at these conclusions—that architecture should make use of colour decorations, and especially the representation of the human figure, as it has in previous ages; that painting must be modern; and that modern painting will not decorate. What, then, is the solution of this dilemma? In the first place we must renounce great schemes of decorative figure compositions, though we may still hang a great picture—the expression is used advisedly—in the place of honour, the important point on which interest will be concentrated. The reredos of a church, or the wall of a court of justice, may still be dignified by the finest pictures, but no longer can wall and vault of monumental interiors be covered with the works of contemporary painters. Such interiors as do not pretend to unity of architectural effect on a large scale, as the walls of apsidal chapels and baptisteries, or the corridors and galleries of public buildings, will still afford opportunity for the painter to display his art. It is doubtful whether the Pantheon of Paris gains or loses by the pictures on the walls; the commemorative value of the building is increased, but the general effect is probably diminished. Only an architect could notice or describe the architecture of the Sistine Chapel; it happens to be a building of minor architectural significance, apart from the decorations, but such decorations would have crushed the greatest monument of the Renaissance. We may compare the practice of the Greeks; the single statue of Athena Parthenos or the Olympian Zeus, supported perhaps by subordinate decorative works, was sufficient for the interior, but extended series of sculptures were confined to the exteriors of temples, where only a limited portion could be seen at one time.

But though in monumental interiors paint-

ing must remain as panel painting, colour will not thereby be confined to a few important points; rather should the whole building form one harmonious scheme of colour, worthy to receive the masterpieces of modern art. With some great picture to vocalise the speechless forms of architecture, sufficient emphasis for the remainder of the building may be obtained from harmonies and contrasts of colour, symbolic and conventional ornament, inscriptions, and all the thousand devices of the decorative painter. We have already seen that colour should be added to architectural forms not as an after-thought but as an essential part of an original scheme. The power of colour is too great to leave anything to chance. In the words of Viollet le Duc, "C'est une fée qui prodigue le bien ou le mal, mais qui ne demeure jamais indifférente. D'un coup de pinceau elle détruit une œuvre savamment conçue, mais aussi d'un humble édifice elle fait une œuvre pleine d'attraits, d'une salle froide et nue un lieu plaisant où l'on aime à rêver et dont on garde un souvenir ineffaçable."

But though the very ease of handling paint has led to peculiar difficulties in its use as a decorative agent, other materials remain to the hand of the architect. Coloured sculpture and bas-relief, gesso, sgraffito, mosaic, marble inlay, marble panelling, tile work, faience, enamel, and stained glass will compensate for the loss of figure painting. Moreover, these materials are in themselves more beautiful than paint. Oil paint, especially in flat tints, is not a substance of surpassing beauty. Rather does its excellence exist in the facilities for refinements of varying tone and tint, in the application of combinations of colour to other materials. Nothing is more difficult in the way of decoration than to harmonise flat tints of coloured paint. The elaborate theories of Chevreul or the Draconian laws of Owen Jones will not give the softening touch so readily lent by the shades and shadows of coloured sculpture, the glaze of faience, or the network of mosaic joints.

Again, conventions that now seem absurd in painting are in more constructional media (such as glass or mosaic) not only necessary but the very essence of a proper artistic treatment. And provided the human figure be represented with the limitations imposed by the material, the cultivated eye will feel no loss from the absence of that "effect" universally associated with modern painting. This, however, must be remembered, that paint in a sense decorates construction, while mosaic and such materials are themselves the actual construction. In other words, colour rightly applied in the form of paint may intensify and elucidate the meaning of the architecture, but if added in the form of stained glass, mosaic, or other constructional methods, not contemplated in the original design, the whole character of the building will thereby be changed.

For instance, take the case of stained glass: no coloured material has had a greater influence on architecture, as has been shown in the account of mediæval decoration. As the majority of modern churches are more or less close reproductions of Gothic buildings designed for the express purpose of exhibiting stained glass, such churches will probably be improved by the insertion of stained glass windows, though even so the colour treatment must be systematic; better the cold stone and white light throughout than glaring spots of colour isolated among bare walls and unpainted roofs. But to introduce stained glass into buildings decorated with pictures or frescoes, or in those rare cases in which a well-devised system of lighting has been arranged by the architect, is a barbarism that cannot be too strongly denounced. Such a building as Professor Cockerell's fine church in Regent Street, where every window plays a part in the general scheme, would be ruined by the introduction of coloured light. And it must always be remembered that the great height of ancient windows will often mingle the many-coloured light into one mellowing glow before reaching the eye of the spectator. Modern glass is too often inserted in aisle windows where the glaring light may, indeed, permit the perusal of the donor's name, but will effectually accentuate every individual coloured quarry.

Again, mosaic—that gorgeous art of a decadent empire, and a nascent civilisation—was well suited to the crude vigour of Byzantine or Romanesque building. But in St. Mark's at Venice, or the cathedral of Monreale, where this form of decoration has been worked out systematically, the effect is rather due to the mosaic than to the well-ordered expression of construction or the beauty of line and mass. As pointed out by V. le Duc, the innumerable little joints and glittering reflections that endow mosaic with such a bizarre charm of its own distract the eye from the colder beauties of architectural design. This is not advanced as an argument against mosaic, but against the introduction of this form of colour decoration into buildings designed on different principles. Glass mosaics have often been used as inlays in marble and porphyry slabs, on pulpits, tombs, or pavements, as the shrine of Edward the Confessor and the Sanctuary pavement at Westminster Abbey. This has given many delightful effects, though it has led to a mistaken use of mosaic in modern times, in subjects of too much detail and insufficient mass. The Byzantine artists almost invariably panelled the lower portions of their buildings with marble slabs, as mosaic, like stained glass, is most successful when seen in broad masses at a sufficient distance to generalise the individual tesserae.

Coloured bas-relief is another method of architectural decoration in which interesting experiments have recently been made. The colouring of low relief is only a step on the way to coloured sculpture in high relief, the supreme achievement of the Hellenic mind, in the arts of form. The principles that should govern the colouring of sculpture were somewhat fully discussed under the heading of Hellenic decoration. Coloured bas-relief, however, occupies an intermediate position between painting and sculpture, and requires a distinct treatment of its own, as the modelling will tell not only as form but also as masses of colour, and to the colour effect the modelling must be subordinated. Fascinating possibilities are opened up by the reintroduction of this ancient form of decoration; difficulties of perspective, the foreshortening of figures, the treatment of backgrounds, afford technical problems of an interest that may lead to results of the highest artistic importance. Coloured bas-relief and sculpture undoubtedly harmonize with polychromatic decoration and painted mouldings, as well as figure painting, and better than stained glass or mosaic; it does not demand the realistic treatment of the one, and is exempt from the technical difficulties of the others, in the representation of the human figure. The quality of ideal dignity as well as the charm of human interest can best be imparted to architecture by series of bas-reliefs or monumental statues. A Neo-Hellenic school of sculpture painters may perhaps be destined to reunite the arts of painting and sculpture with architecture.

The latter part of this essay has been chiefly concerned with interior colour decoration, though the same principles will apply to exteriors, with the proviso already stated, that the stability and convenience of the structure must not be injuriously affected. This condition is evidently of considerable importance in England, as a climate that requires the continual repainting of external woodwork is clearly unsuited to the polychromatic painted decoration of Greece or Egypt, or even the more limited system of mediæval France. The great cathedrals of the north of France were certainly not painted all over. But the more sheltered and important features, such as the mouldings and sculpture of porches and niches, or the leadwork of *flèches* and roof crests, were emphasised with colour and gilding, in a setting of sombre stone. Even this amount of painting would be out of place in England, where colouring of a constructional nature can alone be considered of sufficient permanence to merit consideration as an element of architectural effect.

The colour treatment of exteriors, unlike interiors, cannot be regarded solely in relation to itself, but must be modified to suit the peculiar surroundings of each example. In the country, isolated buildings have the advantage

of a natural background, changing only with the seasons of the year. To ensure a certain degree of harmony with the general landscape, the most obvious plan is to use the building materials of the district: stone and slate among the hills, brick and tile in clay pastures, thatch and timber in woodlands. But whatever the method of construction, the building should not be cut up into irritating little stripes and patches, but should tell as a few simple masses of colour. Like Nature, the architect must work with a full brush.

In towns greater difficulties occur, both in securing harmony with the surroundings and in obtaining materials of sufficient permanence. The natural polychromy of building stones and bricks is soon destroyed in the smoky atmosphere of modern cities, and nothing but glass mosaic or glazed brick will retain its original character. The permanent colour treatment of buildings might perhaps at first open the way to greater atrocities of colour than those that now exist. So long as adjoining owners confine themselves to inconspicuous shades of brown and yellow stucco, the evil soon rights itself, even though the dividing line of paint be carried down the centre of a pilaster. But in the unchanging medium of faience some attempt would have to be made at a neighbourly harmony. There is no doubt that the fine effect of such streets as Regent Street depends mainly on the uniformity of colour and material. And if it were possible to secure a similar ground colour for a whole street or square a very important step would be made towards harmony of effect. It need not be feared that a uniformity of ground colour would cause undue monotony. In the country the background is nearly always monotonous, and in the town the houses form a background for each other. Moreover, the details and ornamentation of each house would afford ample scope for originality and variety of treatment on the part of the individual designer.

These notes on the practical use of colour may seem meagre and insufficient, in comparison with the greater space devoted to the philosophical and historical sides of the subject. It is, however, impossible within the limits of these articles to do more than allude to the different media that can lend colour to a building. Each in itself a lifelong study, could only receive justice from a master of the craft, and it would be useless to repeat at second hand the personal experience and advice of other artists. And although it is hoped that some information may have been given about the various uses of colour in different periods of art, the discussion has been confined as far as possible to the value of colour as an element of architectural design.

At the present time the great body of artists pay small regard to the thoughts and actions of workers in other forms of art. For although the actual products of men's minds and hands be marked as the work of the same time, yet, from the isolation of the workers themselves, they lack that spirit of unity so noticeable in the greatest periods. An extended use of colour in building would do much to draw together painters, sculptors, and architects, and to interest the greater public in works of an ideal nature. In the words of a fine writer: "There come, from time to time, eras of more favourable conditions in which the thoughts of men draw nearer together than is their wont, and the many interests of the intellectual world combine in one complete type of general culture. Then men do not live in isolation, but breathe a common air, and catch light and heat from each other's thoughts."

Deptford Art Exhibition.—The committee responsible for the organisation of the projected art exhibition at Deptford are appealing for funds to enable them to meet the cost of the undertaking. Already a large number of works of art possessing particular interest for all dwellers in Deptford and Greenwich have been promised by collectors and artists. But the cost of insuring the many valuable pictures which have been lent, and the expense of working the show, must be met by voluntary subscriptions, and the committee are naturally anxious to secure sufficient support to safeguard them against possible loss.

Enquiries Answered.

The services of a large staff of experts, including all those engaged on "Specification," are at the disposal of readers who require information on architectural, constructional, or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.

Bricks and Stones in North Durham.

LIVERPOOL.—AJAX writes: "What are the bricks, red bricks and stone, most easily procured, and of a good nature, in the neighbourhood of the Tyne Ports and North Durham?"

Prudham is the best quarry for good sandstone. Windy Nook, Blaydon, Kenton and Burradon are all fairly good, but the two latter are not so good now as they were some years ago. Heworth is a good quarry for steps and thresholds, being a hard stone. Some of the best bricks come from Blaydon, Shincliffe, Sherburn, Pensher, Birtley and Choppington. The Blaydon bricks are chiefly white or buff. The Pensher are used for pressed bricks, and the others are common. H. C. C.

Party Wall.

GREAT YARMOUTH.—DOUBTFUL writes: "A. contracts with B. to build some houses in a terrace; C. owns the land upon each side of B's plot, but does not build till B's houses are completed. The clauses in the agreement read:—'The contractor to build and complete the said seven houses generally in accordance with the plan drawn by X.Y.Z. and the stipulations of the vendor. . . . Generally the houses are to be built as those built and being built upon the same estate and as usually built in houses of this class.' The stipulation of the vendor is:—'All division walls are to be party walls, and the purchaser of each site is to bear half the cost of erecting such party walls.' The plan drawn by X.Y.Z. shows party wall to full thickness. A. upon commencing to build gave notice to C. that he would charge him with half the cost of party walls. Now seeing that the half of party wall is not part of B's houses, and also noting the terms of agreement, &c., will you please advise if B. has any claim or right to the amount paid by C. to A.?"

I do not think he has. When A. contracted to build the houses he did so, apparently, on the understanding that he was to look to C. for payment of one-half of the cost of erecting the two party walls, and therefore estimated his price simply with reference to the cost of so much of the building as would be erected on the ground which belonged to B. If B. could get back from A. what the latter received from C. he would be getting a double advantage, namely, first getting the houses built cheaper by the half cost of the two party walls, and secondly getting from A. what A. got from C. as C.'s contribution towards building them. Of course, if A.'s tender was simply based on the cost of erecting the houses, on a site which exceeded B.'s property by the width of half of each party wall, without any reference to the fact that C. was bound to contribute one-half the expense of these walls, then A. has got paid twice over for the portions of them that are erected on C.'s plots, and B. would be entitled to credit for the amount received by B. from C. It is hard to tell which of these alternatives is correct: but having regard to the fact that the contract between A. and B. distinctly refers to the "stipulations of the vendor" it would seem that A. must have taken into consideration, when tendering, the fact that C. was bound to bear half the expense of the party walls, and that C. would—as he thought—be bound to pay him such sum as fairly represented the one-half of the cost of erecting them. H. P. B.

Rights of Light.

GREAT YARMOUTH.—DOUBTFUL writes:—"A. and B. are neighbours living in a narrow thoroughfare, each keeping a shop. Two years ago A. put bays to each floor above his shop.

B. has now at the end of his own premises, upon the lead flat, erected an upright signboard reaching to top of A.'s window. Has A. any remedy?"

I do not understand the position. There is no explanation of what "the lead flat" is. B. has a perfect right as against A. to erect anything he likes on his own premises unless such structure interferes with the access of light to an ancient window. H. P. B.

Payment for Repairs.

KENT.—ANXIOUS writes: "I have just finished a contract for £1,000 for alteration to a workhouse administrative block. I had several provisional items in the specification, one being £50 for extras. A dispute has now occurred with the architect. The specification states 'the whole of the ceilings throughout to be repaired to the entire satisfaction of the architect.' When I came to some of these ceilings they were found to be very bad, and the architect told me to take them down and re-lath where necessary and put up new, which I have done. I have now sent him in my account for new, and he simply runs his pen through the items, and returns to me, with a final certificate for £46 18s. 9d., my account being for £90. I may say that he gave me a good deal more work than was provided for in the specification, and he has signed the items in a diary that I kept for that purpose. The Guardians say they cannot pay without another certificate. Would it be any good for me to appeal to the Local Government Board? There was no properly drawn up contract besides signing the plan and specification."

I think that the taking down and re-lathing the ceilings or parts of ceilings was covered by the clause in the specification which your correspondent quotes, and that the cost of doing so cannot be recovered as an extra. An appeal to the Local Government Board would be useless. H. P. B.

Views and Reviews.

English Windows for an American Church.

Mr. Henry Holiday has recently completed two large stained-glass windows for the church of the Holy Trinity, New York, for the chancel of which he has already made seven windows. The two which he was showing to his friends the other day are to face each other at the ends of the transepts. The subjects are respectively "The Crucifixion" and "The Ascension," and the windows are of five lights of equal height with tracery above. In the former the centre light contains the figure of Christ on the Cross, and the outside lights are filled with the crosses of the two thieves, below which, on the right, are the soldiers casting lots and dividing the clothes, while on the left are the faithful women and St. John; behind these groups in lights two and five are soldiers on horseback, and above are mourning angels. Across the whole window runs a band of grey towers (the city of Jerusalem) and horizontal bars of clouds, between which the golden sky shows; these bars a little higher become the floor upon which the angels stand. In the tracery are little subjects from the Resurrection, the risen Christ, the Entombment, the Angel and the Women, &c. The colouring of the choir of angels is very happy—green-blues, purple-blues and purple, with a few wings and nimbi ruby and pale purple.

The centre light of the "Ascension" window is filled by the figure of Christ clothed in pale green with a splendid ruby robe and an aureole of varied blues and ruby on yellow. In the next lights on each side, on a lower level, stand the "two young men in white apparel," and the Apostles and other Disciples fill the lower part of each light, the Virgin and St. John being in the centre. Above, in the two external lights, is a choir of rejoicing angels, which also extends over the upper part of the second and fourth. These are not quite so successful as the mourning angels, either in colour or design, but much of the general colour is quite splendid, particularly in the deep rubies and rubies on

yellow. The greens also are frequently very fine, recourse having been had to plating to obtain them. The tracery contains small subjects from the Ascension and Pentecost.

Mr. Holiday has been careful to complete the design of each light in itself, while so arranging the figures in them that each bears a relation to the others, thus avoiding the appearance of the mullions being superposed on the design, which is frequently so disturbing in windows in which the subject extends over several lights. The right way, of course, is for the spaces given to be pleasantly filled so that one is not tempted to wish the mullions away, and Mr. Holiday may fairly be congratulated on the success of his design in this matter, as well as on the splendour of his colouring. A. W.

Correspondence.

The Royal Architectural Museum.

To the Editor of THE BUILDERS' JOURNAL.
7 PALL MALL, S.W.

SIR,—In February-March last you published some letters from Mr. Adams and myself concerning the state of the above museum. In my first letter I called attention to the want of a catalogue, the unsatisfactory state of the museum copy, and the general state of the museum itself. In reply, Mr. Adams, the hon. secretary, stated that a new catalogue would be issued shortly, it being then in preparation. He also remarked that he failed to find my name among the list of subscribers to the museum. I wrote to Mr. Adams saying that I should be glad to receive a copy of the last annual report, with a list of the subscribers, adding that I should only be too glad to become one myself. The fact that my request for a report or list of subscribers was utterly futile will perhaps show why subscriptions are not forthcoming. It is evident that the Council are not making any serious efforts to get subscriptions or to make the existence of the museum known, and it seems very probable that unless something is done soon the museum will become entirely absorbed in the Westminster School of Art, and thus lose its character of a *Museum of Gothic* altogether. It seems to be the wish of the Council to turn this institution into a sort of Arts and Crafts School, and at their annual meeting at the museum held last Friday week this was the chief topic. The maintenance of the museum as a museum was hardly mentioned, and the question of a catalogue did not come up at all. It seems a pity that the Council cannot see their way to take steps to set the museum on a basis of its own apart from any School of Art or Arts and Crafts. At any rate, all who are interested in the welfare of Gothic will look to Mr. Emerson, the President of the Royal Institute of British Architects and the new President of the Museum, to try and restore it to its proper dignity and relation with the Institute and the profession.

A School of Art is one thing and a museum quite another, and if the Council devote their energies to the first, as they have done now for so long, they will be neglecting the trust that has devolved upon them from the founders of the museum.—Yours, &c., MAX JUDGE.

Ham Hill Stone.

To the Editor of THE BUILDERS' JOURNAL.
NORTON, STOKE-UNDER-HAM, SOMERSET.

SIR,—On page 428 of your issue of July 11th your correspondent replying to an inquiry about Devonshire building stones makes some remarks as to the delay experienced in obtaining Ham Hill stone. Probably your correspondent refers to the period previous to the year 1888, when the various Ham Hill stone businesses were amalgamated into the company now working the quarries. Having erected by far the best and most speedy stone-working plant in the south or west of England, this company can invariably guarantee prompt delivery of all orders for wrought stone to any required details and can refer intending customers to the leading architects of the day under whom works have been executed.—Yours, &c.,

For the Ham Hill and Doulting Stone Co.,
J. STAPLE, Managing Partner.

Architects' Assistants' Salaries.

To the Editor of THE BUILDERS' JOURNAL.

SIR,—I have read with great interest the letters which have appeared in your valuable paper lately on this subject. I must congratulate the gentleman who has opened this discussion in your paper, for his is exactly my own idea, and also the idea of all those in the town in which I stay, both assistants and apprentices. I agree with "Vigilans" that there should be a society for architects' assistants in every town in three classes, *a*, *b* and *c*, the subscription to depend on the class belonged to. I would like, if some gentlemen would make a start, to open such a society. I am sure every assistant would join it. I should be very pleased to do anything in my power to help it on.—Yours, &c., ARCHITECT'S ASSISTANT.

NEWPORT, MON.

SIR,—I think it is quite time that this subject was called attention to. No one can take exception to the facts stated by "Disgusted," and few I think can fail to agree with him. If we take the premium into consideration (which is not covered by the first few years' earnings) a young architect has, when he leaves school, a period of seven or eight years, on the average, to look forward to in which he earns absolutely nothing—a cheerful prospect. If he studies outside his office work his hours are indeed long, and yet how can he gain the necessary qualifications demanded by most employers without it.

Union is strength, and this state of affairs can only be remedied by a united effort on the part of the assistants throughout the kingdom.—Yours, &c., A READER.

SIR,—I have read the letters on the above subject in your valuable paper with much interest and I would like to say that the opinions expressed in them are exactly in accordance with my own ideas, although with regard to what "Hopeful" (see last week's issue, p. 463) says in his letter about the assistants themselves being to blame for not asking enough I may say that if an apprentice newly out of his articles were to ask when applying for a situation a salary of from 25s. to 30s. a week, he simply would not get it, so he would have to come down to 20s. or 23s. a week whether he wanted or not, and I think the same can be said of the head draughtsman and his salary also.

If a society for the improvement of assistants' salaries can be got up I would be very pleased to do everything in my power to help it on, and also try to get others to do so.—Yours, &c., JUNIOR.

EXETER.

SIR,—Architects' assistants are not always paid at so low a ratio, as your correspondents seem to assume. In my own office I have—and have had for several years—an architect's assistant (a draughtsman)—a young fellow who receives £2 a week. If he makes overtime he is paid for it at the same rate. Now this is in a small West of England city, where few ordinary clerks in business establishments receive more than 25s. a week.

I had occasion recently to advertise for an additional assistant of the kind, but of all the replies I received—perhaps a dozen—the lowest "screw" asked by any applicant was £2 a week.

The rate of wages here for all members of the building trade is under 30s. a week.—Yours, &c., AN ART WORKER.

Mission Church for Naauwpoort.

The important railway camp at this junction on the line between Cape Town and the north has become quite familiar to English readers within the last few months. Apart from the circumstances brought about by the war, the place was growing fast and the population rapidly increasing. A good schoolhouse and an institute had been provided, but no place of worship or residence for a clergyman. Funds are appealed for to erect first a small clergy house for the agent already at work, and afterwards a modest church. Only £200 are needed for the first and £1,000 for the second. Miss Elise Astley, 3 Halkin Place, will gladly receive contributions.

BUILDING TRADES' GIFT TO THE NATION.

MR. SACHS, the Chairman, announces that considerable progress has again been made this month with the Building Trades' Gift to the Nation regardless of the approaching holiday season. In the first place large contributions have this month been received from the provinces, for which Mr. T. F. Rider personally made the necessary arrangements. The collections in Birmingham from workmen already exceed £200; whilst in Walsall over £150 have been collected, in Leicester the amount has reached £170, and in Nottingham £100, &c. A "shilling" collection by the BUILDERS' JOURNAL has also reached £180, and one by the "British Clayworker" over £100, besides producing many gifts in kind. There have been numerous subscriptions from individuals and firms, the Clerk of Works' Association also sending £22, whilst small contributions from workmen aggregated £98. Numerous gifts in kind have also been presented in connection with the execution of the work. Regarding the progress of the buildings at Bisley, Messrs. George Trollope and Sons are carrying out the work with all possible speed, and the brickwork of two of the new Homes is already nearly completed. As far as contributions are concerned, it is now particularly requested that they may be in money rather than in kind, and all communications in this matter should be addressed to the Executive at 1 Waterloo Place, Pall Mall, S.W.

The following further contributions have been received at the offices of the Executive of the Gift:—

	£	s.	d.
The Nottingham Master Builders' Association (per Mr. W. G. Barton) ..	100	0	0
The Clerk of Works' Association (per Mr. J. A. Spooner) ..	22	1	0
Collected by Messrs. Langford and Ward from Employers and Builders of Wisbech ..	16	4	10½
Employes of Messrs. Patman and Fotheringham ..	16	0	0½
Messrs. Smith and Co. ..	15	0	0
Messrs. Raffety, Thornton and Co., Ltd. ..	10	10	0
Workmen of Messrs. B. Ward and Co. ..	10	7	3
Workmen of Messrs. Malcolm and Macleod ..	10	0	0
Messrs. Isherwood Brothers (Salford) ..	5	5	0
Messrs. C. E. Todd and Co. (Hackney) ..	5	5	0
Messrs. Sheffield Brothers ..	5	0	0
Messrs. Peacock Brothers and workmen ..	3	16	5
Workmen of Messrs. W. H. Dews (Leeds) ..	3	6	4
Workmen of Mr. John Marsland (Waltham) ..	3	1	6
Mr. Alfred Dowling and workmen (Bristol) ..	2	17	0
Workmen of Messrs. Sheffield Brothers ..	2	15	9
Workmen of Mr. Thomas Cole ..	2	10	9
Workmen of Mr. J. Ashley (New Brighton) ..	2	10	0
Mr. J. Davis and workmen ..	2	10	0
Workmen of Messrs. C. E. Todd and Co. ..	2	8	0
Workmen of Messrs. E. A. Roope and Co. ..	2	7	3
Mr. George Humphreys (Bristol) ..	2	2	0
Mr. S. H. Blackstone (of Messrs. B. Ward and Co.) ..	2	0	0
Mr. W. J. Keene and workmen ..	2	0	0
Messrs. J. Hebble Thwaite and Sons and workmen ..	1	13	6
Workmen of Messrs. Alfred Goslett and Co. ..	1	10	0
Mr. C. B. King and workmen ..	1	8	9
Employes of Mr. J. C. Noakes (Wolverhampton) (per Mr. C. Vincent Vale) ..	1	6	8
Workmen of Mr. George Humphreys (Bristol) ..	1	6	8
Mr. W. H. Bach and workmen (Kilburn) ..	1	6	6
Workmen of Messrs. A. Goslett and Co. ..	1	5	6
Workmen of Mr. F. W. Rhodes (Stoke Newington) ..	1	6	6
Workmen of Messrs. E. R. Burt and Sons ..	1	2	6
Workmen of Messrs. T. Rider and Sons ..	1	1	0
Messrs. H. Cockerell and Sons ..	1	1	0
Employes of Mr. William Smith, Jun. (Wolverhampton) (per Mr. C. Vincent Vale) ..	1	0	0
Workmen of Messrs. J. and H. Patrick ..	0	10	5½
Workmen of Mr. H. Cresswell (Brighton) ..	0	10	0
Workmen of Messrs. G. A. Browne and Co. ..	0	7	0
Workmen of Mr. C. W. Collins ..	0	5	0
Mr. W. Hammond (Battersea) ..	0	2	6

The Dean Cowie Memorial.—The scheme for the memorial of Dean Cowie in St. Lawrence Jewry has undergone some alteration. As the funds necessary to introduce the electric light into the church are not sufficient, it has been decided by the committee that a carved oak litany stool shall be placed in the church with a suitable inscription. Mr. G. H. Fellowes Prynne has been asked to design the stool.

WESTMINSTER IMPROVEMENT.

AT last week's meeting of the London County Council an urgency report was brought up by the Improvements Committee respecting the improvement scheme at Westminster which has recently been before a Committee of the House of Lords (see page 464 in our last week's issue). The Committee had found the preamble of the Bill proved, but did not approve of the suggested plans, although an alternative plan met with their sanction. If the improvement should be carried out in accordance with the decision of the Committee of the Lords the effect would be to add to the Victoria Tower Garden an area of about three-fourths of an acre, the greater part of which would otherwise have been available for recoupment. The line of the street would have a bend near the southern end of the present garden, with the result that, in approaching from the south, a finer view of the Houses of Parliament would be obtained, and, conversely, anyone going south from the Houses of Parliament would obtain a better view of any buildings to be erected upon the southern portion of the new street. The Victoria Tower Garden would be scarcely touched, and a fine row of some twelve trees would be preserved. The extent of the property to be compulsorily acquired was not altered, but land that would otherwise have been available for recoupment would now be added to the garden, and it was estimated that the selling value of this land would be about £60,000. As against this there was a small set-off in the engineering works, which would be somewhat less expensive, the estimated gain being about £4,000. Therefore, to carry out the new scheme would cost the Council about £56,000 more than the scheme embodied in the Bill. The Committee felt that the Council was in a difficult position; but nevertheless thought they should proceed. A report of the Parliamentary Committee on the same subject was taken with the urgency report, the recommendation being that the Council should not accept the alterations.

Mr. Cornwall, chairman of the Parliamentary Committee, said the Council's scheme had passed successfully through the House of Commons Committee, but now they were asked by a Committee of the Lords to accept a totally different scheme. There was no time to go into all the facts relating to a new improvement, and his committee proposed to drop the matter for the time being. The Improvements Committee had called a hurried meeting and brought an urgency report to the Council in favour of the Lords' amended scheme, and he submitted that this was not the way to conduct the business of the Council. There were a great many questions which the Council would have to consider before it could pledge itself to a new scheme. The Lords Committee seemed to have been influenced by the owners of property in Abingdon Street, but he thought the Council would not be affected in like manner. The Lords asked the Council to treat this as a national not as a municipal improvement. It would be a bad precedent for the Council to rush any improvement scheme in the way the Lords suggested, because future Bills of the Council would be opposed at the eleventh hour in the hope that the Council would give in rather than drop them. It was the duty of Parliament not to ask the Council to consider a new scheme but to accept or reject the one which the Council promoted.

Mr. Shaw-Lefevre moved as an amendment:—

"That the Council do proceed with the Bill subject to the Select Committee of the House of Lords agreeing that the new street from the southern end of Abingdon Street to Lambeth Bridge shall be carried out in general accordance with the route shown upon the plan approved by the Improvements Committee on June 7th, 1899, sanctioned by the Council on July 4th, 1899, including the widening of the northern end of Abingdon Street as already arranged."

He agreed that it was not wise to accept an alternative scheme from a Parliamentary Committee, but this was not really a new scheme,

as it had already been approved by the Council in June, 1899. He regretted that the House of Lords Committee had not accepted the Council's later scheme, but as they had accepted the first scheme he could not help thinking it would be very unwise for the Council to drop this improvement at the present time. Any delay would add to the cost enormously. In fact, the Council's valuer had stated emphatically that a year's delay would entail an additional charge of £100,000. It would be better, therefore, to incur now the £50,000 extra which the amended scheme involved than to permit any further delay to take place. This was one of the most important improvement schemes which had ever come before the Council—it was also one of the most popular—and he trusted that the Council would not place itself out of favour by dropping the scheme at the present time.

Mr. R. A. Robinson, who seconded, said the question of cost was the chief consideration, and he was convinced that the Council would lose heavily by refusing to go on with this scheme now.

Mr. McKinnon Wood opposed the amendment. He said they were asked to add three-quarters of an acre to the House of Lords' garden at a cost of nearly £60,000, and to secure a new approach to the Houses of Parliament. If this was to be a national improvement, as was stated, why was it not paid for out of national funds? He did not object to expend money in opening out the public buildings of London, but they must draw the line somewhere, and he was not prepared to spend another £60,000 on this improvement.

Dr. Napier could not accept Mr. Wood's leadership in this instance, and he could not help thinking that it would have been better had he raised his objections when the scheme first came before the Council. Unless this improvement were at once proceeded with, it was not unlikely that the syndicate which had formerly proposed to deal with it would again be formed.

Mr. Burns agreed that Mr. Wood's opposition ought to have been raised two years ago, and he considered it was hardly worthy of the leader of the Progressive Party to raise the cry of economy now. It was not the House of Lords' garden that would be enlarged, but a garden that was open to the people of London. He welcomed the Lords taking an interest in the enlargement and preservation of open spaces. The amended scheme was better than the old one, and he believed that the additional cost would be more than compensated for by the additional benefits.

Dr. Longstaff said it was utter nonsense to speak of the open space as the garden of the House of Lords, inasmuch as the place was dedicated to the use of the public for ever. The new scheme made it possible for the Council to erect its new county hall in the neighbourhood if it so desired.

Mr. Benn thought that the additional cost entailed by the amended scheme ought to be met by the Government, and failing that he was not prepared to support it. He ridiculed the idea that it would be possible to build a county hall in the locality. Imagine the House of Lords and the County Council facing each other.

On a division there voted:—For the amendment, 64; against the amendment, 43.

Mr. McKinnon Wood then proposed as an addition to the amendment a clause "providing that the Government is prepared to contribute the cost of the addition to the garden."

Mr. Benn formally seconded.

Mr. Shaw-Lefevre explained that there was no time to negotiate for a contribution, even though it were possible to secure one, as the Council's decision must be given to the House of Lords Committee next day. He would take that opportunity of informing the Council that the Chancellor of the Exchequer had several times told him that the Government could not under any circumstances contribute to the cost.

Another division was taken, when the proposed addition was defeated by 61 votes to 47.

After further discussion Mr. Shaw-Lefevre's amendment was put as a substantive motion, and carried by 52 to 40.

The Select Committee of the House of Lords again had the subject before them last Thurs-

day in considering the clauses of the Bill of the London County Council authorising various London improvements, the most important of which is the construction of a new road from the Houses of Parliament to Lambeth Bridge, the extension of the embankment wall and gardens from the Victoria Tower Garden to Lambeth Bridge, and the clearing and rebuilding of the properties on the western side of the new road.

Mr. G. J. Talbot said that, before their lordships went through the clauses, he would ask leave to state the attitude of the London County Council towards the Westminster Improvement in view of the decision of the committee, which, by transferring a piece of land to the eastern side of the street, where it would have to be added to the gardens and so would not be valuable for the purposes of the Council, had involved some addition to the net cost of the work. The Chairman: £65,000. Mr. Talbot: Yes. But that cost, whatever it might be, had been thrown on the County Council in order that the work might be a more satisfactory national improvement. The Chairman: The phrase "national improvement" has been attributed to me, but I was not the author of it. Mr. Talbot said there was a portion of the scheme which was of a London character, but the improvement of the approaches to the Houses of Parliament was of a national character. The view of the County Council, whether right or wrong, was that the enhanced cost occasioned by the modification of the scheme in the interests of the national part of it ought to be borne by the Government. The County Council, however, were sensible that, if the scheme were to be carried out at all, it must be carried out without delay, as there was going on all over the area affected a substitution for poor property of expensive houses and works—a process that would be greatly accelerated should further delay occur. The Council, in proceeding with the modified scheme, desired to make it plain that, in doing so, they did not abandon or prejudice their right to approach and press on the Government the contention that in equity the national Exchequer should make a further contribution in respect to the additional cost imposed on the Council in regard to the national as distinct from the metropolitan improvement. Counsel then read the resolution of the Council dealing with the matter.

On Clause 6 Mr. Rigg asked that the houses in Abingdon Street should be exempted not only from the action of the clause, but from the whole Act. Mr. Talbot said that one of the objects of not exempting the houses from the whole Act was to secure, that very high or unsightly buildings should not be erected opposite to the Houses of Parliament. The Ecclesiastical Commissioners, who were the freeholders of the greater part, did not object to the Office of Works having a veto in regard to rebuilding. The committee refused Mr. Rigg's application. The remaining clauses having been disposed of, the Bill was ordered for report.

A New Fire Station at Islington was opened last week. It is situated in the Upper Street, within a few hundred yards of the Agricultural Hall, and in close proximity to the Vestry Offices. The station, which has been built by the London County Council Works Committee at a total cost of £20,594, contains a steam engine, a horsed engine, and a hose cart, and has accommodation for four horses, 19 firemen, and two coachmen. Originally the chief station for Islington was in the Essex Road, but as far back as 1893 it was decided to build a station suitable to the requirements of the district on the present site, but unexpected difficulties arose, and the result was that the Council had to go to Parliament to get power to build. The new station has a frontage of 54ft. to Upper Street and 50ft. to Florence Street. When the County Council came into existence they had 118 square miles of territory to protect from fire and risks, and a population of 4,600,000 people to look after. They have built eight new stations and rebuilt six others, and six are now in process of erection. About £100,000 more a year is now spent on the Fire Brigade service than formerly, and it is in a decidedly more efficient state than ever.

MASTER BUILDERS' ASSOCIATION.

THE National Association of Master Builders held its half-yearly meeting in Nottingham last Tuesday week. Mr. W. Sapcote, of Birmingham (president) presided. The half-yearly report having been adopted, Mr. C. W. Green submitted the financial statement. In years gone by they had experienced great difficulty in getting local associations to pay their half-yearly subscriptions punctually. He could quite understand that there was a difficulty in some districts which were thinly covered with building contractors. He wished to suggest that each builder in paying his wages each week should put a penny away for every pound paid. There was each year £60,000,000 paid in wages by builders. If the pennies were put into a reserve fund as he suggested the total would be £250,000. If this was done they would have very little difficulty in obtaining a very large reserve fund, which was an essential point in attaining an international association in the future.

A grant of £100 was then made to the Hull and Halifax Law Costs Fund, and it was further decided to make a special appeal on behalf of the fund to those associations which had not contributed.

On the motion of Mr. Green (Liverpool), seconded by Mr. Walters (Hull), it was resolved to appoint a committee consisting of three representatives from each of the four federated centres, together with the president, to meet the master plumbers and plasterers as to their affiliation with the N.A.M.B., and to take into consideration the terms upon which they can combine. Mr. Sapcote (president), Mr. Mansfield, Mr. Smithurst, Mr. Dawson, and Mr. Walters were appointed a committee to prepare evidence to give before the Parliamentary Joint Committee on the question of municipal trading.

The Builders' Foremen's scheme was then submitted. The chairman stated that the committee met in Manchester on this question, and recommended the scheme of the Northern Centre for adoption as soon as practicable. Mr. Smithurst explained the scheme, and stated that they had had two actuaries engaged, and had incurred considerable expense. Most of the trade societies carried with them benefits for the men and superannuation. They therefore could hardly go and ask foremen to join some other society unless they gave them the same benefits. In their scheme, the benefits were much better. They recommended that the masters pay the first six months' subscription, and thus put their foremen into immediate benefit. They had done this in the belief that in the next few years there would be an effort made to bring, by compulsion if necessary, out of the men's society all the men who were foremen. It was eventually decided to adopt the scheme as a national scheme, and to carry into effect the recommendations of the committee. The sum of £50 was voted towards the cost incurred in preparing the scheme was unanimously carried.

With reference to the finality of builders' estimates the council recommended the following clause:—"This estimate, should it be accepted, is subject to a written contract, pending all usual and proper terms being signed by the parties, and shall not be taken in itself as constituting a contract." There were several amendments proposed, and eventually Mr. Whittall proposed that a form of tender be issued by the National Association of Master Builders, and that all members be recommended to use that form and no other. This was seconded and carried.

The following resolution was carried on the proposition of Mr. Wall (London):—"When a builder's tender has been accepted, and the priced quantities deposited, and the schedule verified, that the said quantities shall be placed under seal, and only used for the purpose intended, viz., the settlement of accounts. Farther, that when the accounts are settled the quantities shall be returned to the builder. In case of instalments the builder's verified copy shall be used for rates and prices."

Mr. Church (Bristol) proposed the following resolution:—"That all specialists' provisional amounts in quantities should in future include

the costs of all attendance on the part of the general contractor or contractors, and where the payment of such sums devolves upon the contractor they should carry 10 per cent. commission to him or them. Also that in the case of all per cent. sums in quantities all goods should be ordered through the contractor." Mr. Whittall briefly seconded. Mr. Smithurst proposed as an amendment, "That they shall not be less than 5 per cent." The amendment was defeated, and Mr. Church's resolution was carried after a lengthy discussion.

The Bristol Local Association recommended the following resolution, which was adopted:—"No priced quantities shall be sent in with the estimate, but should members receive an invitation to tender for work where it is stipulated that quantities are to be sent in with the tender, the members are to immediately inform the secretary of the federation, and the committee will at once take up the matter, with a view to avoiding friction between the contractors and architects."

Mr. J. Wakeham (Plymouth) proposed that a committee be formed to meet and appoint from themselves a deputation to wait on the largest railway companies' engineers, with a view of inducing them to receive tenders unaccompanied by priced bills of quantities. Mr. Walters (Hull) seconded, and the resolution was carried. The following were appointed the committee, with power to add to their number:—The president (Mr. W. Sapcote), the vice-president (Mr. A. Krauss), Mr. R. Neill (Manchester), Mr. W. Shepherd (London), Mr. Nicholson (Leeds), and Mr. B. J. Greenwood (London).

The association voted £75 to Mr. J. Alfred S. Hassel (Liverpool) for services rendered during the plasterers' strike.

The following resolution passed by the Emergency Committee of the Lancashire, Cheshire, and North Wales Federation was approved of:—"That it be a recommendation to the National Association to amend the form of contract, by substituting 90 per cent. for 80 per cent., at the end of line 4, in clause 19,"—which at present reads—"When the value of the works executed, and not included in any former certificate, shall from time to time amount to the sum of £— or otherwise, at the architect's reasonable discretion, the contractor is entitled to receive payment at the rate of 80 per cent., &c."

In the evening a banquet was held at the George Hotel, the delegates being invited by the president (Mr. William Edgar) and the committee of the Nottingham Master Builders' Association. Mr. William Edgar presided. Mr. A. Krauss proposed "The Architects, Engineers, and Surveyors," to which Messrs. R. Evans and A. N. Bromley responded. Sir Thomas Roe, in bringing forward the toast, "The National Association of Master Builders of Great Britain," referred to the present crisis in the trade caused by the rise in the price of materials, and cautioned builders in the matter of giving under-estimates for work. Mr. Wm. Sapcote responded. Mr. Walters proposed "The Nottingham Association of Master Builders," to which the chairman responded.

CURRENT PERIODICALS.

The Journal of the Society of Estate Clerks of Works for July is mainly devoted to a well-illustrated article on "Bath: Ancient and Modern," by Councillor Cotterell, which was read as a paper before the society at their meeting at Bath in June. The paper is of exceptional interest.

The Journal of the Society of Architects has in the July issue the full text of the Architects' Registration Bill, which the society is promoting. We have nothing to add to our former expressions of approval concerning the measure. The qualifications, experience, and work of the eight architects selected to submit designs for the New Street frontage are here set forth in a ludicrous manner. The principal works of these architects have been in nearly all cases overlooked, and Mr. Reginald Blomfield's sole qualification to fame lies in the fact that he is a nephew of the late Sir A. Blomfield. Evidently the author believes in a far-reaching

heredity, but no excuse can be found for inserting this ridiculous notice.

The Slate Trades Gazette is much perturbed by some of the recent manifestations of trade unionism, particularly the limitation of output. "The Chicago Tribune" is quoted upon this latest phase and its evil results, and it is asserted that the trade unions, with their officials, "clothed in a little brief authority," are becoming a greater tyranny to the men than the employers whose sins they were created to deal with. This is only another way of saying that all men are not born with equal advantages and abilities and that you cannot play tricks with Nature. Perhaps we shall adopt Jerome K. Jerome's farcical suggestion of lopping off an arm or leg from the extra strong and big men, and performing surgical operations on those with extra brains in order to bring their wits down to the general level of imbecility. As our contemporary asserts, the limitation of output is a premium on laziness, which is the worst vice to be encouraged because it is the father of all the other vices.

The Scientific American, Building Edition (July), has its usual collection of designs for American houses and bungalows. We cannot understand the reason for giving interior views of the Hearst Californian seat. There is so much furniture and bric-a-brac in the rooms that any architectural effect they may possess is entirely lost.

Die Kunst (Munich), in common with the majority of art journals—English and foreign—continues to devote a great deal of space to the Paris Exhibition. In the July number a thoughtful essay on German art, by Mr. Alfred Lichtwark, is reprinted from the official catalogue of the German section; there are also a well illustrated article—the first, apparently, of a series—on decorative art in the Palaces of the Esplanade des Invalides, another on the restaurant in the German House, and a third on the decorative paintings. The author of the last named article makes the somewhat superfluous remark that you will not find at the Paris Exhibition any epoch-marking frescoes like those of Giotto or Masaccio. He points out, however, that some of the work is very interesting, though much of it clearly reflects the influence of Pavis de Chavannes. An article on French furniture at the Exhibition is illustrated by some strikingly original designs; some of the pieces are very graceful and pleasing, but in others the designer, in his efforts after originality, has only achieved eccentricity. Apart from the Exhibition matter, the principal article in this month's issue is one dealing with the dreamy and mysterious work of the painter Fernand Khnopff.

The Revue de l'Art for July is wholly given up to the Paris Exhibition. Its contents, however, are more varied and interesting than that fact might seem to imply, and the illustrations are reproduced in first-class style. The first article deals with paintings of the French School, and is illustrated by a fine heliogravure of M. Benjamin Constant's "Mes deux Fils" and an etching of M. Delaunay's "Pandore," as well as by several smaller illustrations. In a critical article on the sculpture at the Exhibition, M. Maurice Demaison deplores the "obsession of the antique," which in the reaction against the frivolous aestheticism of the eighteenth century has come upon French sculpture and robbed it of interest and vitality. "Whilst the survivors of the eighteenth century," he writes, "excel in bold and rapid sketches, and at the first glance catch their models in full action, in full life, in the attitude and movement which are habitual to them, while they give us, by dint of an accurate transcription of physical characteristics, the impression of a complete and absolute moral likeness, the exponents of the new doctrine display an evident anxiety to correct nature, to regularise and embellish its characteristics; they modify here the depth of the eyes, there the prominence of a bone, the wrinkles, the accidents, the peculiarities, the traces of thought or of mannerisms; all that in a face differs from the 'rule' adopted by the school they proscribe as a deformity, not considering that they are suppressing at the same time everything that makes the interest and

charm of a portrait. In their cold images, the shoulders shaped like those of Hermes, the sightless eyes, the symmetrical lines, the conventionally rounded model, the fixed expression, there no longer exists anything which displays individuality or palpitates with life." Other articles deal with medals and medallions and with silverwork at the Exhibition, while to those of antiquarian tastes probably the most interesting article in the number will be that on jewelry and enamelling, which forms the third of a series on the exhibits illustrative of the history of French art.

St. George (the journal of the Ruskin Society of Birmingham) contains an excellent paper by Mr. Charles Holme on "Ruskin's Nature of Gothic, and its Relation to Modern Handicraft." This famous chapter from the "Stones of Venice" is one of the best known and most valuable of Ruskin's writings on artistic subjects, and Mr. Holme does well to apply its teachings in a definite and practical way to present-day handicrafts. Some concluding reflections on the seriousness and the universality of art are very true and suggestive. "It often seems to me," says Mr. Holme, "that art is most welcome when it is most natural, and when it is produced without apparent effort; and that it is, therefore, especially pleasing when found in the simple articles of everyday use that custom may have made familiar to all. There is more art in a common Devonshire earthenware jug, with its coarse running-down glazes, than there is in the bedizened and begilt ewer of a china chamber service. There is more art in an old brass candlestick than there is in many a highly ornate modern lamp. There is more art in an old oak clothes-chest than there usually is in the carved and polished mahogany sideboard. And, finally, there is infinitely more art in the thatched Sussex cottage, or the half-timbered Shropshire one, than in the stone porticoed and balustraded suburban villa. Art is not ornament, although ornament may be art. Art is not a question of material—of stone versus wood, of gold versus clay. The commonest things may be artistic in a certain degree, while the most elaborate may lack art in every degree whatsoever." There are some interesting Ruskiniana in this number in the form of three hitherto unpublished letters of Ruskin reproduced in facsimile, and among the "Notes" at the end of the magazine we find some interesting reminiscences of Tennyson and some details of Cosme Colony—a remarkable social experiment that has its home in Paraguay.

Harper's Magazine for August contains an excellent sketch of the ruins of Montmajour, near Arles, and a little poem by William McLennan which well expresses the poetry and pathos of

"The mighty pile which lies here, wrecked and still,
Yawning to Heaven like an empty grave."

The other contents of the magazine are good and varied as usual, though there is nothing that calls for special comment.

Cassell's Magazine contains an article of some interest to engineers—an account of the construction of the railway to the summit of the Jungfrau. We cannot regard such an enterprise with very great enthusiasm, though it is no doubt a wonderful engineering feat. The author tells us that the railway will be no disfigurement to the great mountain mass, and we devoutly hope this anticipation will be realised.

Architecture for July has nothing to notice in the letterpress. There are a number of interesting illustrations of houses however. The residence at Germantown is simple and effective. The residence on Riverside Drive and Eighty-ninth Street, New York, is simple, but being absolutely symmetrical, even to making panels to match windows, and the detail Classic, it is quite dead. The architect of this residence would do well to study that by Messrs. Carrere and Hastings, architects, at Cold Spring Harbour, a most happy, generally symmetrical, building. Here very little ornament is used, and consequently the building gains in effect. The garden front is not so good, however, the stone dressings round the window and the entrance being rather distressing. Pennsylvania Institute for the Blind at Overbrook, the sketch for a garden terrace and

house, stable and garden at Greenwich, Conn., are all to be complimented. The Pennsylvania University Buildings for Deaf and Dumb are simple, but the central block is out of feeling. The two half-timber houses illustrated in the number are pretty, but as the construction is probably false do not rank as other than stage scenery.

The American Architect for June 30th contains an article entitled "A Day in Provence," illustrated by photographs of architectural works of those delightful old towns of Aix and Arles. Mr. Maurice M. Sloan contributes a specification for iron and steel work. The Americans being so far ahead of us in the use of steel for structural purposes this specification should be studied. The illustrations are most interesting. The design for Yale College Memorial Building at New Haven, Conn., reminds us forcibly of the new Record Office Building in Chancery Lane, London, and is just as unsatisfactory. There are also two further examples in Gothic style—Rylands' Library, Manchester, by Mr. Basil Champneys, and a design for a proposed church at Newcastle-upon-Tyne by Mr. George W. Ward. It is just as foolish to design now in Gothic as it is in the Classic styles: these styles being dead and the forms they assumed being produced by different conditions to those ruling at present. It stands to reason, therefore, that to use the traditional forms, now without significance, is akin to writing in a dead language to communicate with the people of to-day. And again, on this simile, to mix two dead languages or styles, or a dead with a living, is both ridiculous and in bad grammar. Mr. Basil Champneys in his library has produced a reserved and academic Gothic design of good grammar, but still the interest one takes in it is purely that of an exercise in a dead language, and it seems a pity that the great capabilities for design that Mr. Champneys has everywhere shown should not have been exercised in writing in a modern tongue. In this library everywhere are evidences of a thorough knowledge of the true principles of architectural design. Mr. Ward's church is not so successful, although much more modern in feeling—it requires more reserve. The library of a house at Tuxedo Park illustrated is too finical. Some fine old iron railings in New York are illustrated. In the number for July 7 the second part of the article on "A Day in Provence" is given, illustrated by a number of views in Arles. An interesting article is given on "Washington, the City Beautiful." The house at Larchmont, N.Y. (Ludlow and Valentine, architects), is, on the whole, a very successful design: we will not criticise the detail, the architects no doubt know its faults as much as we do. The design for a mausoleum is an atrocious and senseless piece of work, for where is the need for buttresses and flying buttresses in this structure of about twenty feet in height in the upper part which it is pretended is supported by them. The detail is of course appalling. The number for July 14th contains an illustrated article on the Paris Exhibition. Two of the illustrations in the plates are of successful works—an apartment House by Messrs. Cram, Goodhue and Ferguson; and the Main Entrance to the Judson Memorial Church, Warlington Square, New York, by Messrs. McKim, Mead and White. The latter shows a capability for design that is rather thrown away upon dead Classic styles. The illustrations of the restoration of Ordsall Hall, near Manchester, call for some general remarks upon the subject of restoration. Restoration is solely done with the object of giving an idea of the appearance of the structure in its complete state. This is a want that it is certainly permissible to fulfil—but not by destroying the original or falsifying the history of the building. No collector of small works of art or antiquities, such as pictures, books, statues, &c., would esteem a copy or a restoration as highly as the original, and it is merely the extension of this view to the larger and often more important historical works of architecture and building that shows the falsity of the principle. When it is recognised that the style of buildings of the past were an outcome of the spirit of the age they were produced in it will be seen that they serve as no other things can do the place of historical documents. If the

preservation of such documents comes in the way of the absolute needs of humanity we recognise that they must go, but then any parts of them which are of absolute historical value should be preserved in some other place, such as a museum. Now in this case of Ordsall Hall was it necessary that a church should be built against this hall? We think not. A site could have easily been procured elsewhere. Again, why should the whole history of the house have been falsified by adding new parts, in direct imitation of the old. If a reproduction of its original state was required it could have been done elsewhere, and the old materials not destroyed or re-used in the reproduction. This restoration is merely a falsification of history. A reproduction is merely a toy or a peep-show, and not a serious historical document. Ordsall Hall was quite capable of being kept without falling into further decay for many years, and when beyond keeping all parts not of value in themselves should have been destroyed and a modern building erected, to serve, as this has done, as a record of the age in which it was built. Reparation is estimable; restoration is pernicious, and often becomes absolutely false. We, of course, recognise that the owners of the site should have been recouped by some public body for any expense the leaving of this unoccupied building might have entailed.

Masters and Men.

Strike of Quarrymen.—One thousand quarrymen, masons and labourers in the Matlock district came out on strike last week for an advance of $\frac{1}{2}$ d. per hour.

North-East Coast Engineers' Dispute.—The vote taken on the North-East Coast among the Amalgamated Society of Engineers as to whether they were prepared to cease work on August 18th, owing to the employers' uncompromising attitude on the wages question, has not given the necessary majority for a strike. Consequently a fresh vote has been ordered to be taken on or before August 7th.

The Ipswich Bricklayers' Dispute remains without particular alteration in the situation. The number on strike, which last Monday week was 181, has been reduced to 84 and a further reduction is anticipated. The men in work are being levied at the rate of 3s. per head per week, and as there are about 170 men at work it is expected that the strike pay of 15s. per week will receive a substantial augmentation.

Labour Conciliation and Arbitration.—The annual aggregate meeting of representatives of the London Chamber of Commerce and delegates of trade unions interested in the work of the London Labour Conciliation and Arbitration Board was held last week. Mr. S. B. Boulton, the chairman of the board, in presenting the annual report, said that there had not been so many disputes as usual during the past year, and those that had come before the board had been satisfactorily settled. He asked the delegates present that in case of disputes the parties interested should place their grievances before the board before a strike actually took place. The board had been in operation for ten years. In nine cases out of ten if the parties came to them they were able to settle the disputes. Besides the work they had done there were also cases in which they had given advice. They had also done educational work. They had educated each other to such an extent that those on the board had learned a great deal since they joined. That board had also taught the world that working men can make as impartial arbitrators as employers.

Mrs. Brown-Potter, the well-known actress, has just had a Thames villa-residence erected at Bray from the designs of Messrs. Stephen Sadler, F.R.I.B.A., and R. C. Davy, M.S.A., of Maidenhead and Oxford. The same architects have also just completed a large residence next to the Guards' Club, Maidenhead, for Mr. J. W. Benson.

Builders' Notes.

Building Scheme at Ostend.—It is proposed to erect an extensive block of buildings on the sea front at Ostend, between the King's chalet and the Hôtel North. The new block would take the form of an arcade, comprising 120 shops.

Hornsey District Council.—A buildings inspector for Hornsey has been appointed by the District Council. One hundred and twenty-six applications were received. Mr. A. Burbidge, of No. 11 Merchison Road, Leyton, at present a building inspector in the service of the Leyton Urban District Council, was appointed.

A Building Agreement.—Mr. E. W. M. Corbett, Cardiff, the arbitrator appointed by the High Court of Justice, recently heard the case of *James v. Griffiths*. It was a claim by Jno. James, builder and contractor, Merthyr Vale, against Mrs. Cecilia Griffiths, of the Navigation Hotel, Aberfan, for a sum of £290, being the balance due to him under a building agreement. The arbitrator, in his award, ordered the defendant to pay to the plaintiff the sum of £250, each party to pay their own costs.

Very Speculative Builders.—The first meeting of creditors of David Phillips and Philip Davies, trading as Phillips and Davies, builders, Bridgend Road, Maesteg, was held at Cardiff recently. The debtors, both tinplate workers, commenced business as speculative builders in 1896 with a capital of £15 and £10 respectively. They had built twenty houses, all of which, with the exception of five, had been sold, and upon those five there remained due £1,130 15s. 11d. These houses were valued at only £800, and the mortgagees were returned as unsecured creditors for the balance. Six houses had been commenced at Barnado Street, Maesteg, upon which debtors had received £470 19s. 3d. These houses were valued at £500, and there was an estimated surplus therefrom of £20 9s. 5d. The Official Receiver remains trustee.

New Buildings at Hastings.—The Hastings Town Council have approved the following plans of new buildings, &c.:—Three pairs semi-detached villas, St. Saviour's (Parish of St. Leonard), for Mr. G. T. Jenkins, owner, per Messrs. Elworthy and Son, architects; Wesleyan Chapel, Norman Road (Parish of St. Mary Magdalen), for Trustees of Wesleyan Chapel, owners, per Mr. J. Weir, architect; new shop, 1 Stonefield Place (Parish of St. Mary-in-the-Castle), for Mr. E. Coussens, owner, per Messrs. Cooper and Coussens, architects; cart lodge at rear of Hughenden Road (Parish of St. Helen's), for Mr. T. L. Smith, owner, per Mr. A. Dray, architect; alterations, No. 2 Maze Hill (Parish of St. Mary Magdalen), for Mrs. Dengate, owner, per Mr. P. H. Tree, architect; fifteen cottages near the Ridge, London Road (Parish of St. Helen's), for Mr. H. Arnold, owner, per Mr. H. Ward, architect.

Annoyance from Building Operations.—Mr. A. Bird, Church Street, wrote to the Rugby Urban District Council complaining of the nuisance and annoyance caused to himself and customers by the alterations being made to the adjoining premises. He contended his premises had not been properly protected by the builder, and during the alterations bricks and other débris fell into his doorway several times, not only damaging his stock-in-trade, but being a source of danger to customers visiting his shop. It was generally considered that hoardings should be erected while alterations similar to those in question were being made, but the Surveyor said it had not been the practice to compel builders to do so in the past. He, however, thought it ought to be done in every case. It was decided that in future hoardings must be erected in every case where alterations were being made to the fronts of business premises.

Building at Ayr.—The Works Committee of the Ayrshire County Council have

passed the following plans:—John Cowan, New Cumnock, for the erection of workmen's houses at Bank, New Cumnock; James S. Stevenson, Valepark, Prestwick, for erection of double villa at Prestwick; James Macdonald, Eglington Arms Hotel, Dalmellington, for additions to hotel; Rev. J. Spence, for addition to O. S. Manse, Auchinleck; Robert Gemmill, for double villa at Prestwick; William McGeachin, Comely Bank, Prestwick, for erection of double villas at Monkton Road, Prestwick; Dalmellington Iron Co., for erecting cottage at Waterside; Wyllie and Co., Prestwick, for erecting dwelling houses at Briarhill, Prestwick; James Young, New Cumnock, for erection of cottage there; R. M. Davidson, Drumley, for erection of cottage at Drumley; Thomas Higgins, Prestwick, for erection of houses on Briarhill Road, Prestwick. A small sub-committee has been appointed to meet the first Tuesday of each month, at two o'clock, to consider plans under the new by-laws, consisting of Messrs. Bell, Davidson, Montgomerie and Ligertwood; two a quorum.

The City Property Market.—At the London Auction Mart, Tokenhouse Yard, E.C., on Wednesday, the two shops and suite of offices, Nos. 12 and 13 Poultry, City, let at rentals amounting to £1,384 per annum, and held on lease from the Governors of Christ's Hospital for an unexpired term of 34 years at a ground-rent of £485 per annum, were together passed at £7,500, while the 18 years' Crown lease of the business premises No. 34 St. James's Street, W., let on lease at a rent of £525 per annum, was likewise withdrawn at £6,500. The old-established hostelry known as the Royal Victoria and Bull Hotel, Rochester, which is freehold in tenure and let at £150 per annum, changed hands at £7,900, while the freehold with possession of the fully-licensed property known as the Colonnade, Brighton, realised £8,200. A freehold ground-rent of £200 per annum, secured upon the office premises No. 10 Ironmonger Lane, Cheapside, of the rental value of £500 per annum, lease 92 years, was sold for £5,600, at which price it will pay the purchaser $3\frac{1}{2}$ per cent. A freehold site in Shoreditch, occupying an area of 20,000 square feet, realised £16,500, while the freehold property, No. 67 Lincoln's Inn Fields, containing three floors and offices, comprising 22 rooms, and having a ground floor area of about 2,500 superficial feet, changed hands at £14,400.

Who Should Purchase a Jail?—Sheriff Strachan recently decided a case relating to the sale of the old jail, Rutherglen, belonging to the Town Council of Rutherglen. The plaintiff was George Williamson, builder, Monrave House, Rutherglen, who asked the Court to find against the vendors of the property, who were the defendants in the case, that he was the purchaser of the materials of the old jail at the price of £20. The defendants, he said, put the materials up for public auction on June 6th last. He and John Love, builder, Rockland, Rutherglen, who was also sued as a defendant in the action, were present at the sale, and both made offers, the plaintiff's bid being £20. Love and he continued the bidding thereafter, and at the close the auctioneer knocked the subjects down to Love at the best bid of £27. The plaintiff pleaded that Love, being a member of the Town Council, and therefore one of the expositors of the materials, he was disqualified as a bidder or purchaser at the auction, and that the jail materials should pass into the plaintiff's hands at the first bid of £20. At a former stage in the case the Sheriff granted an interim injunction against the defendants receiving the materials sold pending the settlement of the action. His lordship now found the plaintiff has no title to challenge the transaction under which the defendant Love became the purchaser of the subjects.

Sheffield's Building Boom.—House building in Sheffield has been going on at a very rapid rate during the past two years, but there are signs now that the boom is at an end. From enquiries amongst local builders there is a considerable diminution in the amount of new property projected. The cost of building material is now so high that it is impossible to

erect houses which, at the rents obtainable, will afford a fair return upon capital. Hence investors are shy of this kind of investment. Owing to the spell of good trade and to the development of the suburbs of the city under the stimulus of tramway facilities, house property has been planned and carried out very rapidly of late. In 1899 the number of houses sanctioned on plans by the Corporation sub-committee which deals with the matter was 3,618, as compared with 3,566 in the previous year. The average growth of the city since the by-laws were adopted in 1884 has been 970 houses per year, and it will be seen, therefore, that the years 1899-1900 were exceptionally brisk in the building trade. The present year opened under similar conditions, and up to the last meeting of the City Council the number of houses for which plans were submitted and approved was 1,530. This does not look like any great falling off, but it is worthy of note that it was in the early months of this year that most of the property was projected, and, of course, all of it may not be immediately carried out. Lately the plans sub-committee have not had many plans for new house property before them. At a meeting of the committee last week only 69 new houses were approved, and at the two previous fortnightly meetings the numbers were 62 and 77. These figures are considerably below the recent average. It does not follow at all because there is no longer a boom in house-building that more houses are not wanted. Overcrowding still exists in some parts of the city, and it is simply the high cost of building which has given a check to enterprise. At Walkley, where new dwellings have sprung up very rapidly, the supply seems to have overtaken the demand. This is not the case in other parts of the city, however, and building is still going on fairly rapidly in the Ecclesall and Abbeydale districts, which do not seem to have yet shared in the general lull.

Deviation from Plans.—At Sheffield Police Court, before the Stipendiary Magistrate (Mr. Welby), Harry Ripley, of 245 Penistone Road, builder, was summoned recently on the information of the City Surveyor for erecting, on March 22nd, a new building, to be used as a dwelling-house, at the corner of Eden Street and Driffield Street, which had not, at the rear, or at the side, at least 150 square feet free from any erection thereon above the level of the ground. There was a second summons against the defendant alleging that he did not give to the Council complete plans and sections of every floor of eleven dwelling-houses which he intended to erect in Eden Street and Driffield Street. On November 24th last the defendant sent in plans for ten houses, situated in Eden Street, which were approved. On March 22nd a building inspector went to inspect the houses, and found that one house, shown on the plan, had been converted into two; and also that a portion of ground had been built further over than was shown on the plans approved. At the rear of a building intended to be used, part as dwelling-house and part as sale-shop, the air space was 68ft., whereas the minimum laid down by the by-law was 150ft. The defendant sent in an amended plan, which was disapproved. Plans had not been sent in for the houses as they at present stood. The defendant said he had added five feet since the offence, and the air space was over 300ft. He had not split the house into two. Cross-examined, the defendant said on March 22nd the house in question had two sets of stairs, two kitchen ranges and two sinks. Since that time he had removed the ranges, and a doorway had been broken through a wall. In reply to the Stipendiary, the defendant said he found that his foreman was making the house into two at about the time of the alleged offence, and he stopped him. The second summons was withdrawn, the Stipendiary remarking that they could not consider a deviation from a plan the same as not sending in a plan. With regard to the first case there seemed to have been a breach of the by-law. He could come to no other conclusion than that the defendant was making this house into two, and so it would have stood if his attention had not been called to it. The penalty was £5 the defendant would be fined £2 10s. and costs 7s.

Bricks and Mortar.

APHORISM FOR THE WEEK.

"May we not say, however, that the hour of Spiritual Enfranchisement is even this: When your Ideal World, wherein the whole man has been dimly struggling, and, inexpressibly languishing to work, becomes revealed, and thrown open; and you discover, with amazement enough, like the Lothario in 'Wilhelm Meister,' that your 'America is here or nowhere'? The Situation that has not its Duty, its Ideal, was never yet occupied by man. Yes here, in this poor, miserable, hampered, despicable Actual, wherein thou even now standest, here or nowhere is thy Ideal: work it out therefrom; and working, believe, live, be free. Fool! the Ideal is in thyself, the impediment too is in thyself: thy Condition is but the stuff thou art to shape that Ideal out of: what matters whether such stuff be of this sort or that, so the Form thou give it be heroic, be poetic?"

THOMAS CARLYLE.

Our Inset Sheets.

THE House at Limpsfield has not been built as designed by Mr. Voysey, a dispute having arisen which shows the continual meddlesomeness that interferes with the carrying out of an architect's artistic conception. The house was designed for Mr. C. A. Sewell, but that gentleman concluded the purchase before the plans were passed by the owner, who demanded that the elevation should be more cut up and that red tiles should be substituted for slates. To do this Mr. Voysey absolutely declined, and consequently some other architect had to be employed. The house was to be built of brick, cement roughcast; Bath stone window and door dressings; and with iron casements and green slate roof. Mr. Voysey's other house at Tooting Bec Common is only a design for a house proposed to be built with stables and coachman's quarters all under one roof. The material intended to be used was brick roughcast, green slate roof with lead pipes and ridges, stone window dressings and iron casements. The weathercock was put into the perspective, but never intended to be placed where shown, as it would not work truly.—The bank at Ilford stands at the junction of Barkings Lane with the High Street, in the centre of the old town. The materials used were Ancaster stone on a granite plinth, with Eureka green slating on the roof, the joinery and fittings of the bank being of Spanish mahogany. The builders were Messrs. Perry & Co., of Bow. The bank was opened a short time ago. The building at Chichester is situated in East Street, within a few yards of the old Market Cross, and is on the site of the old Swan Inn. Very large vaults extended over the whole site, separated by thick rubble walls, and several pieces of fourteenth and fifteenth century work were found in the walling and spandrils, together with two or three pieces of Roman street channelling. The materials used are Portland and Ancaster stone for the front, with Broseley tiling, the joinery and fittings of the bank being of wainscot. Mr. A. Burrell of Littlehampton is the builder. Messrs. Chaston & Perkin, of 5 Union Court, Old Broad Street, E.C., are the architects of these two buildings.

Still these Competitions!

THE Machynlleth School Board is quite overwhelming in its extravagance in the endeavour to encourage architects on their road of Art. It is now anxiously awaiting results from its perhaps too venturesome course, but still, determined to do the correct thing, is willing to face the splendour of the designs that are expected to be a revelation to the architectural world. The Board have advertised for a set of plans for school buildings for the town of Machynlleth, consisting of Mixed and Infants' departments, providing accommodation for 270 and 130 children respectively, together with a Master's House. These plans,

the Board is careful to state, must be in conformity with the requirements of the Board of Education, as stated in Schedule VII. of the New Code of 1900. For all this a "prize" of £30 is offered! The selected, or prize, plan is to become the property of the Board. Should the author of the selected plan be appointed to superintend the work, the prize money is to be part of the remuneration. Each plan is to be accompanied by full specifications, detailed Bills of quantities, estimated cost of buildings and other particulars, three testimonials and past experience, and the terms upon which the architect [the appeal is addressed to such] would be willing to undertake the supervision of the erection of the buildings.

King's College Prize Winners.

MR. R. ELSEY SMITH, Professor of Architecture at King's College, London, sends us the following list of prize winners in the Division of Architecture at the College:—*Day Classes*.—Architectural History: (1) Gold medal and books, Harry Prince; (2) silver medal and books, Gilbert Henry Lovegrove. Architectural Studio: (1) Gold medal and books, N. Austin Leech; (2) silver medal and books, Harry Prince; (3) bronze medal, Gilbert Henry Lovegrove and John Parlett. Building Construction: 1st year—(1) silver medal and books, W. J. Marlow; (2) bronze medal and books, O. C. Thompson. 2nd year—(1) silver medal and books, J. R. P. Rowley; (2) bronze medal and books, R. W. Edwards. 3rd year—silver medal and book, N. A. Leech and G. H. Lovegrove. Quantities: (1) Silver medal and books, G. H. Lovegrove. *Evening Classes*.—Architectural History: (1) Silver medal and books, Harry Prince; (2) bronze medal and books, Ralph C. Willis; (3) books, G. H. Lovegrove. Architectural Studio: Bronze medal and books, F. A. Sprules. Building Construction: (1) Silver medal and books, F. Hartnoll; (2) bronze medal and books, F. J. Jones; (3) books, C. A. Colyer. Sanitary Science: Alderman Sir Faudell Phillips' medal, George Henry Spears. Constructional Drawing-book Prizes: (1) F. J. Jones; (2) C. H. Wheeler; (3) A. Bradburn. Quantities: Book Prizes—(1) A. Bradburn; (2) J. D. Robertson; (3) A. Miles.

Fire Tests.

THE concluding series of fire tests of the present session conducted under the auspices of the British Fire Prevention Committee were undertaken last Wednesday at its testing station near Regent's Park, this being the last occasion on which this can be used, as the committee have to move their plant by the autumn to make room for an extension of the Great Central Railway, which has obtained Parliamentary powers over the property in question. The occasion was marked by the chairman of the committee entertaining a party at luncheon, among whom were Mr. Arthur Cates, the Crown Surveyor; Major-General Festing, of the South Kensington Museum, and several other officers of the committee. There was a very large attendance of district surveyors, Government and municipal officials for the actual tests, which comprised a continuation test with a patent floor which had already been subjected to a preliminary investigation a fortnight ago and with a partition, as well as two tests with iron doors. The door tests were of considerable importance as comparative tests, as one of the doors was built in accordance with the requirements of the London Building Act and the other in accordance with the requirements of the insurance companies. It was found that, although the Building Act door was of better construction than really required by the Act, the insurance door, in which only the minimum requirements were observed, was the more efficient. The floor in question was constructed by the Mural and Decorations Syndicate, Limited. The preliminary test lasted 1½ hour at temperatures up to 2000° Fahr., followed by an application of water. The continuation test was for another hour at similar temperatures, with a further application of water. The problem was to see what the resistance of this floor would be after having passed through one

ordeal of fire, the matter being of the highest importance to insurance companies as a question of reinstatement. The partition under investigation was the "Cunah-Wright" partition constructed by the Fireproof Syndicate, Limited. The test was of one hour's duration at temperatures up to 2000° Fahr., with a final application of water. As regards the iron doors, these doors were simultaneously subjected to fire up to 2000° Fahr., followed by the application of water, the test being of one hour's duration.

A Technical Museum for Dundee.

THE new museum in Dudhope Park, Dundee, was opened last week. Its establishment is largely due to the overcrowded state of the Museum in the Albert Institute, which made it impossible to properly arrange and classify some of its departments. The museum has been formed by reconstructing the eastern portion of the large building in Dudhope Park formerly used as officers' quarters. To it have been transferred the famous Watt-Boulton engine from Douglas Bleachfield, along with the exhibits in the Albert Institute of an engineering, mechanical and industrial character. The object the Free Library Committee have in view is to organise a Museum of Science and Technique, an institution greatly required in Dundee and now deemed absolutely essential everywhere for the effective teaching of these subjects. The Science and Art Department, South Kensington, not only approved of the reconstructed Dudhope buildings as suitable for a museum, but also gave a grant in aid of the purchase of the most up-to-date models of engineering and mechanical details and building construction. A second loan collection from South Kensington has just been installed. This collection does not include mechanical models, these having been purchased outright with the assistance of the grant in aid. The loan collection embraces specimens of wood carving, wrought iron work, and other craft work. There are also included various specimens of modern carved work, embossed leather work made by students of the Kirkby Lonsdale and Leighton Buzzard handicraft classes, and specimens of the hammered copper and brass work made at the Keswick School of Industrial Arts.

Finds in Ecuador.

NEAR Manti, Ecuador, is a remarkable archaeological relic, one of the most interesting monuments in South America of an unknown and extinct civilisation. Upon a platform of massive blocks of stone, upon a summit of a low hill in a natural amphitheatre and arranged in a perfect circle, are thirty enormous stone chairs, evidently "The Seats of the Mighty." Each chair is a monolith, cut from a solid block of granite, and they are all fine specimens of stone carving. The seat rests upon the back of a crouching sphinx, which has a decidedly Egyptian appearance. There are no backs to the chairs, but two broad arms. This is supposed to have been a place of meeting—an open-air council of the chiefs of the several tribes that made up the prehistoric nation which was subdued by the Incas of Peru several hundred years before the Spanish invasion. Tradition teaches with more or less obscurity that the territory now known as Ecuador was divided into several independent but allied kingdoms, and that the people reached a high stage of civilisation. They worshipped the sun and the moon, to both of which they raised temples. They had a knowledge of astronomy and were skilled in other sciences and art, but they had no written language, and the only records that tell of their existence are mute monuments like the chairs described.

£1,000,000 for Workmen's Dwellings.

THE will of the late millionaire carrier of Golden Lane, City, Mr. William Richard Sutton, which has lately been proved, provides that, after settling various annuities on his wife, relations, and a few faithful servants, out of his personal estate, the residue and the whole of his real estate shall be appropriated for the housing of

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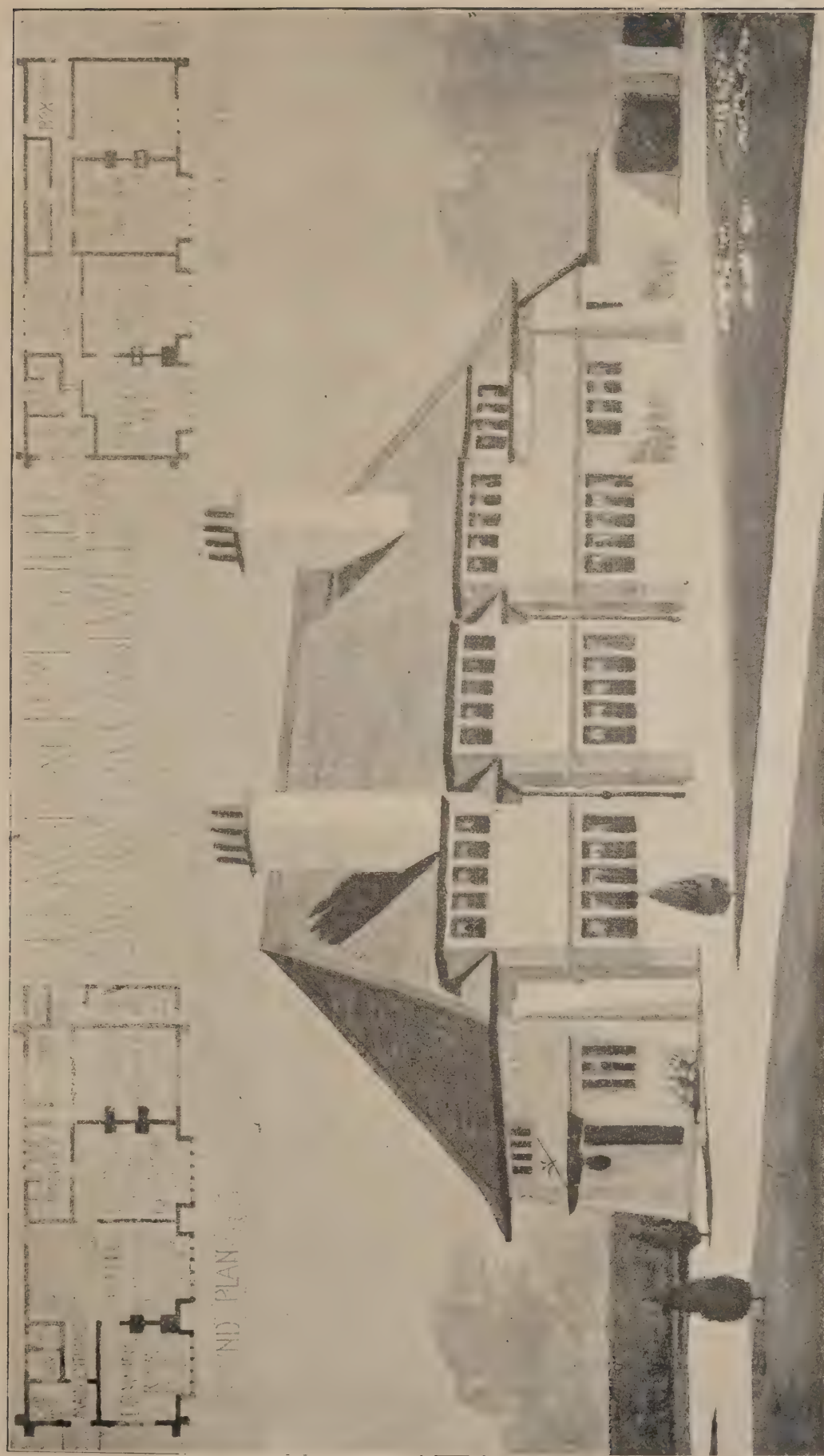


NEW LONDON AND COUNTY BANK AT CHICHESTER.- CHESTON AND PERKIN, Architects.

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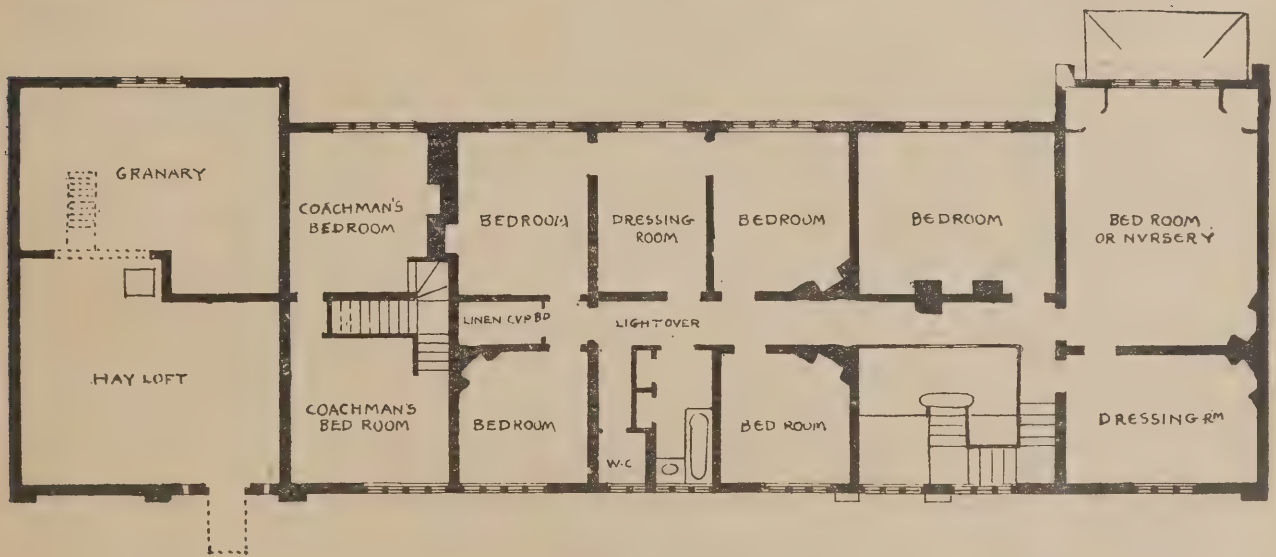


NEW LONDON AND COUNTY BANK AT ILFORD. CHESTON AND PERKIN, Architects



DESIGN FOR A HOUSE AT LIMPSFIELD, SURREY. C. F. A. VOYSEY, Architect.

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FIRST FLOOR PLAN.



GROUND PLAN.

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poor but regularly-employed working men. The blocks of buildings are to be erected in London or in the country. The districts chosen must be where a real difficulty is found by artisans and others in getting housing accommodation. This point is made very explicit in the will. Accommodation is to be provided in decidedly overcrowded districts. The relief is not to be sought for by resorting to sparsely populated suburbs, but to the very centre of plague spots. The buildings, when erected, are to be called the "Sutton Model Dwellings." Certain relatives of the deceased millionaire are going to oppose the will, but with what success it is impossible to forecast. The real value of the estate cannot yet be ascertained. For the purpose of probate the will has been proved at quite a nominal sum. How much will be available for the benefit of the working man cannot yet be estimated. The sum is bound to be between £1,000,000 and £2,000,000. The design, extent and site of the buildings are left entirely to the discretion of the trustees, Mr. Chas. T. Sutton (a brother), Mr. Chas. E. T. Lamb and Mr. Thomas Watson. These gentlemen are empowered to buy, sell, and mortgage property as long as dwellings are erected which will enable working men to rent habitable dwellings at a lower figure than the average rent of the district chosen. On no account must families be admitted rent free.

Housing in Edinburgh.

IN his annual report, just issued, the Burgh Engineer of the city of Edinburgh (Mr. John Cooper) gives the following in reference to the housing of the poor:—"The question has again and again been raised: Are you providing housing for the evicted slum dweller?—that is to say, for those persons whom the civic authority are bound to provide for in this way. It would be a matter of satisfaction were it possible to answer this question in the affirmative, but with all the number of houses of the cheapest class which have been erected in Edinburgh during the last five years the question is scarcely so answered. No doubt the sanitary conditions of the new housing must be taken into account, but people cannot live on sanitary conditions alone, however superior. Why should not Part III. of the Housing of the Working Classes Act, 1890, be taken advantage of? Should cheap and handy travelling facilities be provided in order that the people travelling to and fro to their work and otherwise be fully accommodated? Will the labouring classes take advantage of such houses when erected? Short of this there does not appear a way out of the difficulty, excepting municipal aid, and most people will admit that it is fraught with mischief to attempt to pauperise. It is out of all reason to suppose that slum clearances are the remedy, or that the persons disoused by such clearances can be rehoused on the same areas. The remedy for overcrowding, which is one of the main evils which are struck at by our slum clearances, involves the acquisition of new sites on which to erect new housing. For such new sites one naturally turns to unoccupied suburban areas, and the available existing enabling legal machinery is Part III. of the Housing of the Working Classes Act, 1890. To my mind the Corporation should, without loss of time, possess itself of sufficient suitable cheap lands for the purpose."

The Ostian Marshes.

THE eminent Italian archaeologist, Signor Constantino Maes, has lately submitted a memorial to the Government in which he affirms that 3,000 bronze tables, constituting the records of Rome from its foundation to the time of Vespasian, are buried in the marsh at Ostia, near Rome, having been carried to Ostia after being rescued from the fire which devoured the Capitol in the year 69 of the Christian era. Signor Maes proposed to the Government that the marsh should be completely drained in order to recover this invaluable historic treasure. A commission will be appointed to investigate the matter. Some years ago Signor Maes announced that if excavations were made an obelisk would be found behind the church at Ostia. The excavations were made and the obelisk recovered.

A.A. SUMMER VISITS.

STOWE HOUSE, BUCKINGHAM.

STOWE HOUSE, the celebrated seat of the Dukes of Buckingham, was visited on Saturday last, July 28th, by the Architectural Association as the fourth summer visit of the session, by the kind permission of the Baroness Kinloss, its owner.

This magnificent edifice is one that must be placed in the same category of illustrious English homes as Blenheim and Castle Howard—works that are not only contemporary with it, but were produced by the same architect, Sir J. Vanbrugh.

The ground plan of the building may be said to be a symmetrical arrangement worked from a centre consisting of an enormous rectangular block with large pavilion wings united to it by buildings of a lesser height: the centre and the pavilions, rising to a great height, form an academic architectural composition of enormous magnitude, the length over all being a trifle over 930ft. The entrance, or north front, is designed something after the manner so nobly carried out at Blenheim, with a projecting colonnade, quadrant shaped on plan, covering the north ends of the pavilions.

The entrance to the house is by a flight of thirty-one steps leading up to a loggia or great portico. On either side of these steps are placed two remarkable copies of lions that formerly occupied a similar position in regard to the garden entrance of the Villa Medici at Rome, but which are now preserved in Florence. A large "formal" garden on either side of this entrance stretches the whole length of the façade, and is enclosed by a very elegant iron balustrade, with Portland stone piers surmounted by antique vases of stone or marble.

The great loggia or entrance is formed of six columns, each being 3ft. 7in. in diameter, rising to a great height, with finely carved capitals supporting a well-designed frieze and cornice with an admirably proportioned pediment. Above this comes the severe lateral lines of the entire centre block, terminated with a well-designed but poorly-detailed balustrade that passes around the entire building in the centre. The lesser portions of the façade that connect the pavilions with this loggia have a well proportioned columniation, with a good type of window placed between each; but here, as at Blenheim and other buildings of the period, the merit of the detail throughout is very unequal—some of it is coarse, other portions being designed with great refinement. The whole rests upon a powerfully rusticated basement storey.

Behind the pillars of the loggia is the entrance doorway, of great size, designed with good taste: this leads into the entrance hall, a large chamber that depends for its effect more upon good proportion than design. It has, however, a finely painted ceiling by Kent, some interesting sculptures and fine pictures well disposed about its floor, and the walls give it distinction. This opens into the great saloon, an oval apartment of large size. Around this saloon are placed sixteen columns in Scagliola by Bartoli in imitation of Sicilian jasper, these supporting a cornice adorned with Classic masks of satyrs and Bacchantes. Above this an Attic frieze is placed, the decoration of it consisting of more than 300 figures of a large size designed and executed by Valdie, the scheme representing a triumph and a sacrifice; the coved ceiling is divided into richly-decorated compartments, with, at either end, large female figures bearing escutcheons containing the arms of the first Earl Temple and of George, Marquess of Buckingham; in the centre is placed an extremely tasteful and elegant dome, the opening lighting the apartment. Around the saloon are placed sixteen niches between the columns, containing

antique statues of Roman deities, poets, generals, &c., and alternately large richly gilded bronze candelabra of large size though slightly heavy in design; the pavement is entirely in white Carrara marble. The state dining room that is adjoining is an immense apartment with a very finely designed albeit heavy ceiling, the walls hung with very wonderful old Brussels tapestry representing the triumph of Ceres, Bacchus, Venus, Mars and Diana. These tapestries are to be looked at strictly as works of art; the colouring, apart from the compositions, is more akin to the quality of fine pastel colours, although mellowed by age, than to the tints usually associated with the schemes of colouring seen in antique needlework, the lightness and richness of the whole set being very remarkable.

In this room are two fireplaces of large size and elaborate design in Siena and white Carrara marble. Above each one is a finely designed wooden overmantel with carvings by Grinling Gibbons—the centre panel in each respectively represents "A Goddess Conducting Learning to Truth" and "Learning Conducting the Muses to Mount Parnassus." These very fine works have however been painted to represent bronze, a thing, like so much else of the same order, that is in very questionable taste; the finest one is in many beautiful colours.

The state drawing room, of a very great size, is hung with a very elaborate old yellow silk brocade, with a cornice and ceiling richly gilded. From it in the centre hangs an elaborate crystal chandelier, surrounded by smaller ones. The furniture here is extremely magnificent.

The music room is a richly decorated chamber having a ceiling and cornice supported at each end fine by Scagliola columns imitating Siena marble, with richly carved and gilded capitals by Bartoldi. The paneling is filled with designs taken or adapted from Raffaele's works in the loggia of the Vatican. The chimneypiece is a good specimen of its style carried out in a greyish white marble with Rosso Antico panels.

The Rembrandt room, architecturally, is chiefly remarkable for its ceiling, representing "Venus at her toilet." The paintings here and elsewhere in the house are by Claude, Poussin, Ostade, Cuyp, Teniers, Dow, Vandyck, Rembrandt, Pietro da Cortona, Rubens, Durer, Dolce, Corregio, and many others. The chapel is not a very interesting place: it is elaborately panelled throughout in fine cedar, with a large gallery executed in the same material, the greater portion of the wood coming from a vessel captured from the Spanish, the remainder from the chapel at Bulstrode, the seat of the then Duke of Portland; it was all worked by "one Michael Clerke, the carving being done by Mr. Grinling Gibbons." The organ belonged to James the Second. The State bedrooms, in crimson silk damask, with a ceiling in colours of the Insignia of the Garter, supported by white and gold marble pillars, and the State dressing room, hung with splendid Brussels tapestry, are all magnificent. The great library, 75ft. by 25ft. by 25ft., contains 20,000 books, pictures, and a beautiful wrought-iron balustrade to its gallery is a very clever design. The MS. library is in a style of carpentered Gothic by Soane. The armoury, approached by a curious stair in the wall, is very interesting. Many other fine rooms and sumptuous decorations were seen, when the members left the mansion to inspect the grounds, laid out by Lancelot (Capability) Brown, and which remain much as he left them: the orangery, some 130ft. in length, the large natural-history museum, the Bourbon Tower with the oaks planted by Louis XVIII. and family; the Gothic temple built to receive ancient painted glass, in a pre-Strawberry Hill type of Gothic, and many other shrines, temples, grottoes, fountains, garden seats, rotundas, pyramids, obelisks, built in a great variety of marble; and what caused general admiration, a copy of the Palladian Bridge at Wilton, that here seemed larger and to form with the connecting arches a better composition than the original, the whole of these things in the gardens forming a grand architectural composition of a great mansion and splendid gardens architecturally disposed.

H. D. W.

Professional Practice.

Bristol.—An important extension scheme has been carried out at the Bristol City Asylum at Fishponds. The work is now practically completed. The principal extension comprises a new wing on the western side of the long range of asylum buildings—the female side of the institution. The cost of the new buildings was at the outset estimated at about £45,000. The additional western wing contains four wards to accommodate 150 females, so that the asylum has now room for just upon 1,000 patients; and preparation has been made for the transfer to Fishponds of 40 patients, chiefly belonging to the added areas of the city, who have been boarding at Gloucester Asylum. The wing is constructed of durable stone with freestone dressings to harmonise with the structure previously existing. The various departments are well-lighted, airy and lofty, and electrical fittings extend through the building. In the wing, which, like the rest of the premises, has two storeys, is an infirmary ward as well as an infirmary day room. A nurses' annexe has accommodation for eight night and two day nurses, and a dining and recreation hall. Mr. H. R. Withycombe, clerk of works, carried out the work.

Dorking.—The permanent Homes of St. Barnabas are being erected near Dormans Station. The buildings, which are intended to provide a home for aged and infirm clergymen of the Church of England, were commenced in the autumn of last year. Accommodation will be provided for some 60 inmates when completed. It is not, however, the intention of the Council, at present, to proceed with more than the erection of the west wing and the administrative block and nursing wards in the north wing, about one-third of the scheme. To complete the first block £1,500 is still required. The architect is Mr. C. H. Rew, of Berkhamstead, and the builder Mr. H. Young, of East Grinstead. The cost of work now being carried out will be about £10,000, but that of the completed scheme will be between £40,000 and £50,000. The building is to be composed of red brick to the ground floor and part of the upper floor; the remainder will be rough cast. The roofing is to be of Broseley tiles, and the whole of the windows and door arches are to be of Hackenden stone. The casements are to be of wrought iron and diamond square lead glazing throughout.

Newquay, Cornwall.—The new Headland Hotel has just been opened. The building is one of three storeys, with ground floor and basement, and has cost £500,000. The material used is native stone raised in the grounds, relieved with Dennis's Ruabon red terra-cotta. The approach or eastern elevation consists of a central tower rising over the main entrance to a height of about 100ft. to the vane. Right and left of this are two wings, one giving accommodation to the billiard and smoke rooms, and the other to the offices, with long connecting curtain walls, making a façade of some 200ft. in length. The south elevation has a large conservatory, approached from billiard rooms, smoke and drawing rooms. The western elevation overlooking Fistral Bay has another central tower rising from a very bold circular bay with a corresponding treatment to that of the entrance front, and is of the same length. Internally the plan is a parallelogram, with central north and south sections, and two large internal areas for light and ventilation. In this way the architect, Mr. Trevel, has managed to place all the reception rooms on the outer sides, giving an external or sea view to every window occupied by visitors, whilst all the corridors, lavatories, offices, stores and other subsidiary departments are lit and ventilated from the internal areas. The ground floor comprises entrance, porch, hall, vestibule, &c., which open upon the lounge hall. Its extreme dimensions are about 90ft. long from front door to the main bay window, and 70ft. across the western ocean frontage, broken by piers, recesses, &c. Out of the hall the various corridors radiate, by which access is obtained to the dining room, drawing room, billiard room (two tables), smoke

room, private sitting rooms, and offices of various descriptions. The whole of the joinery and furniture on the ground floor is of solid English oak. Mr. Arthur Carkeek was the builder, and Messrs. James Shoolbred and Co. were the furnishers. The upper floors are approached by a broad staircase of wide tread and easy rise, constructed of fireproof materials, as well as by an electrical lift. The drawing-room is about 50ft. by 30ft., broken by two monolithic Devonshire marble columns with carved caps and bases, which occur also in the lounge hall, and on the main landings in the upper floors. There are about 120 bedrooms and sitting rooms for visitors. The electrical arrangements comprise a detached electrical station fitted with two Campbell's oil engines of 20 horsepower each, with dynamos, storage batteries, and all accessories of the latest type. These drive the entire lighting, the installation consisting of over 600 lamps. The electrical contract was carried out by Mr. Headley, of St. Austell. In addition to the ordinary fireplaces the hotel has a hot-water installation fixed by Messrs. Musgrave and Co., of Belfast. The contract for the terra-cotta facings throughout was let to Mr. Henry Dennis, of Ruabon. The contractors for the mosaic were Messrs. Diespeker and Co., of Holborn Viaduct, London; for the decorations, Messrs. Harris and Co., of Plymouth. The architect was Mr. Sylvanus Trevail, F.R.I.B.A., of Westminster and Truro, Mr. Thos. Parsons being his local clerk of works.

St. Andrews.—The new hall of St. Andrews Company of the Boys' Brigade is almost completed. The building is estimated to cost £2,000. The site is a piece of ground three-quarters of an acre in extent, belonging to the Kirk-Session, and situated at the south end of the town. The hall is built of red and white brick. Standing at the upper end of the spacious parade ground, the building is entered from the north side. The hall is roomy, well-lighted, well-ventilated, and is 70ft. long and 40ft. broad. The walls are left in plain brick. There are five exits from the hall and three entering to the lobby with swing doors, and two to the rear. On one side of the entrance hall is a store, office, and lavatory and bathroom accommodation, while on the other is a dressing or officers' room. Adjoining this apartment is a workshop, with concrete floor, where the lads can spend a spare hour or two at manual work. From the entrance hall is a stair leading to the reading and recreation rooms and gallery. The reading room is 30ft. by 15ft., and is decorated in dark primrose with white roof. The recreation room is similarly treated. The side of the lobby is fitted with swinging glass screens, and when these are opened it is converted into a gallery. The caretakers' house is at the north-west corner of the building, and the heating chamber is located under the hall. In front of the building is a large parade ground, 100ft. by 130ft., while to the rear it is intended to lay out a lawn, the whole being enclosed by a neat iron railing. The contractors for the building were:—Brickwork, Messrs. Street, Ltd., Dunfermline; joiner, Mr. George M'Bean, St. Andrews; plumber, Mr. Andrew Turpie, St. Andrews; painter, Mr. David Todd, St. Andrews; slater, Mr. Thomas Black, St. Andrews; plasterer, Messrs. M'Ritchie, Dundee; heating, Messrs. Low and Sons, Edinburgh; grounds, Mr. M'Dougall; and railings, Messrs. Smith and Co., Glasgow.

Stickney.—The parish church at Stickney was recently reopened after extensive restoration. The parish church of St. Luke is a stone building of the thirteenth century, in the Early English style, consisting of chancel, clerestoried nave and four bays, aisles, and south porch and tower of some two hundred years later date. Large sums of money were spent on the church during the incumbency of the late Canon Colman, who was succeeded in 1893 by the present rector, the Rev. G. H. Hales. In 1853 the chancel was rebuilt at a cost of £1,000, and in 1855 £677 was expended in the restoration of the nave. In 1882 the fine tower, which was built principally of sandstone obtained from the adjacent wolds, was found to be very unsafe, and, at the suggestion of the late Mr. Butterfield, a wooden frame was erected inside the

tower, at a cost of £100, to take the weight of the bells off the walls. But this was found to be of little use, large masses of masonry falling out of the south-east corner of the bell chamber in 1884. Mr. Bassett Smith, of the firm of Messrs. W. and C. A. Bassett Smith, of John Street, Adelphi, architects, was then called in and asked to report on the state of the tower, and he suggested that the bells should be taken out, the upper half of the tower taken down, and the remaining half temporarily roofed over. This was done in 1887, at a cost of £180, and the porch, which had become very unsafe, was also rebuilt by Messrs. Sherwin and Sons, of Boston, at a cost of £150. In 1893 it was decided to begin the work of restoration. Tenders were invited for rebuilding the tower, and that of Mr. S. F. Halliday, of Stamford, was accepted, the price being £1,735, including rehanging the bells. On examination it was found that part of the walls were good enough to stand, so the order was given to repair instead of to rebuild, and it is hoped that the money thus saved will be sufficient to repair the south aisle and the roof of the north aisle. The estimated cost of the present restoration is about £2,500, and towards this sum about £1,700 has been received. The sand required in the building operations was given gratuitously by the farmers of the parish. The work of restoration was carried out under the direction of Mr. W. Chell, of Uttoxeter, clerk of the works. The bells, which were rehung by Messrs. Warner, of London, are four in number. The large bell was cast in 1607, and bears the inscription—"By roaring lowde doth warning give that men heare may not always live." There is another bell of older date with the inscription—"Hujus Sancti Matthæi," and the two smaller bells were recast, it is supposed, from three others in 1803. The old sanctus bell still remains. In exploring the foundations of the tower, part of the old churchyard cross was found. The buttresses of the old church are of Ancaster stone, but the new tower is built of stone from the contractor's own quarry at Stamford.

West Jesmond, Newcastle.—Foundation-stones of a United Methodist Free Church Hall to be erected on a site at the corner of St. George's Terrace and Coniston Avenue, West Jesmond, were laid last week. The hall will form part of a block of buildings which the United Methodist Free Churches of the Newcastle Prudhoe Street Circuit purpose placing upon an extensive plot of ground, situated as already stated. The hall will be constructed to accommodate 350 people. Mr. W. H. Knowles is the architect, and the contract has been entrusted to Mr. Alexander Bruce. The main entrance will be in St. George's Terrace. Double doors will give access to a lobby, from which the hall itself will be reached. There will be a gallery at the east end over the lobby. In addition to the hall the present contract includes two large vestries, boiler house, and cloak rooms. The entrance will be surmounted by a parapet, and a three-light traceried window will be placed in the gable. There will be a small square tower, with a domical roof. The windows on the south or Coniston Avenue side will be grouped, and will also be traceried. The space intervening between the hall and Sunbury Avenue will be eventually occupied by a church, with additional vestries, class rooms, &c. The entrance to the church will be in Sunbury Avenue, at the north end of the site. The style of architecture adopted is modern Gothic, and on the whole is very satisfactory. The buildings will be in sneaked rubble stone, with chiselled dressings. Green Westmorland slates will be used for the roofing. The portion of the scheme now commenced will cost about £3,000.

Enlargement of Romford Cottage Hospital.—At a special meeting of the committee of management Mr. Kennedy attended with plans for the erection of another ward and the conversion of the present operating room into a small ward for cases of severe illness or for distressing accident cases. To carry out the entire scheme it was estimated that with furnishing about £450 was required. It was decided to carry out the work.

Surveying and Sanitary Notes.

New Public Garden at Plaistow.—

On Wednesday last the disused churchyard of St. Mary's, Plaistow, E., and an adjacent piece of ground, both of which have been laid out by the Metropolitan Public Gardens Association, were opened to the public. The laying-out of the garden has cost the association about £400, and makes the 104th ground which the association has provided. The garden has been effectively laid out by the association's landscape gardener, Miss Wilkinson.

Granite Setts at a Premium.—

Unless the Newport Corporation is willing to substitute other material for laying the extension of the tramway service in the town there is likely to be delay in executing the work. Messrs. A. Krauss and Son, of Bristol, the contractors, whose tender at £13,362 0s. 8d. for the laying of the Corporation Road new service with granite setts was accepted at the last meeting of the Corporation, have now notified that they are unable to procure delivery for four months of Aberdeen or Norwegian granite, and it was reported to the Corporation by the borough engineer at the last meeting that Cornish granite was not now procurable.

City Improvements.—

At a meeting of the Court of Common Council last week the Improvements and Finance Committee brought up a report relative to the rebuilding of houses in Leadenhall Street, and the opportunity afforded for an improvement between Billiter Street and Aldgate. It would be desirable to make that portion of Leadenhall Street 50ft. wide, and they recommended that the London County Council should be approached with a view to ascertain whether the Council was prepared to contribute towards the cost—estimated at £636,500. This was agreed to. A plan was approved for continuing the improvement of Blomfield Street, by making it 50ft. wide between East Street and the corner of Eldon Street. A letter from the London County Council asking the views of the Corporation as to the erection of a kiosk and a clock of fourteen shops with rooms over, in the forecourt at Ludgate Hill Station, the committee recommended that the Council be informed that the Corporation was unable to consent, inasmuch as the erection might interfere with the alterations and improvements at the station, which was merely a timber structure, badly lighted, and quite unsuitable for the requirements of the public. The report was adopted.

Proposed Piccadilly Widening.—

The Improvements Committee of the London County Council have considered an important proposal from the First Commissioner of Works for the widening of Piccadilly, between Hyde Park Corner and Walsingham House, who hopes to obtain the assent of the Queen to enable a sufficient strip of the Green Park to be added to the street, and so facilitate traffic passing eastward and westward without interfering with traffic passing northward by Hamilton Place. He undertakes to advise the Queen in that direction if the Council will undertake the expense of setting back the Park railings and of paving the widened carriageway and the new footway. The present width of Piccadilly between Hyde Park Corner and Walsingham House varies from about 68ft. to 100ft.; under the suggested plan it will vary from about 70ft. to about 170ft. At the junction between Hamilton Place with Piccadilly a large refuge would be placed in the middle of the road. Trees now in the Park would remain on the pavement, but ten trees now on the pavement (three of which are young and two dying) would not remain in the roadway. The Committee recommend the Council to co-operate in the scheme, and vote £30,000 for the necessary works.

Laying Telephone Wires in Streets.—

The case of *Attorney-General v. National Telephone Company, Limited*, came before Mr. Justice Kennedy and Mr. Justice Darling in the Queen's Bench Division recently. It was an information by the Attorney-General against

the defendants, the National Telephone Company, Limited, praying, "(1) That it may be declared that the defendant company are not entitled to place or maintain any telegraph wire or wires, tube, pipe, casing, covering, or apparatus for the purpose of telegraphic or telephonic communication, or to execute any other work within the meaning of the Telegraph Act, 1863, under any street or public road, or any part of any street or public road, within the administrative county of London, or to open or break up any such street or public road or any part thereof, or to exercise any other of the powers of executing works which are conferred on the Postmaster-General by the Telegraph Acts, 1863 and 1878, without the authority of the Postmaster-General and the consent of the London County Council for such purpose prescribed by the Telegraph Act, 1892, being duly had and obtained in the first instance and preliminary to any other authority or consent required by law for the execution of any such work; (2) That the defendant company, their officers, servants, and agents may be restrained by the order and injunction of this honourable Court from placing or maintaining or proceeding or continuing to place or maintain any telegraph wire or wires, tube, pipe, casing, covering or apparatus for the purpose of telegraphic or telephonic communication, and from executing or proceeding or continuing to execute any other work within the meaning of the Telegraph Act, 1863, under any street or public road within the administrative county of London, and from opening or breaking up or proceeding or continuing to open or break up any such street or public road or any part thereof, and from exercising or proceeding or continuing to exercise any other powers of executing works which are conferred on the Postmaster-General by the Telegraph Acts, 1863 and 1878, without the authority of the Postmaster-General and the consent of the London County Council for such purpose prescribed by the Telegraph Act, 1892, being duly had and obtained in the first instance and preliminary to any other authority or consent required by law for the execution of any such work." By consent, the Court made a declaration in the terms of paragraph 1 of the prayer, and in lieu of the injunction asked for in paragraph 2 the defendants gave an undertaking not to extend their present system of underground pipes without the consent of the Postmaster-General and the London County Council.

The Cleansing of a Sewer.—

The case of *Baron and Another v. the Portslade-by-Sea Urban District Council* came before the Lord Chancellor, Lord Justice A. L. Smith and Lord Justice Vaughan Williams, in the Court of Appeal last week. This was an appeal from the judgment of Mr. Justice Mathew on further consideration after the trial of the action with a jury at the Lewes Assizes. The plaintiffs were the occupiers of certain premises at Portslade, consisting of a dwelling-house and land used for agricultural purposes. A sewer, which was made by a private individual and which carried the sewage from a brewery and some cottages, passed in an open cutting through the plaintiff's land. This sewer became vested in the defendants under the Public Health Act, 1875. Formerly the defendants, by arrangement with the plaintiffs, paid for the cleansing of the sewer, but in 1898 a dispute arose between the plaintiffs and the defendants, with the result that the sewer was not cleansed. The plaintiffs complained that in consequence thereof large quantities of sewage and filth came upon their land so as to cause a nuisance. The defendants contended that the plaintiffs' only remedy for the defendants' neglect of the statutory duty, imposed by Section 19 of the Public Health Act, 1875, of keeping the sewer properly cleansed, was by complaint to the Local Government Board under section 299 of the Public Health Act, 1875. The jury assessed the damages at £75. Mr. Justice Mathew held that the action would lie and gave judgment for the plaintiffs.—The Court now dismissed the appeal. The Lord Chancellor said that in the present case there was a sewer vested in the defendants. That sewer was formerly cleaned out at certain intervals, and no nuisance was created or

allowed to exist. The local authority seemed to have discontinued that ordinary and natural duty, and they thereby caused a nuisance to a private citizen with respect to his land. There was all the difference between the jurisdiction to call upon the local authority to make new sewers or a new system of drainage and the jurisdiction to compel the local authority to deal with the existing sewers in a proper and reasonable manner. There was no question here as to making new sewers. The plaintiffs' complaint was that the defendants, who had formerly dealt with this sewer in a proper and reasonable manner, had lately neglected to do so, and had thereby caused a nuisance and damage to the plaintiffs. The earlier part of Section 299 of the Public Health Act, 1875, had reference to new works. The only difficulty arose with regard to the later words of the section, but on looking at the context they evidently referred to a duty to be enforced of a kind similar to that dealt with in the former part of the section. The words did not mean that every time the local authority neglected to use proper diligence in the management of the existing sewers the only remedy was by complaint to the Local Government Board. Where there was neglect by the local authority in the ordinary management of sewers, and damage was thereby caused to a private citizen, there was nothing in the Act which took away the ordinary common law right of action.

Purification of Tannery Effluents.—

The case of *The Attorney-General on the Relation of the Sevenoaks Rural District Council, and the Sevenoaks Rural District Council v. Whitmore*, which came before Mr. Justice Mathew sitting with an Assessor, Mr. Baldwin Latham, O.E., in the Queen's Bench Division, was decided last week. The action was tried at Maidstone on July 13th, 14th and 16th. The relators and plaintiffs are the local sanitary authority for the parish of Edenbridge, and the defendants, Messrs. T. and H. Whitmore, are the owners of a tannery in that parish. The plaintiffs claimed an injunction to restrain the defendants from causing or permitting the effluents from their tannery to flow into the sewers of the plaintiffs, on the ground that such effluents were of so offensive and dangerous a character that they caused the effluent flowing from the plaintiffs' sewage farm into the River Eden to be a nuisance to and injurious to the health of the inhabitants of the parish of Edenbridge and the persons living near the River Eden. The defendants contended that the plaintiffs were bound to continue the admission into their sewers of the effluents from the tannery, and that the nuisance, if any, was caused by the inefficient state and unskilful management of the sewage farm; and they alleged that the tannery effluents were as capable of being dealt with by bacterial treatment as ordinary sewage if the sewage farm were properly managed. The plaintiffs further contended that the tannery effluents contained free alkalinity to an extent which rendered them a liquid which would "prejudicially affect the application to land" of the sewage matter conveyed along their sewers, within the meaning of Section 7 of the Rivers Pollution Act, 1875 (39 and 40 Vict., c. 75), and that consequently they were not compelled to receive such effluents into their sewers. It appeared that in 1875, when the local authority constructed a system of sewers leading to settling tanks and thence into the River Eden, the defendants had received a notice requiring them to connect their tannery with the sewers of the local authority, which they had done. In 1886 the present system of sewerage was constructed; and, before connecting themselves with the new system, the defendants, at the request and under the supervision of the sanitary authority, erected settling tanks upon their own premises. Upon the completion of this work the sanitary authority agreed to admit, and admitted, the tannery effluents into their sewers. Dr. Voelcker and Dr. Thudicum were called on behalf of the plaintiffs and stated that in their opinion the tannery effluent contained alkalinity to so great a degree that a liquid resulted which prejudicially affected the application to land of the sewage matter conveyed by the plaintiffs' sewers. Mr. Strachan, Mr. Frank Scudder, and Mr. Santo

Crimp, who were witnesses for the defendants, were of opinion that the effluent of the tannery, in which no chemicals other than vegetable acids and lime were used, in no way prejudicially affected the application of the sewage to land, inasmuch as a considerable quantity of the free alkalinity was reduced by carbonic acid from household sewage in the plaintiffs' sewers and the settling tanks at the sewage farm. They also considered that, owing to the sewage farm being on a clay soil and under-drained, the sewage matter found its way through the cracks in the soil into the under-drains, unaffected by the bacteria on the surface, and so passed in its crude state into the river. His Lordship, in delivering a considered judgment, stated that he was not convinced by the evidence given on behalf of the plaintiffs; and that he relied and acted upon the evidence of the witnesses for the defendants. He gave judgment for the defendants with costs.

Engineering Notes.

St. Vincent's Asylum, Dublin, is being fitted with the latest improved hot-water heating apparatus by John King Limited, engineers, Liverpool.

The Bradstock Lockett Home, near Southport, is being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

Richmond and Chandler, Limited, of Manchester, machine makers, declare a 6 per cent. dividend on the 6 per cent. preference shares and $7\frac{1}{2}$ per cent. per annum on ordinary shares for the year; with £500 to depreciation and £500 to reserve.

Proposed New Esplanade at Gourock.—It has been decided to erect a sea wall and form a promenade extending westwards from Beach Cottage along the front of Craigbank and joining the Ashton Esplanade at Janefield Place. It is estimated that this new esplanade will cost £1,500.

Bad Gas.—At last week's meeting of the London County Council the Public Control Committee recommended the Council to ask the Board of Trade to institute an enquiry as to the cause of the persistent differences between the results of testing the illuminating power of gas supplied by gas companies at prescribed testing places and of tests made with the portable photometer of identical construction of gas supplied to other buildings in the county. The recommendation was adopted, and the Council then adjourned.

Electric Railway Extensions.—The Harrow and Uxbridge Railway Company are taking steps for the acquisition of the land required for their railways, which will connect this undertaking at Harrow with the town of Uxbridge, and the construction of the new lines will shortly be proceeded with.—In view of the importance to the Metropolitan and District Railway Companies of adopting electricity as a motive power a committee, consisting of three members from each of the boards of the companies, has been appointed to consider the question of applying electric traction to the working of the Inner Circle, and it has been agreed between the companies to invite eminent electrical traction firms to submit plans and specifications, with detailed estimates and tenders for the necessary installation.

Electric Companies and Consumers. Eight representatives of the London Electric Supply Companies waited privately upon the President of the Board of Trade, at Whitehall, last week, to ask for an alteration in the Board's regulations respecting voltage. At present the rule to which objection was taken provides that no change shall be made in the pressure of supply except with the consent of the consumer, and for this the members of the deputation wished to substitute words modi-

fying the rule, so that no change could be made except on such terms and conditions as may be agreed between the undertaking and the consumer, or, failing agreement, as settled by an arbitrator appointed by the Board of Trade. Professor Kennedy mentioned that in the district of the Westminster Supply Corporation there were only ten persons objecting to a change from 100 volts to 200 volts. The President, upon this, remarked that perhaps the company had not taken the best course with a view of conciliating these customers, and he suggested that they should consider whether some agreement could not be arrived at. The deputation withdrew upon the understanding that efforts would be made towards mutual agreement.

Electric Tramways in London.—The Select Committee of the House of Lords last week passed the preamble of the Bill promoted by the London County Council under which power is sought to enable electricity to be used as the motive power for tramways which they already own in the Metropolis and for other tramways which, under the Tramways Act, they may acquire. It was stated that the County Council already owned over 70 miles out of the 115 miles of line which exist in London, and by 1911, if their present policy of purchase is pursued, they will have acquired the remainder. The Bill was opposed by the South Metropolitan Gas Company and the Lambeth Water Company, who feared that the proposal would cause electrolysis of their mains, and by the Lambeth and Wandsworth local authorities, who urged that they were not given adequate protection under the Bill. The Committee ordered provisions to be inserted for their protection.—The Light Railway Commissioners, the Earl of Jersey presiding, held an inquiry recently at Kingston-on-Thames into an application by the British Electric Traction Company for an order to construct electric tramways in Kingston and Surbiton and part of the districts of Esher and Thames Ditton. The application was opposed by all the local authorities concerned and also by the Surrey County Council. After hearing counsel the Commissioners intimated that they could not see their way to grant the order applied for.

Local Water Supplies.—At the monthly meeting of the executive council of the County Councils Association, held last week, the committee appointed to consider the question of the sources of water supply which were or might become necessary for local consumption presented their report. It stated that, though the replies which it had received to a circular issued to local authorities on the subject were not numerous, they were sufficient to show that in most counties in England and Wales there are districts where the supply of water required to meet the wants of the locality is imperilled, or is likely to be imperilled in the immediate future. This is attributed, in the majority of cases, to the action either of water companies or of colliery proprietors. Valuable suggestions were contained in the replies of some of the authorities consulted. The committee entered into communication with the Association of Municipal Corporations, and at a meeting on February 14, 1900, the opinion was generally expressed that the best course would be to introduce a Bill into Parliament dealing with the question, with the object of having it referred to a Royal Commission or Select Committee of the House of Commons. No formal resolution was proposed, but the committee of the County Councils Association undertook to draw up a statement embodying its proposals in outline, in the hope that such proposals might form the basis of a Bill which would command the approval of both associations. The executive council resolved to have a Bill embodying the proposals of the committee drawn, with a view to its being introduced into Parliament next session.

The Prix de Rome.—The first grand prize for the Prix de Rome painting has been awarded to Sabatte, the second to Rousseau and the third to Azema—all three pupils of Gustave Moreau. The subject chosen was that of a Spartan father showing to his sons slaves purposely made drunk, for a moral lesson.

Keystones.

The Memorial Stone of a Fire Station in course of erection in Redcross Street, City, was laid last week.

The Statutory Registration of Architects was approved at meetings in Manchester and Liverpool held by the Society of Architects last week.

The Housing of the Working Classes Act (1890) Amendment Bill passed through Committee in the House of Lords last week.

A Statue of Lavoisier, the pioneer of modern chemistry, has been erected at the back of the Place de la Madeleine, opposite the Rue Tronchet. M. Barraix is the sculptor.

Principal Grant-Ogilvie, of the Heriot-Watt College, Edinburgh, has been appointed by the Lords of the Committee of Council on Education Director of the Science and Art Museum at Edinburgh.

The Hospital for Epilepsy and Paralysis has acquired a new site, and has in hand no less than £12,500 towards the £25,000 needed for the completion of a new hospital containing from 50 to 60 beds.

A New Drill Hall for Slough.—Mr. James Galliman has given £1,000 and a site in the centre of the town for a new drill hall, to be used by the Slough Volunteers, provided a building to cost not less than £3,000 be erected free of debt.

A New Town Hall for Bangor formed the subject of a Local Government Board inquiry last week. The Bangor Urban District Council ask for sanction to a loan of £1,600 for the purpose of purchasing the endowed school premises, so that they may be converted into a new Town Hall.

Sessions House.—The Court of Common Council have resolved to levy a county rate of twopence in the pound for the year ending September, 1901, for the provision of £40,000 required by the Government for the purchase of the male wing of Newgate, under the scheme for rebuilding the Sessions House.

The Decoration of the Royal Exchange.—Mr. and Mrs. Normand are making good progress with the panels they are doing for the Royal Exchange work upon which they have both been engaged for some long time now. Mrs. Normand (Henrietta Rae) is the first woman artist to receive a commission for one of the panels.

Roof Garden for London.—It is stated that Mr. George Lederer proposes to build an American Roof Garden in London. He proposes to follow the model of the New York Casino Theatre in having a glass roof with the sides left open. We imagine he will find a great difficulty with the London Building Act and our Theatre Regulations.

The Wesleyan Church at Mellor, Blackburn, is being enlarged by the addition of a new chancel. A Willis's organ is also being erected and a stained glass window has been given. A marble pulpit is also being executed by Messrs. Harry Hems and Sons, of Exeter. The chancel and organ will cost about £1,800, and the window another £1,000.

The Dean Vaughan Memorial Church in Mortimer Road, Kensal Rise, W., was consecrated last Wednesday by the Bishop of London. The foundation-stone of the church was laid a year ago by Princess Henry of Battenburg. The site was given by the Bishop of London's Fund, and the Ecclesiastical Commissioners have given an endowment of £200 a year. The total cost of the building is about £9,000, and £4,000 is still required for a steeple.

A Proposed Isolation Hospital at Draycott formed the subject of a Local Government Board inquiry last week. The Derbyshire County Council asked for sanction to borrow £7,315 for the purchase by the Shardlow Isolation Hospital Committee of land, and the erection thereon of an isolation hospital. Mr. Scott, an adjoining owner, and the Draycott Parish Council opposed the

scheme. The plans have been prepared by Mr. Anteliffe, architect.

Belgian Honours for Art Workers.—It is announced that the King of the Belgians has conferred upon Sir J. C. Robinson, Her Majesty's Surveyor of Pictures; Mr. Lionel Cust, the Director of the National Portrait Gallery; and Mr. Claude Phillips, the Keeper of the Hertford House Collection, the Cross of Chevalier of the Order of Leopold, as an acknowledgment of the assistance given by them in the organisation and arrangement of the Van Dyck Exhibition at Antwerp.

The Late Professor Max Koner.—The sudden death of Professor Max Koner, of the Berlin Academy of Arts, is a severe loss to artistic and scientific circles. The Kaiser has sat to him several times, which naturally made him a fashionable portrait painter. He had not reached his forty-sixth year, and had lately received the French gold medal for his portrait of the Kaiser exhibited in Paris. Koner was a native of Berlin and educated at the Berlin Academy. He was a teacher there for ten years, and in 1892 was nominated Professor.

Florence's Art Museum.—The new rooms in the Galleria degli Uffizi, at Florence, in which the objects of art sold to the Italian Government by the Hospital of Santa Maria Novella are placed, will be opened shortly. These treasures include an altar step of chased silver, the work of Andrea Pucci da Empoli; breviaries by Lorenzo Monaco; reliefs by Donatello; and the great triptych of the Adoration of Christ by the Virgin and Apostles, by the Flemish painter, Vander Goes.

No English.—In Florence just now the English art students may or may not provide the makings of a formidable "school." Native jealousy may possibly be the cause of any disparagement of the Italian onlooker, especially at this rather unpopular time for Englishmen—even for English art students—abroad. Anyway, "the Arno English Artists' Club" has been started, and a letter from an Italian brother-of-the-brush has reached one of the members, innocently addressed to "The Arno-English-Artists' Club."

The Guildhall Loan Exhibition which has just closed seems to have been quite as successful as any of its predecessors in the same gallery. More than 200,000 people visited it during the three months that it remained open, and its exceptional interest was universally recognised. It was the ninth of a series which has in many ways a claim to be considered unique; and it certainly compared well with any other show of the same character which has during recent years been organised either in London or the provinces.

Sale of an Historic Site.—Considerable interest centred in the sale by auction at Canterbury last week of a portion of the site and ruins of the ancient church of St. Pancras, together with a portion of the site of the famous abbey church of St. Augustine. The latter contains the burial places of the saint himself, of King Ethelbert and Queen Bertha, and all the early archbishops of Canterbury. Altogether the sites occupy nearly three acres of land. At £3,000 they were sold to Mr. Vigers, estate agent, on behalf of Lord Northbourne, Canon Routledge, Mr. St. John Hope and Mr. Bennett Goldney, who appeal for subscriptions to enable them to excavate it and then hand it over to St. Augustine's Missionary College.

The Leeds and Yorkshire Architectural Society sends us its annual report for 1899-1900. It is regrettable that the membership has fallen from 121 members last year to 111, as we had hoped that this very strong provincial society was showing the same progress as nearly every other in reducing the number of unattached men, and thus tending to bring greater education among the members of the profession. Still we hope the falling back is only temporary. We trust the Council will continue to hammer away at the subject of competitions in their locality. The balance in favour of the society is £130 5s. 9½d. A number of competitions for members of the society are announced and should evoke keen interest.

A New Poor Law Infirmary is being erected by the Board of Guardians of the West Ham Union at Forest House, Leytonstone. In 1836, when the Union was formed, the population of the parish was under 30,000, and now it is nearly 700,000. The rateable value has increased from £100,000 to over £2,000,000. Forest House, with 45 acres of ground, has been secured, and on an area of 30 acres the new infirmary buildings will be erected at a cost of about £225,000. The wards will be in four three-storeyed blocks, connected one with the other by a central corridor, and provided with fire-escape bridges. There is to be an administrative block, with the usual officers' quarters and outhouses, and a chapel to seat 200 persons. Accommodation will be provided for 672 patients.

A Shields Housing Scheme.—Colonel A. G. Durnford, Commissioner to the Local Government Board, recently held an enquiry into the proposal to build dwelling houses for the working classes at South Shields on the large site known as the Fairles Estate. The property in the vicinity of the North Park, and consequently in close proximity to the Fairles Estate, is chiefly valuable residential property, and the occupiers of the houses strongly opposed such a course being taken as has been suggested by the Corporation. The contention of the residents was that the erection of workmen's dwelling houses to accommodate the occupants displaced by the acquisition of property for street improvements in Thrift Street would depreciate the value of the adjacent property.

New Hospital at East Ham.—The foundation stone of the Passmore Edwards Hospital, Shrewsbury Road, East Ham, was laid last week. In 1897, a committee of the district suggested the building of a hospital in commemoration of the Diamond Jubilee of the Queen, and when some hundreds of pounds had been raised Mr. Passmore Edwards promised to build a hospital at a cost of £4,000 if a site was found for it. The committee secured Shrewsbury House, East Ham, and its grounds of about an acre and a half for £3,500, and of that sum but £800 has yet to be raised. The estimated cost of maintenance is £500 per annum, and towards that sum the committee have the rent of Shrewsbury House (£80) and a promise of £100 a year from the school teachers of the neighbourhood.

The Colossal Statue of King Alfred which Mr. Hamo Thornycroft, R.A., has been commissioned by the Mansion House Committee to undertake is to be completed by next mid-summer. The full-sized model in clay has already been finished. The statue itself measures 14ft. from the crown to the feet. The figure of the king is represented standing with one arm resting on his shield, the other held aloft, the hand grasping his sword so that the cross belt is held uppermost. The pedestal of rough-hewn granite in a single block will be over 20ft. high, and will weigh close on 40 tons. £4,448 has already been received or promised towards the memorial, and £2,000 more is required. Subscriptions may be sent to the Lord Mayor at the Mansion House, to the principal banks, or to Mr. Alfred Bowker, the hon. secretary, King Alfred Commemoration Fund, Guildhall, Winchester.

No. 67 Lincoln's Inn Fields, which is that freehold half of the great historic mansion situated at the north-west angle of the Fields and the corner of Great Queen Street, and known variously, since the date of its erection in 1686, as Powis House, Somers House and Newcastle House, has been sold at the Mart, Tokenhouse Yard, by Messrs. Farebrother, Ellis, and Co., for the sum of £14,400. Some eighteen years ago £17,000 was given for it, and £3,000 was laid out upon it by the recent occupiers. The lowness of the price fetched for the property is rather remarkable, because it should possess additional value from the fact that it is only a few yards from the intended thoroughfare from Holborn to the Strand. The old mansion has been divided into two parts for many years. It was built by the Marquis of Powis, on the site of a former house destroyed by fire in 1684, from the designs of Captain William Winde, a pupil of Inigo Jones,

and Lord Powis forfeited the house to the Crown for his adherence to the cause of James II. Afterwards it was inhabited for a time by the great Lord Chancellor Somers, and in February 1696-1697 it was ordered to remain in the possession of the Lord Chancellor during his custody of the Great Seal. It was subsequently sold to the Duke of Newcastle, the Whig Prime Minister.

The New Pier at Brighton.—The Marine Palace Pier at Brighton, near the Aquarium, is fast approaching completion. Its total length (exclusive of the landing stages) is 1,710ft., which makes it one of the longest promenade piers in England. The deck covers a space of no less than two and a half acres. The pier is built of steel, which gives it both strength and lightness. The toll-houses are somewhat insignificant in appearance—the Town Council having refused to allow them to be made larger. The great pavilion at the seaward end is of Moorish design, the main structure being of wrought iron and steel. Besides the ordinary exits, there are emergency exits. The seats have been arranged on an incline, so that a full view of the stage can be obtained from all parts. Refreshment, reading, cloak and bathing rooms have been provided. An important feature is the landing stage at the pier head, built of steel and iron, and with platforms at three different levels. Owing to the great length of the pier, the head enters deep water, sufficiently so to allow of steamers of heavy draught landing their passengers at any state of the tide. The popularity of the steamboat service at Brighton has been very considerable of late years, and with the great facilities offered by this new pier it seems probable that this attraction will be still more in request. The pier and pavilion will be lighted by electricity.

Trade and Craft.

Artistic Tiles.

We have received from Messrs. T. and R. Boote, Ltd., of the Patent Tile Works, Burslem, a copy of their new glazed-tile pattern book, which is most handsomely produced in colours. It is one of the most complete books issued by the trade, and its compilation has cost a large amount of money and labour, many of the patterns being by first-class designers. Tile design is a matter that requires a lot of skill and principle, and we find in this branch of art the same differences of opinion that become sometimes so acute in connection with pictures and buildings. One school—particularly the British school—works on lines which are in direct opposition to the methods of others. Take a rose, for instance; in decorating a plate with it they would paint it realistically, and would render all the shadows and tones that we find in Nature, making the rose to appear as a raised object on the plate. The other school—and we think decidedly the more correct one—attempts no such thing; what they do is to take the lines of the rose as a theme for design, and they produce a decorative flower which appears as a plane object, its lines in harmony with those of the plate which it adorns. This treatment of line and arrangement of design to surroundings is a special characteristic of Japanese art, and the method is one which is finding more adherents every year. We are therefore glad to see in Messrs. Boote's catalogue a large number of decorative designs. The firm stock a variety of plain and mottled tiles that should satisfy the most fastidious purchaser. On the second page of the catalogue are shown some excellent designs for hearths and panels, and the very large number of designs for tiles are a proof of the capacity and the capability of the firm's workshops. A great many of the designs are treatments of flowers, but there are also numerous geometrical patterns. Messrs. Boote are too well-known to need much recommendation. We feel sure that any of our readers requiring tiles or similar goods will find that this firm will be able to meet their requirements in the most satisfactory and reasonable manner.

New Patents.

These patents are open to opposition until September 4th.

1899.—Shoring and Strutting.—10,832. W. BALMER, 3 Northbourne Street, Newcastle-on-Tyne. The shores are of two or more tubular parts fitted together in telescopic fashion, each lower part being adapted to receive a filling to support the bottom of the next part above, so as to allow of their being used in various depths by varying the amount of the filling.

Portable Huts or Houses.—13,895. E. PAYART, 5 Henrietta Street, Cavendish Square, Middlesex. Double walls are formed of overlapping sheets of corrugated iron, bolted together, with bars or horizontal partitions between. The walls are then filled in with sand or other material. The roofs are constructed in a similar manner.

Paving Material.—14,201. W. DUDMAN, 34 Mansfield Road, Walthamstow, Essex. Gas lime which has been dried and sifted is added to boiling pitch; burnt flints, crushed to a powder, are then added, and the mixture boiled for two hours. It is then ready to be laid as a paving by spreading with wooden floats and covering the surface with hot sand.

Artificial Stone or Cement.—16,501. STEFAN ZIENTARSKI, Wspolna Street, 47A, Warsaw, Russia. Pulverised unburnt clay up to 15 per cent. is added to the unslaked lime powder, in addition to the usual materials for retarding the slaking, such as alum or gypsum. The mixture is then reduced with sand to a plastic state by water.

Fixing Handles to Tools.—17,096. O. MORGAN, Market Place, Penkridge, Staffordshire. The head of a pick, mattock or other tool has a wedge-shaped bridge piece across the eye in order to expand the handle or haft end tightly within the eye.

Cement.—17,853. Firm of Terranova Industrie, C. A. KAPFEER AND SCHLEUNING, 27 Brienerstrasse, Munich. With the object of avoiding the ordinary grey colour of cement a clay free from iron is mixed with felspar also free from iron and lime, and made into a cement in the usual manner.

1900.—Automatic Acetylene Gas Generator.—2,631. G. A. HERVIEU, 41 Avenue de Puteaux, Nanterre, France. Calcium carbide cartridges are automatically distributed into a generating receptacle by the movements of the bell of a gasometer. The generator is also arranged to automatically evacuate the residues of spent carbide, and by its general arrangement does away with the use of any cocks or valves.

Hospital or Infirmary Water-Closets.—4,993. M. J. ADAMS, Park Lane Sanitary Works, Leeds. The basin of the closet is carried above the floor, supported by a slab or downward extension of the closet which carries the weight. The flushing is done with a "low down" cistern having a well formed below in which the outlet valve is fitted.

Connection for Flushing Pipes.—6,073. E. H. BURGESS, 18 Oldhill Street, Stamford Hill. A joint for connecting the flush pipe from flushing tank to the arm of flushing rim of an earthenware closet is formed by a brass nipple with male thread, over which a brass nut, with milled edge and set screw, closes a rubber ring in a brass shield up to the flushing rim of the closet.

Pumps for Clearing or Testing Drains.—6,216. E. NOPPEL, 803 Callow Hill Street, and E. A. NOPPEL, 2071 Ridge Avenue, Philadelphia, U.S.A. The invention consists of a combined lift, force and test pump, consisting essentially of a pumping device and a cup, the latter being bifurcated on the edge to form two members of yielding material. The suction first produced holds the outer member in contact with the surrounding surface of the drain and afterwards the compression of the air in the cup presses the inner member down, thus holding the pump in contact with the surface.

Bob Level.—9,360. F. SINKOVIC, Klausenleopoldsdorf, Austria. Consists of a triangle, the base being formed of a straight rule and the sides of a cord attached to the rule and carrying a weight at its middle point. The bob is attached to the middle point of the base.

Beams or Girders.—9,574. G. STOCKFISCH, 7 Unter Pettenhennen, Cologne, Germany. Iron beams or girders constructed with the under flange or side piece widened or extended are strengthened by having transverse webs at certain distances fixed to them, thus forming bearing surfaces for the joists or transverse beams on the under flanges.

The following specifications were published on Saturday last, and are open to opposition until September 11th. A summary of the more important of them will be given next week. The names in italics within parentheses are those of communicators of inventions.

1899.—13,954, LOVELL AND KING, machines for bevelling glass. 13,962, HOLMES, acetylene gas generators and holders. 14,119, LANE AND RAINFORTH, hydraulic valves. 14,292, YOUTEN, stoves for heating purposes. 15,613, HOUGH, elevators. 16,194, MOSES, acetylene gas generator. 16,763, WORSNOP, method of preparing carbide of calcium. 16,857, WILLETTTS AND ROTHAN, pulley blocks, hoists, lifts, crabs, &c. 17,366, LAWSON, glazing for roofs. 17,396, SCHNITZLER, apparatus for generating acetylene. 17,398, ROWALD, bricks for forming flat ceilings, which may also be used for casings and partition walls. 17,470, BRÖCKER, tiles of cement with interlocking joints. 17,622, SHORROCK, louvres or ventilators. 17,649, BRODIE AND PRIOR, fire grates and appliances used with fire grates. 17,804, MASON AND MASON, water closets. 18,012, TAYLOR, decoration of ceilings, walls, &c. 18,160, SWINNEY, automatic separating table for brick machine. 18,265, BURDICK, apparatus for spraying paint, ink, and other pigments. 19,477, SIMMANCE AND ABADY, street lighting apparatus. 25,006, KLEINSTEUBER, manufacture of plastic materials.

1900.—782, JOHNSON, ventilators. 6,455, HATSCHKE, imitation stone, plates slabs or tiles. 6,957, PUECH, apparatus for filtering sewage. 8,150, LAKE (*Christensen*), construction of kilns. 8,508, OPLATEK, combined shovel and weighing device. 8,637, NEWTON (*Carleton*), fastening devices for windows. 8,790, FAIRWEATHER (*Standard Incandescent Burner Co.*), incandescent oil-lamp burners. 9,074, BEAUBEGARD AND GOODING, door checks and springs. 9,643, FLETCHER, gate operated locks for elevators. 9,725, VORDTRIEDE, building bricks. 9,738, SCHULZ, fire-proof floors or ceilings. 9,804, BIALOWAS, automatically operating locks for sliding doors. 9,813, THOMAS, ventilating appliances. 9,967, STIGLIZ, machines for working stone surfaces. 10,014, ROWCLIFFE, hammer. 10,023, MICHAELIS, means for cleaning tramway rails. 10,292, SIMPSON, STRICKLAND AND CO., LTD., AND CROSS, direct-acting steam pumps.

New Companies.

Johnby Wythes Tilery Co., Ltd.

This company was registered on July 16th with a capital of £1,500 in £5 shares to acquire a lease of the premises now used as a tilery at Johnby Wythes, Skelton, Penrith, and to carry on the business of tile manufacturers, &c. Registered office: Johnby Wythes, Skelton, near Penrith, Cumberland.

Biltons, Limited.

This company was registered on July 19th with a capital of £7,500 in £1 shares to carry on the business of earthenware manufacturers, potters, brick and tile makers, &c. The first directors (to number not less than three nor more than five) are E. Bilton, L. Bilton and J. W. Bilton. Registered office: London Road Works, London Road, Stoke-on-Trent, Staffordshire.

Economiser, Limited.

This company was registered on July 20th with a capital of £20,000 in £1 shares to adopt an agreement with A. Z. Germaine, to acquire certain patents relating to a lamp and stove-chimneys, fuel economising appliances, &c., and to carry on the business of chimney cowl, lamp and stove manufacturers, &c. The first directors (to number not less than three nor more than seven) are to be appointed by the subscribers.

Bannisters, Limited.

This company was registered on July 14th with a capital of £5,000 in £1 shares to adopt an agreement with J. Bannister, T. Abbott and S. Bannister to acquire and deal with real and personal property of all kinds, and to carry on the business of builders, contractors, decorators, stone, sand, lime, brick, timber and hardware merchants, &c. The first directors (to number not less than three nor more than five) are to be appointed by the subscribers. Registered office: 29 York Street, Sheffield.

CURRENT PRICES.

OILS AND PAINTS.			
	£ s. d.	£ s. d.	
Castor Oil, French .. per cwt.	1 8 0	1 12 8	
Colza Oil, English .. do.	1 10 0	—	
Coppasas per ton	2 0 0	—	
Lard Oil per cwt.	1 17 0	—	
Lead, white, ground, carbonate do.	1 2 10	—	
Do. red do.	1 0 4 1/2	—	
Linseed Oil do.	1 13 6	—	
Petroleum, American .. per gal.	0 0 6 1/2	—	
Do. Russian do.	0 0 6 1/2	—	
Pitch per barrel	0 8 6	0 9 0	
Shellac, orange per cwt.	3 2 0	—	
Soda crystals per cwt.	2 17 6	3 0 0	
Tallow, Town per cwt.	1 5 6	1 8 0	
Tar, Stockholm per barrel	1 6 0	—	
Turpentine per cwt.	1 11 6	—	
METALS.			
Copper, sheet, strong .. per ton	84 0 0	—	
Iron, Staffs., bar do.	9 15 0	11 10 0	
Do Galvanised Corrugated sheet .. do.	13 10 0	14 0 0	
Lead, pig, Spanish do.	17 15 0	18 0 0	
Do. do. English common brands .. do.	18 5 0	—	
Do. sheet, English, 3lb. per sq. ft. and upwards .. do.	20 0 0	21 0 0	
Do. pipe do.	22 0 0	—	
Nails, cut clasp, 3in. to 6in. .. do.	12 0 0	13 0 0	
Do. floor brads do.	11 15 0	12 15 0	
Steel, Staffs., Girders and Angles do.	8 10 0	9 0 0	
Do. Mild Bars do.	9 7 6	9 15 0	
Tin, Foreign do.	144 5 0	144 15 0	
Do. English ingots do.	147 0 0	—	
Zinc, sheets, Silesian .. do.	23 10 0	—	
Do. do. Veille Montaigne .. do.	24 5 0	—	
Do. Spelter do.	19 12 6	—	
TIMBER.			
SOFT WOODS.			
Fir, Dantzic and Memel .. per load	3 0 0	4 0 0	
Pine, Quebec Yellow do.	4 7 6	6 0 0	
Do. Pitch do.	3 8 0	3 11 0	
Laths, log, Dantzic .. per fath.	4 10 0	5 10 0	
Do. Petersburg .. per bundle	0 1 2	0 1 3	
Deals, Archangel 2nd & 1st per P. Std.	12 15 0	18 0 0	
Do. do. 4th & 3rd .. do.	13 5 0	—	
Do. do. unsorted .. do.	11 0 0	12 10 0	
Do. Riga do.	6 15 0	8 10 0	
Do. Petersburg 1st Yellow .. do.	11 10 0	19 0 0	
Do. do. 2nd .. do.	10 15 0	13 15 0	
Do. do. unsorted .. do.	8 15 0	13 0 0	
Do. do. White .. do.	11 5 0	—	
Do. Swedish do.	14 10 0	21 5 0	
Do. White Sea do.	15 10 0	20 10 0	
Do. Quebec Pine, 1st .. do.	13 15 0	23 15 0	
Do. do. 2nd .. do.	18 15 0	—	
Do. do. 3rd &c. .. do.	9 0 0	9 15 0	
Do. Canadian Spruce, 1st .. do.	10 10 0	11 15 0	
Do. do. 3rd & 2nd .. do.	7 6 0	9 10 0	
Do. New Brunswick .. do.	7 5 0	8 0 0	
Battens, all kinds .. do.	8 5 0	10 10 0	
HARD WOODS.			
Ash, Quebec per load	3 17 6	4 10 0	
Birch, Quebec do.	3 12 6	3 17 6	
Box, Turkey per ton	7 0 0	15 0 0	
Cedar, lin., Cuba .. per ft. sup.	0 0 3	0 0 3 1/2	
Do. Honduras do.	0 0 3 1/2	—	
Do. Tobasco do.	0 0 3 1/2	—	
Elm, Quebec per load	0 12 6	5 10 0	
Mahogany, Average Price			
for Cargo, Honduras .. per ft. sup.	0 0 4 1/2	—	
Do. African do.	0 0 3 1/2	—	
Do. St. Domingo .. do.	0 0 6 1/2	—	
Do. Tobasco do.	0 0 4 1/2	—	
Do. Cuba do.	0 0 4 1/2	—	
Oak, Dantzic and Memel .. per load	3 15 0	5 7 6	
Do. Quebec do.	4 12 6	5 0 0	
Teak, Rangoon, planks .. do.	8 10 0	14 10 0	
Wainscot, Riga (Baulk) .. do.	3 15 0	5 15 0	
Do. Odessa Crown .. do.	3 15 0	5 15 0	
Walnut, American .. per cub. ft.	0 1 8	0 3 2	

COMPLETE LIST OF CONTRACTS OPEN.

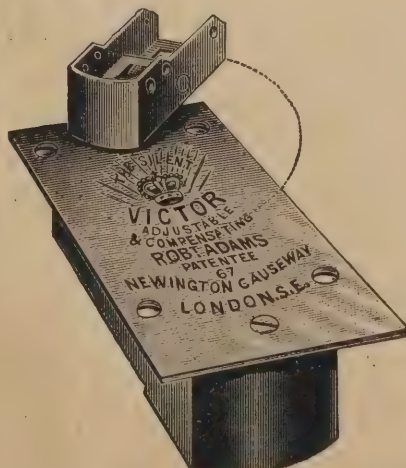
DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
BUILDING.			
Aug. 3	Glasgow—Offices	Parish Council	J. R. Motion, Council Chambers, 38 Oochrane Street, Glasgow.
" 3	Barry Dock, Wales—Church	Trustees of late Alfred Sharp, Esq., J.P. ..	G. Thomas, Queen's Chambers, Cardiff.
" 3	Bingley—Mill	Commissioners of H.M. Works and Public Buildings	W. R. Nunn, Market Street, Bingley.
" 3	London—Plastering	Rathven School Board	H. Tanner, H.M. Office of Works, Storey's Gate, S.W.
" 3	Findochty, Buckie—Additions	Electricity Supply Committee	J. Macdonald, 4 East Church Street, Buckie.
" 4	Markethill, Ireland—Renovation	Urban District Council	J. Brown, 41 Kilmorey Street, Newry.
" 4	Bury St. Edmunds—Cottages	Grammar School	J. O. Smith, Town Hall, Bury St. Edmunds.
" 4	Radcliffe, Lancashire—Chimney	School Board	Engineer, Council Offices, Radcliffe.
" 4	Ashby-de-la-Zouch—Girls' School	Urban District Council	Barrowcliff and Alcock, Architects, Loughborough.
" 4	Anstruther Easter, Scotland—School	Commissioners of H.M. Works and Public Buildings	Williamson & Inglis, architects, Kirkcaldy.
" 4	Coalbrookdale, Shropshire—Vicarage	Earl of Mansfield	The Vicarage, Coalbrookdale.
" 6	Armagh—Cottage	Rural District Council	J. O. Boyle, Armagh.
" 7	Kirkcaldy—Post Office	Poplar Union	H.M. Office of Works, Edinburgh.
" 7	Logie Almond, Perth—Houses	North-Eastern Railway Company	Johnstone & Rankine, 238 West George Street, Glasgow.
" 7	Uxbridge—Cottages	Hospital Board	Denton, Son & Lawford, Palace Chambers, Westminster.
" 8	London, E.—Boiler House, &c.	St. Marylebone Guardians	Clarkson, 136 High Street, Poplar, E.
" 8	Blaydon-on-Tyne—Houses	Rev. J. McGlinchey	W. Bell, Central Station, Newcastle-on-Tyne.
" 8	Wath-upon-Deane, Yorks.—Laundry	Vestry of St. Mary, Stratford	W. T. Campsall, Figtree Lane, Sheffield.
" 8	London, W.—Additions	Parish Council	A. S. Snell, 22 Southampton Buildings, Chancery Lane, W.C.
" 11	Donemana, Ireland—House	Barton Regis Rural District Council	E. J. Toye, Strand, Londonderry.
" 13	London, E.—Public Library	Sanitary Committee	S. B. Russell, 11 Gray's Inn Square, W.C.
" 13	Islington, South Devon—Cottage	Urban District Council	Rendell & Symons, Newton Abbott.
" 14	Stony Stratford—Walls	Rural Council	Mr. Woollard, Church Street, Stony Stratford.
" 15	Irvinestown, Ireland—Shooting Lodge	Rural District Council	T. Elliott, 37 Darling Street, Enniskillen.
" 27	Bristol—Cottage	Corporation	A. P. J. Cotterell, 28 Baldwin Street, Bristol.
ENGINEERING.			
Aug. 4	Manchester—Machinery	Corporation	City Surveyor, Town Hall, Manchester.
" 4	Matlock—Boring	Rural District Council	Surveyor, Town Hall, Matlock.
" 4	Midleton, Ireland—Sinking Well	Parish Council	W. Roche, Clerk, Midleton, Ireland.
" 6	Plympton St. Maurice, Devon—Lighting	Rural District Council	A. Folley, Clerk, Plympton St. Maurice, Devon.
" 6	Tiverton—Purification Works	Corporation	Cameron, Commis & Martin, 7 Bedford Circus, Exeter.
" 6	Logie Easter, Scotland—Reservoir	Rural District Council	G. Gordon and Co., engineers, Inverness.
" 6	Torquay—Boilers	Corporation	P. Storey, Electricity Works, Torquay.
" 7	Blean, Canterbury—Waterworks	Rural District Council	H. T. Sidwell, Herne Street, near Canterbury.
" 7	Douglas—Embankment	Corporation	G. H. Hill & Sons, 3 Victoria Street, Westminster.
" 7	Donabate, co. Dublin—Bakery Fittings	Hexham Rural District Council	G. O. Ashlin, 7 Dawson Street, Dublin.
" 7	Hedley-on-the-Hill, Northumberland—Enlarging Well	G.W.R. Company	A. T. Dinning, 25 Ellison Place, Newcastle.
" 7	Pontnewydd and Plymouth—Footbridges	G.W.R. Company	Engineer, Paddington Station, W.
" 7	Andoversford and Charlton Kings—Doubling Railway Line	G.W.R. Company	Engineer, Paddington Station, W.
" 7	Cardiff—Railway	Rural District Council	Engineer, Paddington Station, W.
" 8	Newport, Isle of Wight—Waterworks	Urban District Council	Newman and Cocks, Civil Engineers, Ryde.
" 9	Grays, Essex—Electric Lighting Work	General Purposes Committee	Preece and Cardew, 13 Queen Anne's Gate, Westminster, S.W.
" 9	Crewe—Tanks	Corporation	G. E. Shore, Earle Street, Crewe.
" 11	Leamington—Refuse Destructor	Corporation	W. de Normanville, Town Hall, Leamington Spa.
" 13	Salford—Cables	Corporation	Lacey, Ollreugh and Sillar, 2 Queen Anne's Gate, Westminster, S.W.
" 13	Derby—Filter Beds	Corporation	Borough Surveyor, Babington Lane, Derby.
" 14	London, E.O.—Cable	Corporation	Clarke, Forde and Taylor, 4 Great Winchester Street, E.C.
" 15	Rotherham—Steam Road Roller	Spanish Government	G. Jennings, Council Hall, Rotherham.
" 18	Madrid—Electric Tramway Lines	Waterworks Committee	Commercial Department, Foreign Office, S.W.
" 21	Bury, Lancs.—Filters	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
" 21	Bury, Lancs.—Valves	Russian Government	J. Cartwright, Peel Chambers, Market Place, Bury.
" 28	Warsaw—Telephone Service	Tramways Committee	Commercial Department, Foreign Office, S.W.
" 31	Stockport—Tramcars	Corporation	J. Atkinson, Borough Surveyor, Stockport.
Sept. 5	Lisbon—Iron Bridge	Harbour Commissioners	Public Works Department, Lisbon.
" 8	Bradford—Refuse Destructors	Urban District Council	Mr. McTaggart, Corporation Depot, Hammerton Street, Bradford.
Sept. 17	Jassy, Roumania—Waterworks	Urban District Council	Technical Department, Communal Council Office, Jassy.
Oct. 2	Barcelona, Spain—Elevators	Urban District Council	Commercial Department, Foreign Office, S.W.
IRON AND STEEL.			
Aug. 4	Cramlington, Northumberland—Lamp Pillars	Urban District Council	A. S. Dinning, 25 Ellison Place, Newcastle.
" 14	Woodbridge—Fencing	Rural District Council	G. Cook, District Surveyor, Woodbridge.
" 21	Bury, Lancs.—Pipes	Waterworks Committee	J. Cartwright, Peel Chambers, Market Place, Bury.
Sept. 26	The Hague, Holland—Socket Pipes	School Board	M. Nydoff, Nobelstreet 18, The Hague, Holland.
PAINTING AND PLUMBING.			
Aug. 14	Farnham—Painting	Markets Committee	A. J. Stedman, South Street Chambers, Farnham.
" 18	Shrewsbury—Painting	Urban District Council	W. C. Eddowes, The Square, Shrewsbury.
ROADS.			
Aug. 4	Romford—Paving	Town Council	J. Turvey, Surveyor, Romford.
" 6	Eastbourne—Road Works	Urban District Council	R. M. Gloyne, Town Hall, Eastbourne.
" 7	Brentford—Making-Up	Urban District Council	N. Carr, Clifden House, Boston Road, Brentford.
" 7	Dartmouth—Sidewalks	Corporation	T. O. Veale, Castle View House, Dartmouth.
" 7	Bootle, Lancs.—Improvement Works	Urban District Council	Borough Engineer, Town Hall, Bootle, Lancs.
" 9	Askington, Morpeth—Roadmaking	Isle of Thanet Union	A. Wood, Council Offices, Market Place, Aslington.
" 10	Brighton—Wood Paving		F. J. C. May, Town Hall, Brighton.
" 15	Manstone—Roadway		W. L. Grant, Architect, Sittingbourne.

PERFECTION

Spring Hinges

The "VICTOR" Double Action Spring Hinges open wider than any other—viz., 135° each way, i.e., 45° beyond right angles—and close with a perfect check action.

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The "Victor" showing opening capacity.

PERFECTION

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COMPLETE LIST OF CONTRACTS OPEN—continued.

DATE OF DELIVERY.	WORK TO BE EXECUTED.	FOR WHOM.	FROM WHOM FORMS OF TENDER MAY BE OBTAINED.
Aug. 3	SANITARY.		
" 4	London, S.E.—Sewers	Lewisham Burial Board	B. W. Smith, 23 Lincoln's Inn Fields, W.C.
" 4	Devonport—Sewers		J. Diggle, Heywood, Lancashire.
" 4	Romford—Sewers	Urban District Council	W. Smith, 24 North Street, Romford.
" 6	Blaby—Sewerage Works	Rural District Council	J. B. Everard, 6 Millstone Lane, Leicester.
" 6	Tiverton—Sewerage Works	Rural District Council	Cameron and Co., Bedford Circus, Exeter.
" 7	Frinton-on-Sea—Flushing Sewers	Tendring Rural District Council	T. W. Golds, Surveyor, Thorpe-le-Soken.
" 7	Frinton-on-Sea—Sewers	Tendring Rural District Council	T. W. Golds, Surveyor, Thorpe-le-Soken.
" 8	Wrexham—Sewers	Rural District Council	J. Price Evans, Engineer, Argyle Chambers, Wrexham.
" 9	London, N.—Drainage Work	Islington Guardians	W. Smith, 65 Chancery Lane, W.C.
" 10	Pudsey, Yorkshire—Sewers	Urban District Council	J. Jones, Council Offices, Pudsey, Yorks.
" 15	Manstone—Drainage Works	Isle of Thanet Union	W. L. Grant, Architect, Sittingbourne.
" 15	Tinsley, near Sheffield	Rotherham Rural District Council	B. Godfrey, 29a High Street, Rotherham.
" 21	Newport Pagnell, Bucks—Sewerage Works	Rural District Council	D. Balfour and Sons, 1 Victoria Street, Westminster, S.W.
" 7	TIMBER.		
" 14	London, S.W.—Oak Fence	Wandsworth Burial Board	T. Clouting, Town Hall, Wandsworth, S.W.
" 14	Woodbridge	Rural District Council	G. Cook, District Surveyor, Woodbridge.

COMPETITIONS OPEN.

DATE OF DELIVERY.	DESIGNS REQUIRED.	AMOUNT OF PREMIUM.	BY WHOM ADVERTISED.
Aug. 13	Machynlleth—Schools	£20	D. D. Williams, School Board Clerk, Machynlleth.
Sept. 15	Cardiff—Asylum	£105	Borough Engineer, Town Hall, Cardiff.
" 30	Devizes—Hospital	£20, £10	O. Sheppard, Clerk to Joint Committee, Devizes.
" 30	Muskelburgh—Town Hall	£26 5s. and £15 15s.	Town Clerk, Council Offices, Musselburgh.
No date.	Riviera—Villa for Sir William Ingram	£78 15s., £26 5s., £5 5s.	"Architectural Review."

TENDERS.

Information from accredited sources should be sent to "The Editor." Results of tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the Work.

BROADSTONE (Dorset).—For the erection of a villa, for Dr. C. W. Curtis. Mr. W. Andrew, architect, Alton Office, Parkstone:—

Chinchin & Co.	£1,600	Baker & Pearcey	£1,180
J. W. Cross	1,282	A. & F. Wilson, Park-	
E. S. Griffin	1,265	stone*	1,085
E. H. Crabb	1,182		

GLOWN (Derbyshire).—For the erection of six cottages for Mr. J. Radford. Mr. John Allsopp, architect, Worksop:—

G. Norman	£1,529 6 9	John Jackson,	
G. Wright	1,400 0 0	Whitwell, Ches-	
W. Hall	1,288 0 0	terfield*	£1,140 0 0
W. Thomason	1,187 9 0		

GRAY'S (Essex).—For supplying and fixing hot water heating at three schools for the Grays Thurock School Board. Mr. Christopher M. Shiner, A.R.I.B.A. architect, 8 Bond Court, Walbrook, E.C., and Grays:—

Shrivell	£815 10 0	Palowhar & Son	£639 0 0
Benham & Son	724 18 9	Russell & Co.	635 0 0
Burroughes & Co.	674 0 0	Woms & Co.*	600 0 0
Bechet Bros.	639 10 0		

GRAY'S (Essex).—For supplying and fixing lighting system and fittings to the co-operative store for the Grays Co-operative Society, Limited. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 8 Bond Court, Walbrook, E.C., and Grays:—

H. E. Wright	£229 0 0	W. Shrivell	£227 10 0

GRAY'S (Essex).—For supplying and fixing new partitions to schools for the Grays Thurock School Board. Mr. Christopher M. Shiner, A.R.I.B.A., architect, 8 Bond Court, Walbrook, E.C., and Grays:—

J. Brown	£480 0 0	H. R. Rons*	445
H. J. Carter	470		

HENDON.—For the erection of public offices, for the Hendon Urban District Council. Mr. Thomas Henry Watson, architect, 9 Nottingham Place, W. Quantities by Messrs. Leaning & Sons, 23 John Street, W.C.:—

Knight & Son	£12,975	W. Tont	£11,700
Wall & Co.	12,849	Gough & Co.	11,454
Gould & Brand	12,266	Kingerlee & Son	11,454
Collins & Godfrey	11,748	Oxford*	11,309

IPPLEPEN (Devon).—For the erection of farmhouse, &c., for Mr. R. Meddicoth. Mr. S. Segar, architect, Union Street, Newton Abbot:—

H. J. Almond	£1,600 0 0	F. A. A. Stacey	£1,195 0 0
Parker Bros.	1,818 0 0	S. Blatchford	1,090 0 0
W. A. Goss	1,290 0 0	Jos. Edwards	
P. Horswell	1,247 0 0	Newton Abbot*	1,088 7 6
Mitchell & Son	1,230 15 0		

KETTERING.—For the erection of children's home, Burton Latimer, for the Guardians. Messrs. Gotch & Saunders, architects, Bank Chambers, Kettering:—

F. Henson	£1,846 0 0	A. Bamford	£1,575 0 0
G. Henson	1,772 9 0	Lewin & Son	1,568 0 0
Ball	1,758 0 0	A. Lewis, Isham,	
Freeman & Son	1,650 0 0	Kettering*	1,589 0 0

LONDON.—For two artesian wells, pumps, &c., at the New Public Baths, Prince of Wales Road, Kensal Town, for the Parish of St. Pancras. Messrs. T. W. Aldwinckle & Sons, architects:—

Tilley & Sons	£8,307	Le Grand & Sutcliffe*	£4,735
Ister & Co.	5,277		

LONDON.—For the erection of eleven shops and dwellings in High Road, Kilburn, for Mr. J. Druce. Mr. C. W. Fisher, architect, Wellesley Road, Leytonstone:—

Livett	£12,050	Babbs*	£11,000
Gregory	11,095	Cook	10,087
Amos	11,080		

LONDON.—For the erection of a new higher grade school on the Cassland Road site, Well Street, Hackney, for the London School Board. Mr. T. J. Bailey, architect:—

Chessum & Sons	£89,821 17 0		
Leslie & Co., Ltd.	85,029 0 0		£324 0 0
Miskin & Sons	31,074 0 0		344 0 0
Perry & Co.	31,289 0 0		410 0 0
Munday & Sons	31,260 0 0		
Clarke & Bracey	31,250 0 0		374 0 0
Kirk & Randall	31,198 0 0		
F. & F. J. Wood	31,120 0 0		354 0 0
Williams & Son	31,420 0 0		
J. & M. Patrick	30,885 0 0		387 0 0
Grover & Son	30,594 0 0		362 0 0
Lawrence & Sons	30,441 0 0		352 9 0
Treasure & Son	30,379 0 0		348 0 0
C. Cox*			

* Provisionally accepted. † Amount included in tender of contractors.

LONDON.—For the erection of a new school on the Fulham Palace Road site, for the London School Board. Mr. T. J. Bailey, architect:—

Leslie & Co., Ltd.	£31,802	Stimpson & Co.	£28,820
Simpson & Son	30,888	Johnson & Co., Ltd.	28,668
Miskin & Sons	30,078	C. Cox	28,500
Lawrence & Sons	29,794	Martin, Wells & Co.	28,033
Treasure & Son	29,436	Wallis & Sons*	27,844
C. Wall	29,190		
J. Carmichael	29,048		

LONDON.—For the enlargement of Plassy Road School, Catford, for the London School Board. Mr. T. J. Bailey, architect:—

White & Co.	£5,095	Lorden & Son	£4,066
Kirk & Randall	4,965	Garrett & Son	4,618
Wallis & Sons	4,983	J. Appleby	4,590
Johnson & Co., Ltd.	4,989	J. & C. Bowyer	4,386
Edwards & Medway	4,886	Bulled & Co.	4,066
J. Marsland	4,789	Mitchell & Sons*	3,870
Smith & Sons, Ltd.	4,075		

LONDON.—For the erection of halls and other improvements at Portobello Road School, North Kensington, for the London School Board. Mr. T. J. Bailey, architect:—

Garrett & Son	£5,010	Martin, Wells & Co.	£4,192
Leslie & Co., Ltd.	4,063	Miskin & Sons	4,056
Lawrence & Sons	4,850	Stimpson & Co.	4,040
Treasure & Son	4,192	McCormick & Sons*	3,697

* Provisionally accepted.

LONDON.—For the erection of a new school on the Santley Street site, Fern Road, Brixton, for the London School Board. Mr. T. J. Bailey, architect:—

T. L. Green	£24,018 0 0		
F. & F. H. Higgs	23,496 0 0		£284 0 0
W. Downs	23,003 0 0		250 0 0
W. Johnson & Co., Ltd.	23,640 0 0		255 0 0
E. Lawrence & Sons	22,515 0 0		225 0 0
J. Garrett & Son	22,508 18 6		244 17 0
C. Cox	22,050 0 0		265 0 0
G. E. Wallis & Sons	21,990 0 0		218 5 0
Holliday & Greenwood*	21,866 0 0		275 0 0

* Provisionally accepted.

LONDON.—For sanitary and drainage works at the Surrey Lane Higher Grade School, Battersea, for the London School Board. Mr. T. J. Bailey, architect:—

Wells & Co.	£1,800 0 7	H. & G. Mallett	£1,440 0 0
Falkner & Son	1,689 0 0	G. Kemp	1,400 0 0
W. Hammond	1,681 0 0	J. & C. Bowyer	1,390 0 0
G. Parker	1,655 0 0	Edwards	1,387 0 0
J. Carmichael	1,527 0 0	Medway	1,367 0 0
Johnson & Co., Ltd.	1,486 0 0	Rice & Son	1,362 0 0
Akers & Co.	1,481 0 0	Maxwell Bros.,	
Lathley Bros.	1,449 0 0	Ltd.	1,346 0 0

* Provisionally accepted.

LONDON.—For the erection of cloak rooms, sanitary works, &c., at the Walton Street temporary transferred school, Chelsea, for the London School Board. Mr. T. J. Bailey, architect:—

J. Neal	£2,175	John Garrett & Son	£2,048
Rice & Son	2,123	F. G. Minter	1,088
Maxwell Bros., Ltd.	2,095	T. Hooper & Son*	1,999

* Accepted.

LONDON.—For adapting house for schoolkeeper, enclosing, &c., additional land, and other works, at the Woolmore Street School, Poplar, for the London School Board. Mr. T. J. Bailey, architect:—

Johnson & Co., 25 per cent. on schedule.		G. Barker	£1,065
Gibb & Co.	£1,175	Sevens Bros.	998
T. H. Jackson	1,139	Barrett & Power	998
Elkington & Sons	1,069	J. T. Robey*	988

* Provisionally accepted.

LOWESTOFT.—For the erection of the Ganton Cliff Hotel (basement only). Mr. Herbert J. Green, architect and surveyor, 31 Castle Meadow, Norwich:—

Shillitoe & Sons	£3,178	Youngs & Son	£2,518
Cornish & Gayner	2,890	J. S. Smith, Norwich*	2,455
Johnson & Co., Ltd.	2,794		

NEW CROSS, S.E.—For additions to Amersham Grove School, Ludwick Road, New Cross, S.E.:—

R. Soper	£270 0 0	J. Bullers	£788 0 0
W. Pearce	968 0 0	W. Panstons	783 0 0
E. Coates	915 5 0	J. F. Gorham	778 8 11
J. O. Richardson	860 0 0	H. L. Holloway	775 0 0
Hibbard Bros., Ltd.	856 0 0	Castle Bros.	773 0 0
Spicer & Son	819 0 0	Coleman & Co.	768 0 0
Balaam Bros.	815 0 0	Barlow & Robert	753 0 0
J. Howie	809 0 0	F. D. Leng	748 0 0
F. & H. F. Higgs	795 0 0	Hall Bros.	745 0 0
W. Antill & Co.	790 0 0	F. Davy	741 0 0
Bakley & Son & Hol-		F. P. Smith	718 0 0

RAUNDS (Northants).—For the erection of shops and stores, for the Co-operative Society. Messrs. Sharman & Archer, architects, Wellingborough. Quantities by the architects:—

R. Marlott	£2,100 0 0	Kettering Co.	
Smith & Son	2,090 0 0	operative	
Brown & Son	2,052 13 6	Builders,	
G. Henson	2,050 0 0	Kettering*	£1,957 0 0
W. Goodman	1,938 0 0		

RUSHDEN.—For additions to Shoe Factory, Station Road, for Messrs. Jacques & Clark. Messrs. Mosley & Scrivenor, architects, Fish Street, Northampton:—

T. Swindall	£1,999 0 0	W. Beardsmore,	
Rushden	1,998 0 0	Northampton	£1,925 0 0
F. Allwright	1,998 0 0	T. Willmott, jun.,	
H. Spence, W. Rush-		Rushden	1,897 0 0
den	1,980 0 0	Hackley Bros.	
J. M. Panting,	1,980 0 0	Wellingborough	1,869 0 0
Northampton	1,980 0 0	Whittington &	
G. Henson, Wel-		Tomlin, Rushden	1,847 0 0
lingborough	1,978 12 6	E. Mitchell,	
Walker & Everard	1,975 0 0	Irchester	1,828 14 0
Rushden	1,975 0 0	R. Marlott,	
		Rushden*	1,810 0 0

* Accepted.

COMING EVENTS.

Wednesday, August 1.

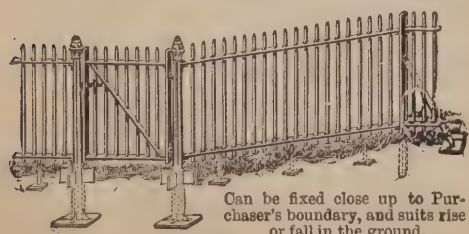
BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m.

Saturday, August 4.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS, NEWCASTLE-UPON-TYNE.—Council Meeting at 1.30 p.m. Annual General Meeting at 2 p.m.

Monday, August 6.

ROYAL ACADEMY Closes.



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TENDERS.

Information from accredited sources should be sent to "The Editor." No results of tenders can be accepted unless they contain the name of the Architect or Surveyor for the Work.

BOLTON.—For rebuilding "Rose and Crown" inn and shop adjoining, Market-street, Farnworth, for the Crown Brewing Company, Limited. Messrs. Openshaw and Gill, architect, Fleet-street, Bury. Quantities by Mr. W. E. Gill.
 Platt and Castle £2,320 0 0 D. Diggle ... £1,970 0 0
 J. Entwistle ... 2,163 0 0 J. Tinline ... 1,895 0 0
 G. Hodgkiss ... 2,033 12 6 Coope Bros. ... 1,889 3 0
 J. C. and F. Woods ... 1,990 17 0

CARDIFF.—For proposed additions to St. Francis Sunday Schools, Roath. Mr. H. H. Turner, architect, 75, Mysore-road, Lavender Hill, S.W. Quantities by the architect.
 A. J. Howell ... £793 8 1 Knox and Wells ... £675 0 0
 S. Shepton & Son 725 0 0

CWMBRAN (Mon.).—For the erection of drill hall, armoury, &c., for Messrs. Phillips and Sons, Limited. Messrs. Swallow and Creighton, architects, Steam Packet Chambers, Newport, Mon. Quantities by architects:
 Leadbetter Bros. ... £1,349 0 D. J. Davies ... £1,141 15
 J. Partridge ... 1,335 0 C. H. Reed ... 1,134 0
 W. Jones and Son ... 1,277 0 W. L. Sier ... 1,096 6
 Wm. Price ... 1,248 0 Jas. Davies, New-
 Lawson and Co. ... 1,180 0 port* ... 999 10
 F. C. Parfitt ... 1,150 0 J. Mainwaring ... 998 0
 *Accepted.

DEVONPORT.—For the erection of St. Chad's Mission Chapel, Devonport. Mr. George H. Fellowes-Prynn, F.R.I.B.A., architect, 6, Queen Anne's-gate, Westminster. Quantities by Mr. R. Henry Hale, F.S.I., 33, Old Queen-street, Westminster, S.W.:—
 Lethbridge and J. P. Berry ... £1,939 13 2
 Sons ... £4,436 0 0 R. Yeo and Sons, ... 3,749 8 8
 T. Jenkin & Sons 4,265 0 0 Torquay* ...
 H. Skinner ... 4,172 19 0 *Accepted conditionally.

ERITH.—For the execution of private street works, Sandcliff-road, Church-road, Crusoe-road, Friday-road, Alford-road, and Fraser-road, for the Urban District Council. Mr. A. H. Jennings, surveyor, Council Offices, High-street, Erith. Quantities by surveyor:—
 Wm. Wade ... £3,942 16 8 A. J. Catley ... £3,240 0 0
 F. Free and Sons 3,820 0 0 A. Bentham and
 Thomas Adams 3,608 10 1 Co., Streatham
 W. H. Wheeler ... 3,351 0 0 Hill, S.W.* ... 3,067 0 0
 Lawrence and Thacker ... 3,243 3 6
 [Surveyor's estimate, £3,307 3s. 2d.]
 *Accepted.

HYTHE (Kent).—For the execution of sewerage works for the Corporation. Mr. A. S. Butterworth, C.E., Hythe. Quantities by engineer:—
 Johnson and Co. ... £4,640 0 Tuff and Miskin ... £2,453 3
 Wallis and Sons ... 2,492 0 Haisell, Hythe* ... 1,989 14
 *Accepted.

KEITH, N.B.—Accepted for the erection of a group of three cottages for working men's families, for Mr. Richard Thomson. Mr. F. D. Robertson, architect, 92, Mid-street, Keith:—
 Mason.—William McPherson, Fifekeith ...
 Carpenter.—John Cormack, Keith ... } £220
 Slater.—Alex. Strachan, Keith ...
 Plasterer.—George McKay ...

LONDON.—For the erection of boiler-house, chimney-shaft, &c., at workhouse, Bromley-by-Bow, E., for the Stepney Union Guardians. Mr. R. Banks Martin, architect, 121, Plashet-grove, East Ham. Quantities by Mr. J. R. Hunt, Queen Victoria-street, E.C. 4:—
 T. Welsh ... £7,029 J. Yates ... £7,000
 A. E. Symes ... 7,495 Gibb and Co.* ... 7,000
 G. Sharp ... 7,417 Thomas and Edge ... 6,997
 Dolman and Co. ... 7,372 Wall and Co. ... 6,850
 Gregar and Son ... 7,235 *Accepted.

LONDON.—For erecting three shops and dwelling-houses over Nos. 190A, 192, and 192A, Rye-lane, Peckham, S.E., for Messrs. N. Hall and Co. Mr. Arthur Garnar, architect, 66, Oakhurst-grove, East Dulwich, S.E.:—
 E. Jones ... £3,647 10 A. P. Macers ... £2,860 0
 Larks and Sons ... 3,280 0 H. Line* ... 2,755 0
 G. Parker ... 3,144 0 *Accepted.

LONDON.—For chimney shaft, electricity supply station, Haggerston, for the Vestry of Shoreditch. Messrs. Kincaid, Waller and Manville, engineers. Quantities by Mr. John R. Hunt:—

	Allowance for existing building.	
Smart ...	£5,700	£5,700
Hill ...	—	5,552
Jenkins ...	6,000	£500
Chessum and Sons ...	5,493	93
Storr, Sons, and Co., Limited ...	5,499	100
Richardson ...	5,196	5

LONDON, S.W.—For the erection of proposed new church of St. Bartholomew, Battersea. Mr. George H. Fellowes Prynn, F.R.I.B.A., architect, 6, Queen Anne's-gate, Westminster, architect. Quantities by Mr. R. Henry Hale, F.S.I., 33, Old Queen-street, Westminster:—
 T. Rider and Sons ... £8,997 0 A. Porter ... £3,160 7
 R. Nightingale ... 8,895 0 J. and C. Bowyer ... 8,095 0
 Holliday and Green-wood ... 8,598 0 Holloway Bros. ... 8,051 0
 Lathey Bros. ... 8,525 0 Goddard and Sons 7,468 0
 Dove Bros. ... 8,515 0 Tooting* ... 7,264 0
 *Accepted.

NEWMILL, KEITH, N.B.—Accepted for the erection of a group of four cottages for working men's families, for Mr. Morrison, McCannachie. Mr. F. D. Robertson, architect, 92, Mid-street, Keith:—

Mason.—William Russell, Fifekeith ...
 Carpenter.—John Taylor, Fifekeith ... } £435
 Slater.—George McKay, Keith ...
 Plasterer.—Robert Kerr Rathie, Keith ...
 Painter and Glazier.—M. McCannachie, Keith ...

NEWPORT.—For alterations to Dock-road Brewery, Newport, for Messrs. Phillips and Sons, Limited, brewers. Messrs. Swallow and Creighton, architects, Steam Packet Chambers, Newport, Mon. Quantities by architects:—
 Lawson and Co. ... £2,079 Jones and Son, New-
 C. H. Reed ... 2,020 port* ... £1,847
 *Accepted.

COMING EVENTS.

Wednesday, April 4.
 SOCIETY OF ARTS.—Ordinary meeting at 8 p.m.
 SANITARY INSTITUTE.—Discussion on "The Housing of the Working Classes in London;" opened by Mr. Thomas Blashill, F.R.I.B.A., 8 p.m. (Lectures and Demonstrations for Sanitary Officers: Part II.)—Mr. R. Sydney Marsden, D.Sc., M.B., F.R.S., on "Practical Methods of Stalling and Slaughtering Animals: Preserving and Storing Meat and other Foods." 8 p.m.
 EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. W. H. Hole, A.R.S.A., on "Inside Decoration of Public and Ecclesiastical Buildings." 8 p.m.
 BRITISH ARCHÆOLOGICAL ASSOCIATION.—Meeting at 8 p.m.
 ARTISTS' BENEVOLENT FUND.—Anniversary Dinner at Royal Institute of Painters in Water Colours. 7 p.m.

Thursday, April 5.
 CIVIL AND MECHANICAL ENGINEERS' SOCIETY.—Prof. A. Sharp, B.Sc., Wh.Sc., A.M.I.C.E., on "Flywheel Accidents." 8 p.m.
 SOCIETY OF ANTIQUARIES OF LONDON.—Meeting at 8.30 p.m.
 INSTITUTION OF ELECTRICAL ENGINEERS.—Meeting at 8 p.m.

Friday, April 6.
 ARCHITECTURAL ASSOCIATION.—Mr. Basil Champneys on "Hints on the Study and Planning of Collegiate Buildings." 7.30 p.m.
 SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers: Part III.)—Paper on "The Laws, By-Laws, and Regulations affecting the Inspection and Sale of Meat and other Articles of Food, including their Preparation and Adulteration." 8 p.m.
 ROYAL INSTITUTION.—Prof. Dewar on "Solid Hydrogen." 9 p.m.
 INSTITUTION OF CIVIL ENGINEERS.—(Students' Meeting.)—Mr. H. E. Wimperis, Wh. Sc., on "Experiments on Struts with and without Lateral Loading." 8 p.m.

Saturday, April 7.
 ARCHITECTURAL ASSOCIATION.—Fifth Spring visit.
 EDINBURGH ARCHITECTURAL ASSOCIATION.—Visit to Balcraig.
 BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to St. Saviour's, Southwark, at 3 p.m. Mr. W. F. Sweet on "Air-Tight Case Making." 6 p.m.

Monday, April 9.
 DUNDEE INSTITUTE OF ARCHITECTURE.—Visit to Glasgow.
 BRISTOL SOCIETY OF ARCHITECTS.—Annual General Meeting.

Tuesday, April 10.
 GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Alexander Davie on "The Practice of Measuring."
 SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—Annual Meeting, Election of Officers, &c.

Wednesday, April 11.
 INSTITUTE OF SANITARY ENGINEERS.—Meeting of Examination and Literary Committee at 2.30 p.m., General Purposes and Finance Committee at 3.30 p.m., Election Committee at 5 p.m. Members' Sessional Meeting at 7 p.m.

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EDINBURGH ARCHITECTURAL SOCIETY.—Presidential Address by Mr. R. S. Lorimer, A.R.I.B.A., and award of prizes.
BIRMINGHAM AND DISTRICT CLERK OF WORKS' AND BUILDERS' FOREMAN'S ASSOCIATION.—Mr. F. B. Andrews, A.R.I.B.A., on "Venice, and Some of her Buildings." 8 p.m.

CURRENT PRICES.

FORAGE.			
Hay, best	per load	£ s. d.	2 s. d.
Sainfoin mixture	do.	3 10 0	4 0 0
Clover, best	do.	4 5 0	5 0 0
Beans	per qr.	1 7 0	—
Straw	per load	1 4 0	1 16 0

OILS AND PAINTS.

Castor Oil, French	per cwt.	1 8 0	1 10 4
Colza Oil, English	per cwt.	1 8 9	—
Copperas	per ton	2 0 0	—
Lard Oil	per cwt.	1 15 0	—
Linseed Oil	per cwt.	1 5 6	—
Petroleum, American	per gal.	0 0 7 9/16	0 0 7 3/4
Do., Russian	per gal.	0 0 7 1/16	0 0 7 3/8
Pitch	per barrel	0 9 0	—
Tallow, Town	per cwt.	1 7 0	1 9 0
Tar, Stockholm	per barrel	1 6 0	—
Turpentine	per cwt.	2 0 10 4	2 1 0
Lead, white, ground, carbonate	per cwt.	1 2 6	—
Do. red	per cwt.	1 0 4 4	—
Soda crystals	per ton	2 17 6	3 0 0
Shellac, orange	per cwt.	8 0	—

METALS.

Copper, sheet, strong	per ton	89 0 0	—
Iron, Staffs, bar	do.	10 10 0	11 10 0
Do. Galvanised Corrugated sheet	do.	15 0 0	—
Lead, pig, Spanish	do.	16 13 9	—
Do. do. English common brands	do.	17 0 0	—
Do. sheet, English, 37b. per sq. ft. and upwards	do.	20 0 0	21 0 0
Do. pipe	do.	22 0 0	—
Nails, cut clasp, sin. to sin.	do.	12 0 0	13 0 0
Do. floor brads	do.	11 15 0	12 15 0
Steel, Staffs, Girders and Angles	do.	9 2 6	9 7 6
Do. Mild Bars	do.	9 12 6	10 0 0
Tin, Foreign	do.	139 15 0	140 5 0
Do. English ingots	do.	143 0 0	144 0 0
Zinc, sheets, English	do.	27 10 0	28 10 0
Do. do. Veille Montaigne	do.	27 7 6	—
Do. Spelter	do.	21 8 9	22 0 0

TIMBER.

Soft Woods.			
Fir, Dantzic and Memel	per load	8 0 0	4 0 0
Pine, Quebec Yellow	per load	4 7 6	6 5 0
Do. Pitch	do.	3 12 0	3 15 0
Laths, 10z, Dantzic	per fath.	4 10 0	5 10 0
Do. Petersburg	per bundle.	0 1 4 4	0 1 5
Deals, Archangel 2nd & 1st per P. Std.	do.	17 5 0	21 5 0
Do. do. 4th & 3rd.	do.	12 10 0	14 0 0
Do. do. unsorted	do.	12 5 0	12 10 0

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Deals, Riga			
Do. Petersburg 1st Yellow	do.	£ s. d.	2 s. d.
Do. do. 2nd	do.	6 15 0	8 10 0
Do. do. Unsorted	do.	14 0 0	17 15 0
Do. do. White	do.	8 15 0	12 0 0
Do. Swedish	per P. Std.	10 15 0	11 0 0
Do. White Sea	do.	7 15 0	11 5 0
Do. Quebec Pine, 1st	do.	14 5 0	15 0 0
Do. do. 2nd	do.	17 10 0	18 0 0
Do. do. 3rd & 4th	do.	18 15 0	—
Do. Canadian Spruce, 1st per P. Std.	do.	9 0 0	17 15 0
Do. do. 3rd & 4th	do.	10 10 0	11 15 0
Do. New Brunswick	do.	9 10 0	10 0 0
Battens, all kinds	do.	7 5 0	8 0 0
Flooring Boards, 1 in.	do.	8 0 0	10 10 0
Do. prepared, 1st	per square	0 12 0	—
Do. 2nd	do.	0 10 0	—
Do. 3rd & 4th	do.	0 8 6	0 8 9

HARD WOODS.

Ash, Quebec	per load	3 17 6	4 10 0
Birch, Quebec	do.	3 12 6	3 17 6
Box, Turkey	per ton	7 0 0	15 0 0
Cedar, lin., Cuba	per ft. sup.	0 0 4 4	—
Do. Honduras	do.	0 0 3 25/32	—
Do. Tobasco	do.	0 0 3 25/32	—
Elm, Quebec	per load	0 12 6	5 10 0
Mahogany, Average Price	per ft. sup.	0 0 5 1/16	—
Do. African	do.	0 0 3 9/16	—
Do. St. Domingo	do.	0 0 3 3	—
Do. Tobasco	do.	0 0 6 3/8	—
Do. Cuba	do.	0 0 8 3/32	—
Oak, Dantzic and Memel	per load	3 15 0	5 7 6
Do. Quebec	do.	4 12 6	5 0 0
Teak, Rangoon, planks	do.	8 10 0	14 10 0
Wainscot, Riga (Baulk)	do.	3 15 0	5 15 0
Do. Odessa Crown	do.	3 15 0	5 15 0
Walnut, American	per cub. ft.	0 2 9	0 8 5

COMPETITION.

COUNTY BOROUGH of CARDIFF.
PROPOSED NEW ASYLUM.
TO ARCHITECTS.

The Corporation of Cardiff invite Architects experienced in Asylum work to submit their names for selection to send in COMPETITIVE DESIGNS for the NEW BOROUGH ASYLUM to accommodate about 800 patients, and proposed to be erected at Whitchurch, near Cardiff.

Each Architect submitting his name must state in his application his experience and the names of any similar buildings carried out under his supervision, and must also state the terms upon which (if ultimately successful in the competition) he would be willing to undertake the erection of the buildings, including the preparation of all plans, specifications, and quantities, and the necessary supervision of the work.

Applications, endorsed "Asylum Architect," to be delivered at my office not later than TUESDAY, APRIL 17th, 1900.

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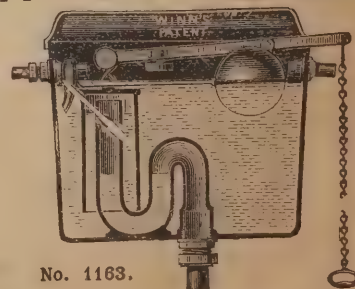
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